Environmental Monitoring Report

Project Number: 42145

July-December 2024

Armenia: North-South Road Corridor Investment Program (Tranche 1 and 2)

Prepared by the "Road Department" Fund of the Ministry of Territorial Administration and Infrastructure of the Republic of Armenia for the Asian Development Bank.

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(Financed by the ADB)

Prepared by

Road Department Fund

Yerevan, Armenia

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Abbreviations

ADB	Asian Development Bank
CEMP	Contractor's Environmental Management Plan
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
IEE	Initial Environmental Examination
IES	International Environmental Specialist
NES	National Environmental Specialist
MOE	Ministry of Environment
MOTAI	Ministry of Territorial Administration and Infrastructure
MESCS	Ministry of Education, Science, Culture and Sport
SEMP	Site-Specific Environmental Management Plan
TMP	Traffic Management Plan
RD	Road Department Fund
EMR	Environmental Monitoring Report
EHSS	Environmental, Health and Safety Specialist
ES	Environmental Specialist
DDR	Due Diligence Report

1 INTRODUCTION

1.1 Preamble

This Semi-annual Environmental Monitoring Report covers the time period from July-December of 2024. The report was prepared jointly by "Road Department" Fund, the JV Egis International and Kocks Consult GMBH, the JV "A.A.B. Project LLC – M/s Dineshchandra R Agrawal Infracon Pvt. Ltd" and the J/V Levantina, Ingenieria y Contsruccion, S.L. & Obras Publicas y Regadios, S.A. (LIC-OPR).

1.2 Headline Information

Originally construction works were implemented by "Corsan Corviam Construction" S.A. Armenian Branch and its subcontractors. However, according to sub-clause 15.2(e) of GCC, the Employer terminated the Contract for Construction Works with the Contractor on July 18, 2019. Till 31.12.2019 the Program Management and Technical Supervision Consultant was a joint venture of French "SAFEGE" and Spanish "EPTISA" companies. After completion of the contract, the PMC/Engineer has proceeded with post-termination processes of the Contractor's contract for civil works. In 2020-2021 measures were taken to continue the implementation of Project through other contractor/contractors.

During the course of the work, it was determined that the Agarak Historical and Preservation Zone could be subject to potential impacts during construction. In order to address this, research and archaeological excavations were conducted. As a result of these investigations, it was confirmed that potential impacts are indeed possible. Subsequently, a decision was made to redesign the project, leading to the approval of a new 8-kilometer road section that avoids the archaeological sites discovered in the area. As a result, Construction is envisaged to be resumed in the following two sections:

- Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)
- Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500).

In the meantime, Road Department negotiated and signed Agreement on 10 August, 2020 with Mr. Viktor Bakhtamyan as IEE/EIA Consultant in order to provide services for review and update of Environmental and Social Impact Assessment document for tranche-2 8km (KM 29+600 - KM 37+600) section according to the new design project description and current activities. This IEE/EIA update requirement was based on RA Law on Environmental Impact Assessment and

Expertise and ADB safeguard requirements: (i) RA EIA&E law - (article 21, point 2- 2)) 2. the positive conclusion of expertise is considered expired if: 2) changes have been made in the design and baseline documents that may have an impact on the environment without informing the authorized body, (ii) ADB Safeguard requirements- 25. Crosscutting Issues- (iii) ensuring that safeguard plans are updated based on detailed engineering design and changes in scope. Updated IEE and EIA are submitted to ADB and RA MoE. Positive conclusion and approvals were received on 06.08.2021 and 26.08.2021 respectively. Local EIA and IEE documents were disclosed in RD Fund and RA MoE web sites.

In 2021, a new Engineer/Consultant was hired in the Project for the calculation of remaining quantities by the previous contractor, revise of existing designs, preparation of new bidding documents, as well as performing the duties of the Engineer during civil works. An appropriate contract was signed with the JV "Egis International" and "Kocks Consult Gmbh" on 25.02.2021.

For Task 1, RD signed contract with J/V A.A.B. Project LLC & Dineshchandra R. Agrawal Infracon Ltd. as a Construction Contractor on October 28, 2022.

For Task 2, RD signed contract with J/V Levantina, Ingenieria y Contsruccion, S.L. & Obras Publicas y Regadios, S.A. (LIC-OPR) as a Construction Contractor on 03 October 2023.

Taking into account that the positive conclusion has been declared invalid according to the law of RA Environmental Impact Assessment, negotiations have taken place between the Road Department and the Ministry of Environment (MoE) to review and update the Environmental Impact Assessment documents for Tranche-2 8km km 29+600 - km 37+600 and Environmental Impact Assessment document for Tranche-2 (which covers 34 km section, km 37+545 - km 71+500) . The MoE of RA has approved that there is no need for updating or reviewing the EIA for both projects.

1.3 Project Description

The RA has selected the Bavra-Yerevan-Agarak route as the North-South Road Corridor to be rehabilitated, reconstructed and expanded. The North-South Road Corridor Investment Program is implemented by "Road Department" SNCO (RD) of the Ministry of Territorial Administration and Infrastructure (MOTAI) to co-ordinate the work. The Program is funded by the Asian Development Bank (ADB) under a multi-tranche funding facility (MFF).

The MFF is designed to rehabilitate and upgrade national north-south roads to form a new, upgraded and expanded North-South highway. The main objective is to widen the existing 2-lane roads to become 4-lane divided roads along existing alignments wherever possible or to construct new alternate 2-lane roads where a single 4-lane road would not be feasible.

Tranche 1 Project is to improve two road sections of the North-South Corridor, namely, the M-1 section of road north from Yerevan to Ashtarak from km 18+370 to km 29+773 (Section 3 in the

contract with Contractor) and the M-2 section of road south from Yerevan to Ararat from km 9+312 to km 47+400 (Section 2 in the contract with Contractor).

The Tranche 2 Project starts at km 29+600 in Ashtarak and end at km 71+500 close to Talin (Section 1 in the contract with Contractor). Two bypasses will be constructed in Ujan from km 36+600 to km 40+300. The Project will also have a new road alignment (8.95 kilometres) at Katnagbyur starting from km 59+950 to km 68+900 that will be located on the left side of the existing highway to join the existing alignment in Talin.



Figure 1. Tranche1 and Tranche2 of North-South Road Corridor

The Tranche 2 project was subsequently divided into two parts. To avoid the important archaeological area at km 32+750 – 33+400, the decision was made to re-design the first 8 km (Task 1, km 29+600 – 37+600) around Agarak Community. The modified alignment passes through the following rural communities: Voskevaz, Agarak, and Aghdzk. Works on the remaining 34 km (Task 2) were only partially completed when the construction contract was terminated in July 2019. The commencement of civil works for the 8 km bypass was issued on January 16, 2023, and the

commencement for the completion of the construction of the 34 km was issued on November 13, 2023.

1.4 Project Contracts and Management

ADB carry out periodic Project reviews, inspections of the Project throughout the Project cycle in conformity with the principles and requirements embodied in the SPS 2009. ADB will aid the RD in managing the social and environmental impacts and risks, thus contributing to the promotion of the long-term sustainability of investments.

Contact information:
Adress: V. Sargsyan street, Kamar business center, 7th floor,
0010 Yerevan, Republic of Armenia
Phone number:+374 10 512300,
Fax +374 10 546374
www.adb.org/armenia

RD Fund is implementing day-to-day management of project execution. The RD Fund includes a Social and Environmental staff whose responsibilities include the management of all environmental and social aspects of the project.

Contact information:
Adress: Government House 3, Republic Square,
0010 Yerevan, Republic of Armenia
Phone number: +374 10 511 391
Email: info@armroad.am
www.armroad.am

The Supervision Consultant/Engineer JV "Egis International" and "Kocks Consult Gmbh" carries out all construction supervision activities and reporting of the project. Environmental Safeguards Unit of the Consultant is responsible for supervising the construction works in relation to environmental and archaeological impact and, in particular, for supervising and reporting on the Contractor's performance in the implementation of the EMP.

For Task 1 and Task 2:

Contact information:
Adress: 15, avenue du Centre -CS 20538
Guyancourt – 78286 Saint-Quentin-en-Yvelines cedex-France
Phone number: +33 139415070

Email: richard.thadani@egis.fr

For Task 1:

The Contractor J/V A.A.B. Project LLC Dineshchandra R. Agrawal Infracon Ltd. as a Construction is implementing construction works. Contractor's Environmental Unit is responsible for preparation and implementation of Contractors' EMPs, SSEMPs, monitoring of the construction activities and reporting.

Contact information:

Adress: Gevorg Vardanyan St., 1a Building,
0037 Yerevan, Republic of Armenia
Phone number: +374 44 999333
Email: info@aab.am
www.aabconstruction.com

For Task 2:

The Contractor J/V Levantina, Ingenieria y Contsruccion, S.L. & Obras Publicas y Regadios, S.A. (LIC-OPR) as a Construction is implementing construction works. Contractor's Environmental Unit is responsible for preparation and implementation of Contractors' EMPs, SSEMPs, monitoring of the construction activities and reporting.

Contact information:

Adress: C/ Ceramista Ramon Galdon, 10 PC. 46260
Alberic (Valencia) SPAIN
Phone number: +34 962441713
Email: lic@lic-sl.com

RD Environmental and Social Staff

The Project Impact Management activities are undertaken by:

- Miss. Mariam Tatulyan - hired by RD Fund in April 2023 as Environmental Impact Specialist is responsible for Environmental management of the project and compliance with the national environmental legislation of the RA and safeguard policies of financing Donors during the preparation and implementation of the Projects, including design, construction, and supervision.
- Miss. Shushan Kocharyan – Acting Head of Social Impact Management Service (HSIMS) is responsible for Social management of the project and compliance with the national legislation of the RA and safeguard policies of financing Donor during the implementation of the Projects, including construction, and supervision .

Consultant Environmental Safeguards Unit

Currently, for both ***Task 1*** and ***Task 2***, the Consultant Environmental Safeguard Unit

comprises:

- Mr. Arsen Hayriyan - Environmental/Health and Safety Specialist is responsible for the overall management of the environmental safeguards. He was replaced in December 2023. Since then, the Engineer has hired Ms. Karine Azatyan.
- Ms. Julietta Hakobyan-Social Specialist (SS), is responsible for the overall management of the social safeguards.
- Mr. Boris Gasparyan – Archaeology Specialist, is responsible for the overall management of the archaeology safeguards.

Contractor Environmental Safeguards Unit

For Task 1, the Contractor Environmental Safeguard Unit comprises:

- Mr. Mikael Tevosyan - Environmental Specialist (ES), is responsible for the compliance of the Contractor's activities to environmental part of the ADB Safeguard.
- Mr. Arman Khachatryan – Social Specialist (SS), is responsible for the compliance of the Contractor's activities to social part of the ADB Safeguard.
- Mr. Davit Ghambaryan – Health and Safety Specialist (HSS), is responsible for the compliance of the Contractor's activities to health and safety part of the ADB Safeguard Policy Statement. The specialist assumed his responsibilities on October 1, 2024.
- Mr. Hayk Haydosyan – Archaeology specialist, is responsible for protection of historical, cultural and archaeological monuments from negative impacts of the construction activities within framework of the EMP implementation.

For Task 2, the Contractor Environmental Safeguard Unit comprises:

- Mr. Mikael Tevosyan - Environmental and Social Safeguard Specialist (ESS), is responsible for the compliance of the Contractor's activities to environmental and social part of the ADB Safeguard.
- Mr. Sergey Khachatryan – Health and Safety Specialist (HSS), is responsible for the compliance of the Contractor's activities to health and safety part of the ADB Safeguard Policy Statement.
- Mr. Hayk Haydosyan – Archaeology specialist, is responsible for protection of historical, cultural and archaeological monuments from negative impacts of the construction activities within framework of the EMP implementation.

1.5 Project Activities During Current Reporting Period

1. Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

During the reporting period, the following construction works were implemented:

1. Common and Rock Excavation
2. Embankment
3. Relocation of electric cables
4. Relocation of drinking water lines
5. Relocation of irrigation water lines

As of December 31, the Contractor employed 113 workers during the reporting period. The workforce consists of approximately 4.79% women and 95.21% men.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

During the reporting period, the following construction works were implemented:

1. Common and Rock Excavation
2. Embankment
3. Drainage works
4. Lighting in the interchanges
5. Road markings, signals, posters and guardrails

The total number of workers employed by the Contractor during the reporting period as of December 31 is 178. The staff is composed of approximately 96.44% men and 3.56% women.

Photos from conducted works for both Tasks are provided in ANNEX A.

1.6 Description of Any Changes to Project Design

1. Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

For Task 1, a design change was introduced concerning the bypass of the existing highway. This design change was prompted by safety concerns. Specifically, at km 0+340 to 0+380 on the left side, the radius of the first curve in the bypass was adjusted from 60 meters to 120 meters. This alteration was made to prevent car collisions and to ensure the safety of the building located in that area.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, the Employer required the 'T'-junction at Nor Edesia (41+300) be upgraded to a full interchange. This required design of an additional overpass and new access roads. These new field

roads are needed for communities whose access will be disrupted or severed by the new highway. All mentioned design changes are included in the Environmental and Archaeological Due Diligence Report.

1.7 Description of Any Changes to Agreed Construction methods

No any significant changes to the agreed construction methods recorded during the reporting period.

2 ENVIRONMENTAL SAFEGUARD ACTIVITIES

2.1 General Description of Environmental Safeguard Activities

The revised IEE/EIA reports for the Tranche-2 8km section (KM 29+600 to KM 37+600) were submitted to the ADB and RA MoE. Positive conclusions and approvals were obtained on 06.08.2021 and 26.08.2021 respectively. The local EIA and IEE documents were made available on the RD SNCO and RA MoE websites for public access.

Considering that the positive conclusion has been declared invalid according to the law of RA Environmental Impact Assessment, negotiations have taken place between the Road Department and the Ministry of Environment (MoE) to review and update the Environmental Impact Assessment documents for Tranche-2 Tranche-2 8km km 29+600 - km 37+600 and Environmental Impact Assessment document for Tranche-2 (which covers 34 km section, km 37+545 - km 71+50.

The MoE of RA has approved that there is no need for updating or reviewing the EIA for both projects.

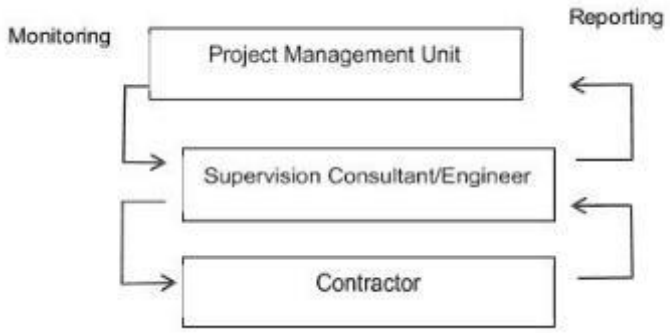
For ***Task 1***, the CEMP was approved on April 24, 2023, with the condition of updating the Tree Management Plan. The TMP was provided on November 7, 2024. The document was reviewed and approved by the Engineer on November 11, 2024

Following the new design changes, ADB requested a Due Diligence Report for ***Task 2***, which was prepared, approved, and disclosed in October 2024. After that, the SSEMP was updated according to the DD report and is waiting for approval.

Road Department Fund is implementing day-to-day management of project execution. The RD Fund includes a Social and Environmental staff whose responsibilities include the management of all social and environmental aspects of the project.

The Supervision Consultant/Engineer carries out all construction supervision activities and reporting of the project. Environmental Safeguards Unit of the Consultant is responsible for supervising the construction works in relation to environmental and archaeological impact and, in particular, for supervising and reporting on the Contractor's performance in the implementation of the EMP.

Contractors are implementing construction works. Contractor's Environmental Unit is responsible for preparation and implementation of Contractors' EMPs, SSEMPs, monitoring of the construction activities and reporting.



2.2 Site Audits

For both ***Task 1*** and ***Task 2*** site audits are conducted in accordance with the developed monitoring program, which is based on ADB Safeguards and EMP requirements.
Typically, the following site monitoring activities were undertaken:

1. ***Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)***

For Task 1, the Client's environmental specialist, along with the Engineer's and Contractor's environmental specialists, conducted site visits. Detailed information is documented in approved checklists and submitted in Monthly Progress Reports.

Table 1. Site visits conducted for Task 1

Environmental Staff	Activities	Status
Contractor's ESS	Regular monitoring site visits are conducted on a weekly basis, and the findings are reported weekly using an approved checklist format. Monthly reporting to the Engineer Participation in Engineer's site visit, held on July 9, 11, 23, August 08, 14, 21, 29, September 3, 13, 18, 25, October 04, 09, 14, 23, 29, November 06, 18, 22, 26 and December 06, 13, 18, 20 and 27.	To be continued in the next reporting period.
Supervision Engineer's EHSS	Regular monitoring site visits are conducted on a monthly basis, and the findings are reported monthly using an approved checklist format.	To be continued in the next reporting period.

	Monitoring site visits on July 12, 23, August 23, September 13, October 09, 14, November 9, 1 and December 02.	
Employer's ES	Monthly monitoring and inspection site visits. Semi-annually reporting to ADB. Monitoring site visits on July 15, 23, September 13 and October 9, 14.	To be continued in the next reporting period.
ADB ES	ADB inspection joint site visit held on October 14.	To be continued in the next reporting period.

During October 10-15, 2024 review mission was held by ADB. On October 14, 2024, a joint site visit was conducted with representatives from the Client, the Engineer, the Contractor, and ADB. During the visit, participants toured various construction sites, including the Contractor's construction camp and concrete plant. ADB requested corrective actions concerning the fuel facility and camp housekeeping. They engaged in on-site discussions regarding potential environmental, social, archaeological, health, and safety issues that could arise or already exist during the construction process. The availability of related documentation and compliance with social, health, safety, and environmental requirements were also addressed.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, the Client's environmental specialist, along with the Engineer's and Contractor's environmental specialists, conducted site visits. Detailed information is documented in approved checklists and submitted in Monthly Progress Reports.

Table 2. Site audits conducted for Task 2

Environmental Staff	Activities	Status
Contractor's ESS	Regular monitoring site visits are conducted on a weekly basis, and the findings are reported weekly using an approved checklist format. Monthly reporting to the Engineer Participation in Engineer's site visit, held on July 04, 12, 19, 23, 29, August 08, 14, 21, 29, September 03, 05, 09, 11, 13, 19, 27, October 04, 09, 14, 23, 29, November 06, 14, 22, 26 and December 06, 13, 19, 24.	To be continued in the next reporting period.

Supervision Engineer's EHSS	Regular monitoring site visits are conducted on a monthly basis, and the findings are reported monthly using an approved checklist format. Monitoring site visits on July 12, 23, August 14, September 03, 09, 11, 13, October 09, November 14 and December 9, 14.	To be continued in the next reporting period.
Employer's ES	Monthly monitoring and inspection site visits. Semi-annually reporting to ADB. Monitoring site visits on July 15, 23, September 13 and October 9, 14.	To be continued in the next reporting period.
ADB ES	ADB inspection joint site visit held on October 14.	To be continued in the next reporting period.

During October 10-15, 2024 review mission was held by ADB. On October 14, 2024, a joint site visit was conducted with representatives from the Client, the Engineer, the Contractor, and ADB. During the visit, participants toured various construction sites, including the Contractor's construction camp. They engaged in on-site discussions regarding potential environmental, social, archaeological, health, and safety issues that could arise or already exist during the construction process. The update of the SSSEMP was requested in accordance with the Due Diligence Report.

2.3 Issue Tracking

For ***Task 1***, the total number of tracked issues during this period is presented in Table 3.

Table 3. Summary of tracked issues of Task 1 as of 31 December, 2024

Summary Tables			
Total number of issues tracked during the reporting period	**10**	**Issues by Category**	
		Environment	**4**
Number of Issues Open during the reporting period	**8**	**Social**	**1**
Number of Issues Closed during the reporting period	**10**	**Health**	**1**
Number of Open Issues at the end of the reporting period	**0**	**Safety**	**2**

Percentage Closed from tracked issues	**100%**	**Other**	**2**

Information regarding ***Task 2*** is presented below (Table 4).

Table 4. Summary of tracked issues of Task 2 as of 31 December, 2024

Summary Tables			
Total number of issues tracked during the reporting period	**8**	**Issues by Category**	
		Environment	**2**
Number of Issues Open during the reporting period	**6**	**Social**	**3**
Number of Issues Closed during the reporting period	**6**	**Health**	**1**
Number of Open Issues at the end of the reporting period	**2**	**Safety**	**1**
Percentage Closed from tracked issues	**75%**	**Other**	**1**

For both Task 1 and Task 2, a detailed summary of compliance and non-conformances is presented in Table 5.

Table 5. The summary of compliance/non-conformance of Task 1 and Task 2 as of 31 December, 2024

Month	Fully compliant	Partly compliant	Non-conformity	Non-conformities corrected (F/P)	Non-conformities not corrected
TASK 1					
2024					
January	35	13	3	1/0	2
February	36	12	3	1/0	2

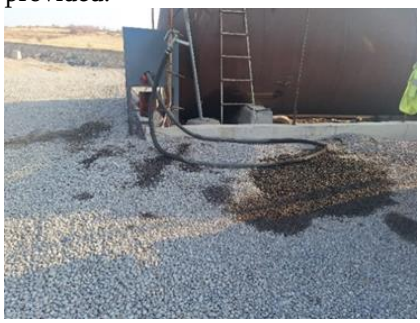
March	34	14	3	1/0	2
April	38	10	3	1/0	2
May	40	8	3	1/0	2
June	41	7	3	1/1	1
July	34	13	4	2/0	2
August	44	2	5	2/3	0
September	45	3	3	1/0	2
October	46	1	4	1/0	3
November	44	4	3	1/0	2
December	46	0	5	3/2	0
TASK 2					
2024					
January	-	-	-	-	-
February	-	-	-	-	-
March	-	-	-	-	-
April	-	-	-	-	-
May	-	-	-	-	-
June	-	-	-	-	-
July	38	10	3	1/0	2
August	36	12	3	1/0	2
September	34	14	3	1/0	2
October	45	3	3	1/0	2
November	46	3	2	1/0	2
December	41	7	3	1/0	2

Corrective actions regarding Task 1, is presented below.

Table 6. Corrective Action

N	Corrective action request	Date of corrective action	UPDATE as of December 31	Corrective action status (according to Contractor's weekly monitoring reports)

1.	Waste Management (Construction waste): Construction waste was observed at the project CAMP site. Waste generated from packaging materials and other construction waste should be collected in a separate place before it is transported to a landfill.	14.10.2024	The situation has been addressed, and the area has been partially cleaned. The Contractor is requested to complete the cleaning and fully resolve the issue.	**Corrected partly** Will be corrected during next reporting period
2.	Waste Management (Household waste): The number of waste containers installed is not enough. It was recommended to increase the number of waste containers and replace the damaged containers. The latter must have a closing lid. 	14.10.2024	The situation has been addressed, and the Contractor has purchased additional waste containers to manage the issue. The issue requires ongoing monitoring and will remain a focus for the consultant during the next visits.	**Corrected partly** Will be corrected during next reporting period 
3.	Secondary Containment for the fuel tank: The fuel tank should be provided with secondary containment with the volume of 110% from the volume of the tank as well as covered. During the visit on October 14 with ADB, significant waste was observed in the secondary containment, and the tank cover was found to be	14.10.2024	The situation has been addressed, and the secondary containment has been cleaned of waste.	**Corrected** 

	incomplete. 			
4.	Concrete Waste: During the monitoring visit at km 31+900 and in several other locations along the project RoW concrete waste was observed. The Contractor was instructed to adopt prompt action and measures to remove all concrete waste from RoW and ensure disposal at the designated public landfill with the week March 18-22, 2024. Letter N ROQE00301/24/326 dated 19.03.2024.	26.03.2024	No concerns were observed here Non-compliance notice on this matter was issued on August 27, 2024. RESOLVED	**Corrected**
5.	Fuel Leak at the Camp site: During the visit traces of fuel leakage at the camp were observed. Contaminated gravel must be replaced and proper storage should be provided. 	15.12.2024	Contractor is replacing polluted material from time to time. The issue requires ongoing monitoring and will remain a focus for the consultant during the next visits. The Contractor is instructed to refresh the gravel on a weekly basis.	**Corrected partly** Ongoing monitoring.

6.	Sanitary Conditions: Properly operated toilet and hand-wash facilities should be provided at the CAMP.	30.06.2024	The situation has been addressed, and the condition of the toilet has been improved. However, it is recommended to replace it with a proper facility.	**Corrected partly** 

Corrective actions regarding Task 2, is presented below.

Table 7. Corrective Action

N	Corrective action request	Date of corrective action	UPDATE as of December 31	Corrective action status (according to Contractor's weekly monitoring reports)
1.	Fuel Leak at the Camp site: During the visit traces of fuel leakage at the camp were observed. 	15.12.2024	Contaminated gravel must be replaced and proper storage should be provided.	**Corrected partly** Will be corrected during next reporting period

Both for ***Task 1*** and ***Task 2,*** the Contractor's EHS team organized verbal discussions on EHS for workers and foremen. During the reporting period, discussions with drivers focused on the use of covers and with foremen on their safety responsibilities, particularly public safety. As a result, the Contractor's foremen, drivers, and workers were reminded about driving and traffic control measures and rules. They were also briefed on the main safety hazards during construction activities, such as working on scaffolding, using ladders, working in trenches, and wearing PPE. Workers and subcontractor staff were provided with the necessary PPE.

2.4 Trends

For ***Task 1***, a total of 62 issues have been identified since the commencement of the project. As of the end of the reporting period, there is no issues remain open. This means that approximately 100% of the identified issues have been successfully closed.

For **Task 2**, a total of 49 issues have been identified since the commencement of the project. As of the end of the reporting period, only 2 issues remain open. This means that approximately 75% of the identified issues have been successfully closed.

2.5 Unanticipated Environmental Impacts or Risks

No any unanticipated environmental impacts or risks were identified in the current period both for ***Task 1*** and ***Task 2***.

3 RESULTS OF ENVIRONMENTAL MONITORING

3.1 Overview of Monitoring Conducted during Current Period

Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

For Task 1, the baseline and periodic instrumental measurements of dust, noise and vibration for the reconstruction of about 8.0 km of highway M1 Yerevan-Gyumri-Bavra, near Agarak community (from km 29+600 to km 37+545) Project was implemented by a specialized entity based on the contract signed between A.A.B. Project LLC – M/s Dineshchandra R Agrawal Infracon Pvt. Ltd. and Consecoard LLC. The objective of this measurements was to collect the baseline information about noise and vibration levels, as well as dust concentration at sensitive points and assess noise and vibration levels, dust concentration at sensitive points before and during the construction (working conditions) and to report the study results. The detailed methodology and equipment, as well as measurements points and their description are presented in SEMP.

Map 1. Points for the instrumental measurements for Task 1





The following points were selected for baseline and routine instrumental measurements for about 8.0 km of highway M1 Yerevan-Gyumri-Bavra, near Agarak community:

1. Sampling point № 1 – 439669.91 m E, 4460351.22 m N, located near the Voskevaz Wine Factory (distance - about 150m).
2. Sampling point № 2 – 436247.00 m E, 4460322.00 m N, located in the section from Ujan to Agarak, in the direction of dilapidated, asphalted road (distance from residential area – about 190m).
3. Sampling point № 3 – 437863.00 m E, 4460255.00 m N, located in the section from Ujan to Agarak, near the barns.
4. Sampling point № 4 – 441617.46 m E, 4461001.61 m N, located in the beginning, near the gas station (distance about – 230m).
5. Sampling point № 5 - 435700.35 m E, 4460485.93 m N, located in construction works camp area (batching plant).
6. Sampling point № 6 (Water) - 438631.00 m E, 4460179.00 m N, located 50m up from construction works area (Shahverd River).
7. Sampling point № 7 (Water) - 438630.00 m E, 4460025.00 m N, located 50m down from construction works area (Shahverd River).

Table 8. Dust measurement categories of Task 1

№	Name of substance	Maximum Permissible Concentration (mg/m³)		
		National Max	National Daily average	WHO/IFC 24 hour
1	PM2.5	0.16	0.035	0.025
2	PM10	0.3	0.06	0.05

Table 9. Noise level measurement categories of Task 1

№	Premises and territories	Threshold limit values (TLV), dBA		
		National		WHO
		Equivalent to sound level	Maximum sound level	One hour equivalent to soud level
1	Workplace	80		85
2	Areas near the hotels and dormitories	60	75	
3	Territories adjacent to residential buildings, clinics, ambulatories, rest houses, care homes, disabled persons homes, libraries, kinder gardens, schools and other educational facilities	55	70	45/55

Table 10. Vibration level measurement categories of Task 1

№	Whole-body vibration	TLV for corrected and equivalent corrected values	
		m/sec²	dB
1	Transport-technological (2nd category)	0.28	109
2	Technological (3rd category a)	0.1	100
3	Technological (3rd category b)	0.04	92
4	Technological (3rd category g)	0.014	83
5	Residential buildings, clinics, rest houses	0.004	72

As all the points are located close or not far from residential areas, results in the tables below are compared to the national and international standards for residential areas (for example 55/70 for noise). The details are presented below:

Table 11. Geographical location of measurements points of Task 1

Point	GPS coordinates	Sensitive receptors	Device location from the nearest sensitive receptor, m
N1	439669.91 m E 4460351.22 m N	Voskevaz Wine Factory	About 150m from Voskevaz Wine Factory
N2	436247.00 m E 4460322.00 m N	Residential area	About 190m from residential area
N3	437863.00 m E 4460255.00 m N	Road section	Near the barns
N4	441617.46 m E 4461001.61 m N	Gas station	About 230m from gas station
N5	435700.35 m E 4460485.93 m N	Batching plant	In construction works camp area
N6	438631.00 m E 4460179.00 m N	Shahverd River	50m up from construction works area
N7	438630.00 m E 4460025.00 m N	Shahverd River	50m down from construction works area

The results of baseline survey for dust, noise and vibration conducted on ***04 of April 2023*** are presented below:

Table 12. Dust (PM 2,5) measurement points and measurement results recognized as baseline on the about 8.0 km of highway M1 Yerevan-Gyumri-Bavra, near Agarak community.

Point №	PM2.5 dust actual concentration, mg/m³				Maximum permissible concentration, mg/m³		
	1st measurement	2nd measurement	3rd measurement	Average value	National		IFC standard
					Maximum value	Daily average	Daily average
1	0.06	0.14	0.08	0.09	0.16	0.035	

2	0.07	0.06	0.08	0.07			0.025
3	0.05	0.07	0.04	0.05			
4	0.08	0.09	0.06	0.08			
5	0.04	0.09	0.07	0.07			

Table 13. Dust (PM 10) measurement points and measurement results recognized as baseline on the about 8.0 km of highway M1 Yerevan-Gyumri-Bavra, near Agarak community

Point №	PM10 dust actual concentration, mg/m³				Maximum permissible concentration, mg/m³		
					National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Maximum value	Daily average	Daily average
1	0.07	0.18	0.08	0.11	0.3	0.06	0.05
2	0.07	0.06	0.09	0.07			
3	0.05	0.09	0.04	0.06			
4	0.08	0.13	0.07	0.09			
5	0.04	0.12	0.08	0.08			

Table 14. Noise level measurement points and measurement results recognized as baseline on the about 8.0 km of highway M1 Yerevan-Gyumri-Bavra, near Agarak community

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 1							
1	54.0	55.0	61.0	64.4	55	70	45/55
2	57.5		64.0				
3	53.5		68.2				

Measurement №	Sound levels, dBA	Threshold limit values, dBA	
		National	IFC standards

	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	night/ day
Point 2							
1	40.3	42.1	48.1	48.5	55	70	45/55
2	44.0		49.4				
3	42.1		47.9				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 3							
1	46.1	42.6	52.2	48.1	55	70	45/55
2	43.9		49.0				
3	37.7		43.3				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 4							
1	55.1	61.0	63.2	68.8	80		85
2	66.7		74.0				
3	61.3		69.4				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 5							

1	53.9	56.3	59.3	62.7	80		85
2	52.8		58.8				
3	62.3		70.2				

Table 15. Vibration level measurement points and measurement results recognized as baseline on the about 8.0 km of highway M1 Yerevan-Gyumri-Bavra, near Agarak community

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 1			
1	0.07	0.10	0.28
2	0.15		
3	0.08		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 2			
1	0.05	0.07	0.28
2	0.07		
3	0.10		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 3			
1	0.10	0.08	0.28
2	0.06		
3	0.09		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 4			
1	0.02	0.04	0.28
2	0.03		
3	0.06		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 5			
1	0.04	0.05	0.28
2	0.08		
3	0.03		

Summary of the measurements is following:

Dust:

1. Dust particles actual concentrations in the measuring point in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards).

Noise:

2. As a result of noise level measurements conducted during the different daytime periods in the measuring point the equivalent and maximum sound levels were within the TLVs set by sanitary norms.
3. It is worth do mention, that sound level in Points 5 & 4 is mainly impacted by Yerevan-Gyumri highway intensive traffic (mentioned points are located just near the highway), so the sound levels are always high.

Vibration:

1. The results of vibration measurements are within the permissible levels set by sanitary norms.

The quality of surface ***water*** in the RoA is monitored in accordance with the principles of EU water framework directive. This system is defined by the RA Government Decree No 75-N (dated 27.01.2011) and applied since January 2013. The classification scheme that envisaged 5 classes for each parameter of surface water quality has been elaborated. These 5 classes are: excellent (class I), good (class II), average (class III), poor (class IV) and bad (class V) and vary depend on the intended purpose of surface water.

Table 16. Surface water quality classes depend on the water use purposes of Task 1

Purpose	Notes	Classes				
		Class I, excellent	Class II, good	Class III average	Class IV, poor	Class V, bad
National water reserve		√	√	√	√	√
Preservation of water flows/ streams		√	√	-	-	-
Eco-systems, fish breeding/ preservation	Salmons	√	√	-	-	-
	Carps	√	√	√	-	-
Irrigation		√	√	√	√	-
Industrial water usage		√	√	√	√	√
Energy generation		√	√	√	√	√

The water sampling from the Shahverd River before the construction activities were performed by the Performer's measurement engineer on 07.07.2023. The chemical analysis of the sampled water was conducted by the laboratory of the Environmental Impact Monitoring Center. The obtained results were assessed and compared with water quality norms set by the RA Government Decree №75-N dated 27.01.2011. The water quality norms/parameters are defined for 14 surface water basins, including Kasagh river basin (Shahvar River). The quality parameters of Kasagh River basin are given in accordance with the RA Government Decree №75-N are summarized on Table 16.

Table 17. Kasagh River basin water quality parameters

Quality parameters	Category					Unit
	I	II	III	IV	V	
BOD	3	5	9	18	>18	mgO_2/l
COD	10	25	40	80	>80	$mgO/_L$
Mineralization	95,8	191,6	1000	1500* *for irrigation 1000	>1500	mg/l
Stiffness	1,07	10	20	40	<40	mg-eq/l
Specific Electrical Conduction (EC)	148,4	296,8	1000	1500* *for	>1500	$\mu S/cm^2$

				irrigation 1000		
Total Suspended Solids (TSS)	8,1	9,8	16,3	32,6	>32,6	mg/l
Phosphat ion	0,060	0,1	0,2	0,4	>0,4	mg/l
Sulphate ion	15,3	30,6	150	250	> 250	mg/l
Chloride ion	3,5	7,0	150	200	> 200	mg/l
Nitrate ion	0,272	2,5	5,6	11,3	>11,3	mg/l
Nitrite ion	0,011	0,06	0,12	0,3	>0,3	mg/l
Ammonium ion	0,033	0,4	1,2	2,4	> 2,4	mg/l
Magnesium	3,3	50	100	200	>200	mg/l
Calcium	18,5	100	200	300	>300	mg/l
pH	not defined					
Turbidity / transparency	not defined					

Water quality measurement results and evaluation (recognized as baseline) of Task 1

The water sampling from the Shahverd River before the construction activities were performed by the Performer's measurement engineer on ***07.07.2023*** on the Points N6 and N7. The results of chemical analysis of water sampled from the Shahverd River presented on Table 17.

Table 18. The results of chemical analysis of water sampled from the Shahverd River

N	Measured indicator	Unit of measurement	Measured value		Standard method used
			Point 6	Point 7	
1	Total Suspended Solids (TSS)	mg/l	1.5	5.2	ISO 11923
2	Stiffness	mg/l	1.08	2.37	Computational
3	BOD_5	mgO_2/l	1.56	1.07	ISO 5815-1
4	COD	mgO/l	15	25	ISO 6060
5	Specific Electrical Conduction (EC)	mg/l	145	378	ISO 7888
6	Mineralization	mg/l	94	246	
7	Sulphate ion	mg/l	6.103	12.662	ISO 10304-1
8	Chloride ion	mg/l	5.455	24.90	
9	Nitrate ion	mg/l	0.771	1.288	

10	Phosphat ion	mg/l	0.154	0.432	ISO 6878
11	Nitrite ion	mg/l	0.0660	0.797	ISO 6777
12	Ammonium ion	mg/l	0.089	0.151	ISO 7150-1
13	Magnesium	mg/l	5.285	12.15	ISO 17294-2
14	Calcium	mg/l	12.75	27.19	

Conclusion:

The chemical analysis of the sampled water was conducted by the laboratory of the Environmental Impact Monitoring Center and the results were assessed and compared with water quality norms set by the RA Government Decree №75-N dated 27.01.2011. The category of Shahverd water quality is waving between II and III. In case of II category, the several indicators exceed the standard values given in the RA Government Decree №75-N in particularly:

- Phosphat ion (Points N6 and N7)
- Nitrite ion (Points N6 and N7)
- Mineralization (Point N7)
- Specific Electrical Conduction (EC) (Point N7)
- Chloride ion (Point N7)

In case of III category, only phosphat ion indicator exceed the standard values given in the RA Government Decree №75-N in Point N7. It is worth to mention, that construction activities will not have any influence on mentioned indicator, since no activities are conducted near the water source.

The following points were selected for periodic instrumental measurements conducted on **July 29, 2024**, at points **N1**, **N4** and **N5**:
The following machineries were operating near the measurement point during the measurements (Table 18):

Table 19. Type of machinery worked on site during measurements on Task 1

Point №	1st measurement	2nd measurement	3rd measurement
1	one truck, three excavators	-	one truck, three excavators
4	one excavator, two trucks	-	one excavator, two trucks

5	two trucks	-	two trucks

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
1	11:30	13:00	14:35
4	12:05	13:35	15:00
5	12:35	14:08	15:30

Table 20. Results of dust (PM2.5) measurements made on July 29, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
1	0.11	0.08	0.10	0.10	0.09	0.16	0.035	0.025
4	0.08	0.08	0.10	0.09	0.08			
5	0.10	0.06	0.08	0.08	0.07			

Table 21. Results of dust (PM10) measurements made on July 29, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
1	0.20	0.14	0.14	0.16	0.11	0.3	0.06	0.05

4	0.14	0.10	0.11	0.12	0.09			
5	0.12	0.08	0.13	0.10	0.08			

Table 22. Results of noise measurements made on July 29, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 1							
1	58.7	55.0	65.1	64.4	55	70	45/55
2	58.3		64.7				
3	57.6		63.6				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	61.1	61.0	68.4	68.8	55	70	45/55
2	60.6		67.2				
3	63.2		69.8				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	57.8		66.0				

2	58.0	56.3	66.7	62.7	55	70	45/55
3	61.4		69.6				

Table 23. Results of vibration measurements made on July 29, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec²			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	Baseline value, m/sec²	
Point 1				
1	0.08	0.09	0.10	0.28
2	0.08			
3	0.11			

Measurement №	Vibration levels and average values, m/sec²			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	Baseline value, m/sec²	
Point 4				
1	0.10	0.09	0.04	0.28
2	0.08			
3	0.10			

Measurement №	Vibration levels and average values, m/sec²			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	Baseline value, m/sec²	
Point 5				
1	0.10	0.11	0.05	0.28
2	0.11			
3	0.12			

Conclusions:

- Dust particles actual concentrations in all points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards). In comparison with baseline values, a little increase of dust concentrations in all points is identified. In comparison with previous measurements, increase of dust concentrations is identified. It is worth to mention, that increase of dust concentrations is mainly connected with hot weather conditions (summer season). The Contractor should implement the watering more often during summer season.
- As a result of noise level measurements conducted during different daytime periods in all points, the maximum sound levels were within the TLVs set by sanitary norms. In comparison with previous measurements, increase of sound levels in Point N1 was identified. Still, in comparison with baseline values, significant changes are not identified. The increase of noise levels in Point 1 is connected with traffic in road, which connects Agarak and Voskevaz villages. It is worth to mention, that sound levels in Points N4 and N5 are mainly impacted by Yerevan-Gyumri highway intensive traffic (mentioned point is located just near the highway), so the sound levels are often high.
- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **August 21, 2024**, at points **N2, N4** and **N5**:
The following machineries were operating near the measurement point during the measurements (Table 23):

Table 24. Type of machinery worked on site during measurements on Task 1

Point №	1st measurement	2nd measurement	3rd measurement
2	one truck, two excavators	-	one truck, two excavators
4	three excavators	-	three excavators
5	two trucks, one excavator	-	two trucks, one excavator

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
2	11:35	13:05	14:35
4	12:10	13:40	15:05
5	12:40	14:10	15:40

Table 25. Results of dust (PM2.5) measurements made on August 21, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
2	0.10	0.08	0.11	0.10	0.07	0.16	0.035	0.025
4	0.11	0.09	0.12	0.11	0.08			
5	0.14	0.06	0.09	0.10	0.07			

Table 26. Results of dust (PM10) measurements made on August 21, 2024 compared with dust basel ine measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
2	0.14	0.08	0.11	0.11	0.07	0.3	0.06	0.05
4	0.14	0.10	0.12	0.12	0.09			
5	0.16	0.08	0.09	0.11	0.08			

Table 27. Results of noise measurements made on August 21, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

	Sound levels, dBA	Threshold limit values, dBA	
		National	IFC

Measurement №	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	standards night/ day
Point 2							
1	49.8	42.1	58.7	48.5	55	70	45/55
2	47.7		56.9				
3	50.2		59.1				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	65.9	61.0	70.3	68.8	55	70	45/55
2	64.7		69.4				
3	65.2		69.8				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	57.6	56.3	64.2	62.7	55	70	45/55
2	57.2		64.0				
3	59.6		65.8				

Table 28. Results of vibration measurements made on August 21, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec²			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	Baseline value, m/sec²	
Point 2				
1	0.10	0.09	0.07	0.28
2	0.08			
3	0.10			

Measurement №	Vibration levels and average values, m/sec²			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	Baseline value, m/sec²	
Point 4				
1	0.10	0.10	0.04	0.28
2	0.10			
3	0.11			

Measurement №	Vibration levels and average values, m/sec²			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	Baseline value, m/sec²	
Point 5				
1	0.13	0.12	0.05	0.28
2	0.11			
3	0.11			

Conclusions:

- Dust particles actual concentrations in all points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual

concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards). In comparison with baseline values, a little increase of dust concentrations in all points is identified. In comparison with previous measurements, significant changes are not identified. It is worth to mention, that increase of dust concentrations is mainly connected with hot weather conditions (summer season). The Contractor should implement the watering more often during summer season.

- As a result of noise level measurements conducted during different daytime periods in all points, the maximum sound levels mainly were within the TLVs set by sanitary norms. In comparison with previous measurements, significant changes were not identified. In comparison with baseline values, significant changes are identified only in Point N2 (maximum sound levels are much higher, a little exceedance from IFC standards is identified). Still, the maximum sound levels in Point N2 are much lesser, than national TLV's. It is worth to mention, that sound levels in Points N4 and N5 are mainly impacted by Yerevan-Gyumri highway intensive traffic (mentioned point is located just near the highway), so the sound levels are often high.
- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **September 27, 2024**, at points **N1, N4** and **N5**.

The following machineries were operating near the measurement point during the measurements (Table 28):

Table 29. Type of machinery worked on site during measurements on Task 1

Point №	1st measurement	2nd measurement	3rd measurement
1	two trucks, one grader, 1 crane	-	two trucks, one grader, 1 crane
4	one truck, 2 excavators	-	one truck, 2 excavators
5	two trucks, two excavators	-	two trucks, two excavators

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
1	11:40	13:20	14:55

4	12:20	13:45	15:20
5	12:55	14:20	15:50

Table 30. Results of dust (PM2.5) measurements made on September 27, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
1	0.09	0.09	0.10	0.09	0.09	0.16	0.035	0.025
4	0.12	0.08	0.10	0.10	0.08			
5	0.10	0.06	0.09	0.08	0.07			

Table 31. Results of dust (PM10) measurements made on September 27, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
1	0.14	0.10	0.10	0.11	0.11	0.3	0.06	0.05
4	0.12	0.12	0.09	0.11	0.09			
5	0.11	0.06	0.10	0.09	0.08			

Table 32. Results of noise measurements made on September 27, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	

Point 1							
1	52.2	55.0	59.8	64.4	55	70	45/55
2	53.6		61.7				
3	54.8		63.0				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	64.3	61.0	69.8	68.8	55	70	45/55
2	60.4		67.6				
3	63.7		69.1				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	56.7	56.3	63.4	62.7	55	70	45/55
2	56.4		62.2				
3	58.3		64.7				

Table 33. Results of vibration measurements made on September 27, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec^2		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec^2	Baseline value, m/sec^2	
Point 1			
1	0.11	0.10	0.28
2	0.12		
3	0.10		

Measurement №	Vibration levels and average values, m/sec^2	TLV for corrected and equivalent corrected values

	Vibration levels, m/sec²	Baseline value, m/sec²	
Point 4			
1	0.10	0.04	0.28
2	0.10		
3	0.09		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Baseline value, m/sec²	
Point 5			
1	0.12	0.05	0.28
2	0.12		
3	0.10		

Conclusions:

1. Dust particles actual concentrations in all points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards). In comparison with baseline values and with previous measurements, significant changes are not identified.
2. As a result of noise level measurements conducted during different daytime periods in all points, the maximum sound levels mainly were within the TLVs set by sanitary norms. In comparison with previous measurements and baseline values, significant changes were not identified. It is worth to mention, that sound levels in Points N4 and N5 are mainly impacted by Yerevan-Gyumri highway intensive traffic (mentioned point is located just near the highway), so the sound levels are often high.
3. The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **October 24, 2024**, at points **N3, N4** and **N5**:
The following machineries were operating near the measurement point during the measurements (Table 33):

Table 34. Type of machinery worked on site during measurements on Task 1

Point №	1st measurement	2nd measurement	3rd measurement
3	two excavators, one truck	-	two excavators, one truck

4	one truck, one excavator	-	one truck, one excavator
5	two excavators	-	two excavators

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
3	11:45	13:24	14:55
4	12:33	13:48	15:22
5	13:00	14:20	15:50

Table 35. Results of dust (PM2.5) measurements made on October 24, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
3	0.04	0.04	0.06	0.05	0.05	0.16	0.035	0.025
4	0.10	0.10	0.11	0.10	0.08			
5	0.08	0.06	0.09	0.08	0.07			

Table 36. Results of dust (PM10) measurements made on October 24, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
3	0.06	0.06	0.10	0.07	0.06	0.3	0.06	0.05

4	0.10	0.12	0.09	0.10	0.09			
5	0.10	0.08	0.10	0.09	0.08			

Table 37. Results of noise measurements made on October 24, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 3							
1	53.7	42.6	64.1	48.1	55	70	45/55
2	52.8		63.4				
3	54.5		66.0				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	64.4	61.0	71.3	68.8	55	70	45/55
2	62.1		68.9				
3	65.7		72.7				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	61.2	56.3	67.7	62.7	55	70	45/55
2	59.8		65.4				
3	58.3		64.2				

Table 38. Results of vibration measurements made on October 24, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 3				
1	0.08	0.08	0.08	0.28
2	0.07			
3	0.10			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 4				
1	0.10	0.10	0.04	0.28
2	0.08			
3	0.11			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 5				
1	0.10	0.10	0.05	0.28
2	0.10			
3	0.11			

Conclusions:

1. Dust particles actual concentrations in all points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards). In comparison with baseline values and with previous measurements, significant changes are not identified.
2. As a result of noise level measurements conducted during different daytime periods in all points, the maximum sound levels mainly were within the TLVs set by sanitary norms. In comparison with previous measurements and baseline values, significant changes were not identified in Points N4 and N5. Still, in Point N3 the sound levels are higher in comparison with baseline values, which is mainly conditioned with machinery, working nearby. It is also worth to mention, that sound levels in Points N4 and N5 are mainly impacted by

Yerevan-Gyumri highway intensive traffic (mentioned point is located just near the highway), so the sound levels are often high.

3. The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **November 26 2024**, at **points N4** and **N5**:
The following machineries were operating near the measurement point during the measurements (Table 38):

Table 39. Type of machinery worked on site during measurements on Task 1

Point №	1st measurement	2nd measurement	3rd measurement
4	three excavators	-	three excavators
5	two excavators, two trucks	-	two excavators, two trucks

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
4	11:45	12:58	14:22
5	12:25	13:40	14:55

Table 40. Results of dust (PM2.5) measurements made on November 26, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
4	0.11	0.09	0.12	0.11	0.08	0.16	0.035	0.025
5	0.10	0.10	0.09	0.10	0.07			

Table 41. Results of dust (PM10) measurements made on November 26, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

		Maximum permissible concentration, mg/m^3

Point №	PM10 dust actual concentration, mg/m³					National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
4	0.12	0.11	0.11	0.11	0.09	0.3	0.06	0.05
5	0.12	0.09	0.09	0.10	0.08			

Table 42. Results of noise measurements made on November 26, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	62.1	61.0	67.8	68.8	55	70	45/55
2	59.7		65.4				
3	64.3		69.8				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	59.8	56.3	65.6	62.7	55	70	45/55
2	57.4		63.1				
3	61.6		67.8				

Table 43. Results of vibration measurements made on November 26, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Baseline value, m/sec²	
Point 4			
1	0.10	0.04	0.28
2	0.10		
3	0.11		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Baseline value, m/sec²	
Point 5			
1	0.10	0.05	0.28
2	0.09		
3	0.10		

Conclusions:

1. Dust particles actual concentrations in all points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards). In comparison with baseline values and with previous measurements, significant changes are not identified.
2. As a result of noise level measurements conducted during different daytime periods in all points, the maximum sound levels mainly were within the TLVs set by sanitary norms. In comparison with previous measurements and baseline values, significant changes were not identified. It is also worth to mention, that sound levels in Points N4 and N5 are mainly impacted by Yerevan-Gyumri highway intensive traffic (mentioned point is located just near the highway), so the sound levels are often high.
3. The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **December 25 2024**, at **points N4** and **N5**:
The following machineries were operating near the measurement point during the measurements (Table 43):

Table 44. Type of machinery worked on site during measurements on Task 1

Point №	1st measurement	2nd measurement	3rd measurement

4	one excavator	-	one excavator
5	two trucks	-	two trucks

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
4	11:50	13:05	14:20
5	12:30	13:40	14:55

Table 45. Results of dust (PM2.5) measurements made on December 25, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
4	0.14	0.13	0.16	0.14	0.08	0.16	0.035	0.025
5	0.14	0.12	0.14	0.13	0.07			

Table 46. Results of dust (PM10) measurements made on December 25, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
4	0.20	0.18	0.23	0.20	0.09	0.3	0.06	0.05
5	0.22	0.21	0.25	0.23	0.08			

Table 47. Results of noise measurements made on December 25, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	61.3	61.0	67.7	68.8	55	70	45/55
2	58.4		64.6				
3	62.2		69.1				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (04.04.2023)	Maximum sound level, LAmax	Baseline Value (04.04.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	50.8	56.3	57.6	62.7	55	70	45/55
2	48.1		55.3				
3	53.2		59.8				

Table 48. Results of vibration measurements made on December 25, 2024 compared with dust baseline measurements made on 04.04.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec^2		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec^2	Baseline value, m/sec^2	
Point 4			
1	0.07	0.04	0.28
2	0.08		
3	0.10		

Measurement №	Vibration levels and average values, m/sec^2	TLV for corrected and equivalent corrected values

	Vibration levels, m/sec^2	Baseline value, m/sec^2	
Point 5			
1	0.11	0.05	0.28
2	0.10		
3	0.10		

Conclusions:

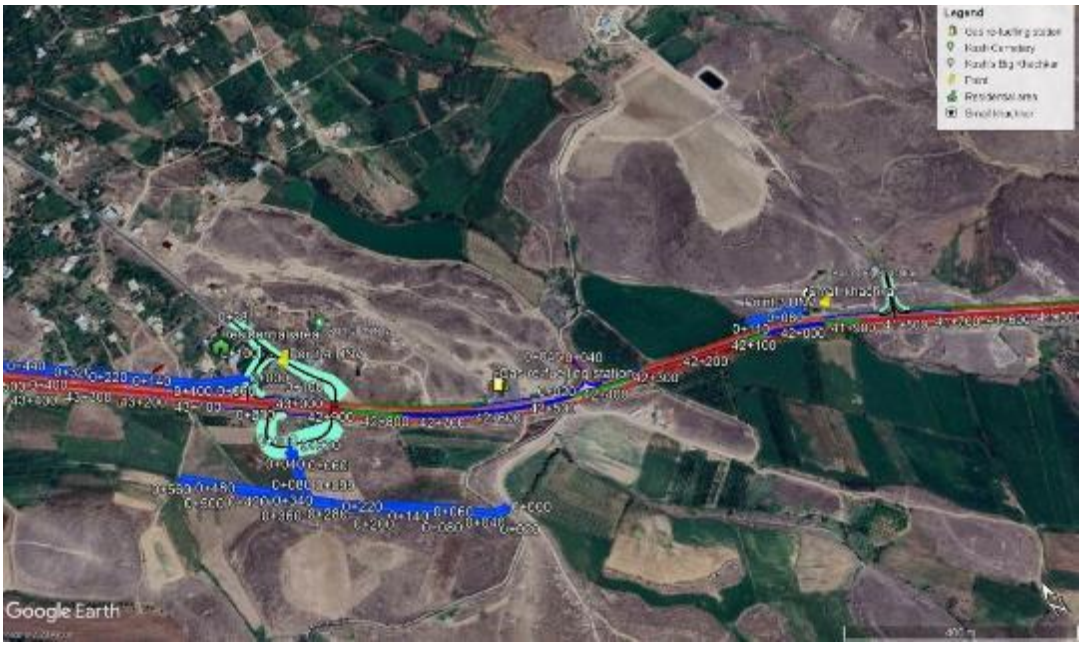
1. Dust particles actual concentrations in all points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles exceed the daily average MPC's (both the national and IFC standards). Still, in comparison with baseline values and with previous measurements, several changes are identified. As it is shown in the tables, the dust particles actual concentrations in all points in different daytime periods are significantly increased, which is not caused by construction activities, but is impacted by weather conditions and increase of overall dust concentrations in several regions of RA (especially in Yerevan). Taking into account the above-mentioned, the Contractor was instructed to organize the construction activities (heavy vehicle activities, transportations, etc.) in a strict manner in order to reduce the possible dust emissions as much as possible.
2. As a result of noise level measurements conducted during different daytime periods in all points, the maximum sound levels mainly were within the TLVs set by sanitary norms. In comparison with previous measurements and baseline values, significant changes were not identified. It is also worth to mention, that sound levels in Point N4 are mainly impacted by Yerevan-Gyumri highway intensive traffic (mentioned point is located just near the highway), so the sound levels are often high.
3. The results of vibration measurements are within the permissible levels set by sanitary norms.

Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For completion of construction of about 34.0 km of highway M1 Yerevan-Gyumri-Bavra (from KM 37+545 to KM 71+435) the instrumental measurements for baseline data collection on dust, noise & vibration is executed at the 10 locations. The measurement points were indicated based on the available documentation and sensitive receptor's locations. The baseline measurements, data collection and analysis were implemented by Consecoard LLC. The detailed methodology and equipment, as well as measurements points and their description are presented in SEMP.
The following points were selected for baseline and routine instrumental measurements:

1. Sampling point № 1 – 40°17'9.45"N, 44°13'3.27"E, located in close vicinity (10-15m) to residential buildings and about 120m from re-fuelling station.
2. Sampling point № 2 – 40°16'58.97"N, 44°11'45.43"E, located in the Ujan settlement territory, near to residential area and gardens (distance from nearest building – about 40m).
3. Sampling point № 3 – 40°17'2.56"N, 44°10'30.15"E, located near the Kosh's Big Khachkar and other small khachkar (distance - about 120m from Kosh's Big Khachkar and about 30m from small khachkar).
4. Sampling point № 4 – 40°17'16.18"N, 44° 9'50.54"E, located in the Kosh settlement territory, near to the Kosh cemetery and residential area (distance - about 50m from cemetery and about 80m from nearest residential building).
5. Sampling point № 5 - 40°17'39.09"N, 44° 8'43.26"E, located in the Kosh settlement territory, near to residential area (distance - about 55m nearest building).
6. Sampling point № 6 - 40°17'43.61"N, 44° 7'21.39"E, located near the residential area and gardens (distance – about 70m from nearest building).
7. Sampling point № 7 - 40°17'49.97"N, 44° 5'57.53"E, located in the settlement territory, near to the cemetery and residential area (distance - about 90m from cemetery and about 220m from nearest residential building).
8. Sampling point № 8 - 40°18'20.92"N, 44° 4'32.80"E, located in construction works camp area.
9. Sampling point № 9 - 40°21'8.16"N, 43°57'21.12"E, located in the Davtashen settlement territory (distance – about 180m from nearest building and about 80m from small khachkar).
10. Sampling point № 10 - 40°23'38.26"N, 43°53'42.35"E, located in the Talin settlement territory (distance – about 60m from nearest residential building and about 220m from gas re-fuelling station).

Map 2. Points for the instrumental measurements on Task 2 (Part I)



Map 3. Points for the instrumental measurements on Task 2 (Part II)



Map 4. Points for the instrumental measurements on Task 2 (Part III)



Map 5. Points for the instrumental measurements on Task 2 (Part IV)



Map 6. Points for the instrumental measurements on Task 2 (Part V)



Measurements categories are presented on Tables 48, 49, 50.

Table 49. Dust measurement categories of Task 2

№	Name of substance	Maximum Permissible Concentration (mg/m³)		
		National Max	National Daily average	WHO/IFC 24 hour
1	PM2.5	0.16	0.035	0.025
2	PM10	0.3	0.06	0.05

Table 50. Noise level measurement categories of Task 2

		Threshold limit values (TLV), dBA		
		National		WHO
		Equivalent to sound level	Maximum sound level	One hour equivalent to soud level
1	Workplace	80		85
2	Areas near the hotels and dormitories	60	75	
3	Territories adjacent to residential buildings, clinics, ambulatories, rest houses, care homes, disabled persons homes, libraries, kinder gardens, schools and other educational facilities	55	70	45/55

Table 51. Vibration level measurement categories of Task 2

№	Whole-body vibration	TLV for corrected and equivalent corrected values	
		m/sec²	dB
1	Transport-technological (2nd category)	0.28	109
2	Technological (3rd category a)	0.1	100
3	Technological (3rd category b)	0.04	92
4	Technological (3rd category g)	0.014	83
5	Residential buildings, clinics, rest houses	0.004	72

As all the points are located close or not far from residential areas, results in the tables below are compared to the national and international standards for residential areas (for example 55/70 for noise). The details are presented below:

Table 52. Geographical location of measurements points of Task 2

Point	GPS coordinates	Sensitive receptors	Device location from the nearestsensitive receptor, m
N1	40°17'9.45"N 44°13'3.27"E	Residential area and re-fuelling station (Ujan settlement)	In close vicinity (10-15m) to residential buildings and about 120m from re-fuelling station
N2	40°16'58.97"N 44°11'45.43"E	Residential area and gardens (Ujansettlement)	About 40m from nearest building
N3	40°17'2.56"N 44°10'30.15"E	Kosh's Big Khachkar and other small khachkar	About 120m from Kosh's Big Khachkar and about 30m from small khachkar
N4	40°17'16.18"N 44° 9'50.54"E	Kosh Cemetery and residential area (Kosh settlement)	About 50m from cemetery and about 80m from nearest residential building
N5	40°17'39.09"N 44° 8'43.26"E	Residential area (Kosh settlement)	About 55m from nearest building
N6	40°17'43.61"N 44° 7'21.39"E	Residential area and gardens	About 70m from nearest building
N7	40°17'49.97"N 44° 5'57.53"E	Cemetery and residential area	About 90m from cemetery and 220m from nearest building
N8	40°18'20.92"N 44° 4'32.80"E	In construction works camp area	In construction works camp area
N9	40°21'8.16"N 43°57'21.12"E	Residential area (Davtashen settlement) and small khachkar	About 170m from nearest building and about 80m from small khachkar
N10	40°23'38.26"N 43°53'42.35"E	Residential area (Talin settlement)and gas re-fuelling station	About 220m from gas re-fuelling station and 60m from nearest building

The results of baseline survey for dust, noise and vibration conducted on **25 of November 2023** are presented below:

Table 53. Dust (PM 2,5) measurement points and measurement results recognized as baseline on the completion of construction of about 34.0 km of highway M1 Yerevan-Gyumri-Bavra (from KM 37+545 to KM 71+435)

Point №	PM2.5 dust actual concentration, mg/m^3				Maximum permissible concentration, mg/m^3		
					National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Maximum value	Daily average	Daily average
1	0.016	0.016	0.018	0.017	0.16	0.035	0.025
2	0.020	0.018	0.018	0.019			
3	0.035	0.032	0.034	0.034			
4	0.034	0.032	0.032	0.033			
5	0.030	0.028	0.032	0.030			
6	0.034	0.030	0.030	0.031			
7	0.018	0.016	0.018	0.017			
8	0.014	0.012	0.012	0.016			
9	0.010	0.008	0.012	0.010			
10	0.012	0.010	0.010	0.011			

Table 54. Dust (PM 10) measurement points and measurement results recognized as baseline on the completion of construction of about 34.0 km of highway M1 Yerevan-Gyumri-Bavra (from KM 37+545 to KM 71+435)

Point №	PM10 dust actual concentration, mg/m^3				Maximum permissible concentration, mg/m^3		
					National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Maximum value	Daily average	Daily average
1	0.032	0.026	0.028	0.029			
2	0.034	0.032	0.032	0.033			

3	0.064	0.058	0.060	0.061	0.3	0.06	0.05
4	0.060	0.058	0.058	0.059			
5	0.050	0.048	0.052	0.050			
6	0.056	0.052	0.052	0.053			
7	0.032	0.030	0.026	0.030			
8	0.020	0.014	0.016	0.017			
9	0.014	0.010	0.014	0.013			
10	0.018	0.010	0.016	0.015			

Table 55. Noise level measurement points and measurement results recognized as baseline on the completion of construction of about 34.0 km of highway M1 Yerevan-Gyumri-Bavra (from KM 37+545 to KM 71+435)

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 1							
1	54.3	56.0	60.9	62.1	55	70	45/55
2	58.4		63.9				
3	55.2		61.5				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 2							
1	61.4	64.4	67.6	73.9	55	70	45/55
2	63.2		73.0				
3	68.7		81.1				

	Sound levels, dBA	Threshold limit values, dBA	
		National	

Measurement №	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	IFC standards night/ day
Point 3							
1	62.4	62.1	71.2	70.9	55	70	45/55
2	59.7		68.4				
3	64.3		73.0				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 4							
1	61.2	60.1	68.7	67.3	55	70	45/55
2	59.8		67.0				
3	59.4		66.1				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 5							
1	62.4	62.4	69.8	69.8	55	70	45/55
2	60.7		68.2				
3	64.1		71.3				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 6							
1	57.8	57.6	66.3	66.1	55	70	45/55
2	54.2		62.8				
3	60.8		69.2				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 7							
1	44.7	43.8	56.2	55.8	55	70	45/55
2	41.2		54.1				
3	45.6		57.0				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 8							
1	55.8	53.9	66.4	64.4	55	70	45/55
2	51.2		62.7				
3	54.7		64.1				

	Sound levels, dBA	Threshold limit values, dBA	
		National	

Measurement №	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	IFC standards night/ day
Point 9							
1	59.8	60.1	67.4	67.8	55	70	45/55
2	58.3		66.2				
3	62.1		69.8				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Average Value	Maximum sound level, LAmax	Average Value	Equivalent to sound level	Maximum sound level	
Point 10							
1	59.8	59.3	68.5	68.7	55	70	45/55
2	57.3		66.7				
3	60.8		70.9				

Table 56. Vibration level measurement points and measurement results recognized as baseline on the completion of construction of about 34.0 km of highway M1 Yerevan-Gyumri-Bavra (from KM 37+545 to KM 71+435)

Measurement №	Vibration levels and average values, m/sec^2		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec^2	Average value, m/sec^2	
Point 1			
1	0.07	0.08	0.28
2	0.10		
3	0.06		

Measurement №	Vibration levels and average values, m/sec^2	TLV for corrected and equivalent corrected values

	Vibration levels, m/sec²	Average value, m/sec²	
Point 2			
1	0.10	0.09	0.28
2	0.07		
3	0.11		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 3			
1	0.08	0.09	0.28
2	0.08		
3	0.10		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 4			
1	0.12	0.12	0.28
2	0.10		
3	0.13		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent correctedvalues
	Vibration levels, m/sec²	Average value, m/sec²	
Point 5			
1	0.10	0.10	0.28
2	0.07		
3	0.12		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 6			
1	0.12	0.11	0.28
2	0.10		
3	0.10		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 7			
1	0.10	0.09	0.28
2	0.08		
3	0.10		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 8			
1	0.12	0.11	0.28
2	0.10		
3	0.12		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 9			
1	0.14	0.12	0.28
2	0.10		

3	0.13		

Measurement №	Vibration levels and average values, m/sec²		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec²	Average value, m/sec²	
Point 10			
1	0.10	0.09	0.28
2	0.08		
3	0.10		

Summary of the measurements is following:

Dust:

1. Dust particles actual concentrations in the measuring points in different daytime periods did not exceed maximum permissible concentrations. As it is shown in the tables the baseline actual concentrations of dust particles (PM 2,5 and PM10) are close to or exceed the daily average MPC's (both the national and IFC standards) in Points from N3 to N6. It is worth to mention, that all MP's are located close to operating M1 highway (except Point N7) and are highly impacted by road traffic. In other Points (N1, N2 and from N7 to N10) the dust particles actual concentrations did not exceed daily average MPC's.

Noise:

2. As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels are close to or exceed both, the national and IFC TLVs (except Points N7 and N8). In Point N7 the noise equivalent levels, but do not exceed both the IFC and national TLV's, because the mentioned point is located further away from M1 highway, than other points. Point 8 results shows, that the noise equivalent levels do not exceed the national TLV's. As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise maximum levels are close to TLVs in Points N4, N6 and from N8 to N10. In point N7 the noise maximum levels are lowest. In other points (N2, N3, N5) the noise maximum levels are very close to or mainly exceed the TLV's.
3. It is worth to mention, that sound levels in all MP's are mainly impacted by Yerevan- Gyumri-Bavra M1 highway intensive traffic, so the sound levels are always high.

Vibration:

The results of vibration measurements are within the permissible levels set by sanitary norms.

The quality of surface ***water*** in the RoA is monitored in accordance with the principles of EU water framework directive. This system is defined by the RA Government Decree No 75-N (dated 27.01.2011) and applied since January 2013. The classification scheme that envisaged 5 classes for each parameter of surface water quality has been elaborated. These 5 classes are: excellent (class I), good (class II), average (class III), poor (class IV) and bad (class V) and vary depend on the intended purpose of surface water.

Table 57. Surface water quality classes depend on the water use purposes

Purpose	Notes	Classes				
		Class I, excellent	Class II, good	Class III average	Class IV, poor	Class V,bad
National water reserve		√	√	√	√	√
Preservation of water flows/streams		√	√	-	-	-
Eco-systems, fish breeding/preservation	Salmons	√	√	-	-	-
	Carps	√	√	√	-	-
Irrigation		√	√	√	√	-
Industrial water usage		√	√	√	√	√
Energy generation		√	√	√	√	√

Based on the available documentation and implemented site surveys, there are no affected water resources in the immediate vicinity of the Project implementation territory. Taking into account before-mentioned, the water quality monitoring will not be implemented. The only water resource near the Project implementation territory is reservoir near Talin settlement, which is located about 140m far from Project territory. The samplers will be taken from mentioned reservoir, if needed (based on recommendations from Engineer).

The following points were selected for periodic instrumental measurements conducted on **July 29, 2024**, at points **N4**, **N5** and **N8**:
The following machineries were operating near the measurement point during the measurements (Table 57):

Table 58. Type of machinery worked on site during measurements on Task 2

Point №	1st measurement	2nd measurement	3rd measurement
4	one crane, one excavator	-	one crane, one excavator
5	two trucks, one excavator	-	two trucks, one excavator
8	-	-	-

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
4	11:30	13:05	14:20
5	11:55	13:30	14:45
8	12:35	13:55	15:10

Table 59. Results of dust (PM2.5) measurements made on July 29, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
4	0.010	0.008	0.012	0.010	0.033	0.16	0.035	0.025
5	0.007	0.006	0.008	0.007	0.030			
8	0.010	0.008	0.010	0.009	0.016			

Table 60. Results of dust (PM10) measurements made on July 29, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (04.04.2023)	Maximum value	Daily average	Daily average
4	0.014	0.014	0.018	0.017	0.059	0.3	0.06	0.05
5	0.013	0.012	0.016	0.014	0.050			
8	0.013	0.008	0.010	0.010	0.017			

Table 61. Results of noise measurements made on July 29, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	57.5	60.1	65.1	67.3	55	70	45/55
2	57.8		65.5				
3	59.4		67.7				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	54.9	62.4	66.3	69.8	55	70	45/55
2	52.6		64.7				
3	57.8		68.1				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 8							
1	42.4	53.9	56.7	64.4	55	70	45/55
2	40.3		52.4				
3	41.8		55.8				

Table 62. Results of vibration measurements made on July 29, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec2		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Baseline value, m/sec2	
Point 4			
1	0.10	0.12	0.28
2	0.07		
3	0.08		

Measurement №	Vibration levels and average values, m/sec2		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Baseline value, m/sec2	
Point 5			
1	0.10	0.11	0.28
2	0.10		
3	0.11		

Measurement №	Vibration levels and average values, m/sec2		TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Baseline value, m/sec2	
Point 8			
1	0.11	0.11	0.28
2	0.10		
3	0.08		

Conclusions:

- Dust particles actual concentrations in the measuring points in different daytime periods did not exceed both maximum permissible and daily average concentrations. In comparison with baseline results, dust actual concentrations are even lesser. In comparison with previous results, no significant changes are identified.
- As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels do not exceed the TLV's in point N8 (in points N4 and N5 the noise equivalent levels exceed the TLV's, because the mentioned points are located just near the M1 highway). The maximum sound levels in

all points are within the permissible levels set by sanitary norms. In comparison with baseline values significant changes are not identified.

- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **August 21, 2024**, at points **N1, N4, N6** and **N8**.
The following machineries were operating near the measurement point during the measurements (Table 62):

Table 63. Type of machinery worked on site during measurements on Task 2

Point №	1st measurement	2nd measurement	3rd measurement
1	two trucks, two excavators	-	two trucks, two excavators
4	two excavators, 1 crane	-	two excavators, 1 crane
6	three excavators	-	three excavators
8	-	-	-

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
1	10:30	12:40	14:20
4	11:05	13:05	14:45
6	11:35	13:30	15:08
8	12:15	13:55	15:35

Table 64. Results of dust (PM2.5) measurements made on August 21, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
1	0.014	0.013	0.012	0.013	0.017	0.16	0.035	0.025
4	0.010	0.008	0.010	0.009	0.033			

6	0.013	0.010	0.013	0.012	0.031			
8	0.010	0.008	0.010	0.009	0.016			

Table 65. Results of dust (PM10) measurements made on August 21, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
1	0.022	0.019	0.020	0.020	0.029	0.3	0.06	0.05
4	0.017	0.016	0.017	0017	0.059			
6	0.017	0.017	0.018	0.017	0.053			
8	0.016	0.016	0.016	0.016	0.017			

Table 66. Results of noise measurements made on August 21, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 1							
1	55.4	56.0	60.2	62.1	55	70	45/55
2	54.3		59.0				
3	56.1		59.7				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 4							

1	57.6	60.1	63.8	67.3	55	70	45/55
2	57.2		63.0				
3	59.8		65.6				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 6							
1	54.8	57.6	66.3	63.0	55	70	45/55
2	52.1		61.4				
3	55.8		64.5				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 8							
1	45.6	53.9	54.2	64.4	55	70	45/55
2	44.7		53.8				
3	47.1		56.5				

Table 67. Results of vibration measurements made on August 21, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 1				
1	0.10	0.10	0.08	0.28
2	0.10			
3	0.11			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 4				
1	0.10	0.08	0.12	0.28
2	0.07			

3	0.08			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 6				
1	0.10	0.11	0.11	0.28
2	0.10			
3	0.12			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 8				
1	0.11	0.11	0.11	0.28
2	0.10			
3	0.13			

Conclusions:

- Dust particles actual concentrations in the measuring points in different daytime periods did not exceed both maximum permissible and daily average concentrations. In comparison with baseline results, dust actual concentrations are even lesser. In comparison with previous results, no significant changes are identified. The non-significant increase of dust actual concentrations was identified, which is mainly connected with hot weather conditions (summer season). Contractor should be instructed to implement watering more often during hot weather conditions.
- As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels do not exceed the TLV's in point N8 (in point N4 the noise equivalent levels exceed the TLV's, because the mentioned points are located just near the M1 highway). The maximum sound levels in all points are within the permissible levels set by sanitary norms. In comparison with baseline values significant changes are not identified (especially in points 1 & 6).
- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **September 27, 2024**, at points **N3, N4** and **N8**.
The following machineries were operating near the measurement point during the measurements (Table 67):

68. Type of machinery worked on site during measurements on Task 2

Point №	1st measurement	2nd measurement	3rd measurement
3	two excavators, one truck	-	two excavators, one truck
4	two trucks, two excavators, one grader, one crane	-	two trucks, two excavators, one grader, one crane
8	one grader, one crane	-	two trucks, two excavators,

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
3	11:30	13:00	14:20
4	12:05	13:30	14:50
8	12:35	13:55	15:15

Table 69. Results of dust (PM2.5) measurements made on September 27, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m³					Maximum permissible concentration, mg/m³		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
3	0.008	0.006	0.007	0.007	0.034	0.16	0.035	0.025
4	0.006	0.004	0.008	0.006	0.033			
8	0.006	0.006	0.008	0.007	0.016			

Table 70. Results of dust (PM10) measurements made on September 27, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

	PM10 dust actual concentration, mg/m³	Maximum permissible concentration, mg/m³	
		National	IFC standard

Point №	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
3	0.017	0.018	0.020	0.018	0.061	0.3	0.06	0.05
4	0.014	0.010	0.012	0012	0.059			
8	0.012	0.008	0.011	0.010	0.017			

Table 71. Results of noise measurements made on September 27, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standard s night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 3							
1	56.4	62.1	63.7	70.9	55	70	45/55
2	52.1		61.2				
3	58.7		66.4				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standard s night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	60.7	60.1	68.4	67.3	55	70	45/55
2	58.6		66.0				
3	62.3		70.1				

	Sound levels, dBA	Threshold limit values, dBA	
		National	IFC

Measurement №	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	standard s night/ day
Point 8							
1	54.7	53.9	61.8	64.4	55	70	45/55
2	52.2		59.6				
3	54.8		62.1				

Table 72. Results of vibration measurements made on September 27, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 3				
1	0.12	0.12	0.09	0.28
2	0.10			
3	0.14			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 4				
1	0.10	0.10	0.12	0.28
2	0.09			
3	0.12			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 8				

1	0.13	0.11	0.11	0.28
2	0.10			
3	0.10			

Conclusions:

- Dust particles actual concentrations in the measuring points in different daytime periods did not exceed both maximum permissible and daily average concentrations. In comparison with baseline results, dust actual concentrations are even lesser. In comparison with previous results, no significant changes are identified.
- As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels do not exceed the TLV's in point N8 (in points N3 & N4 the noise equivalent levels exceed the TLV's, because the mentioned points are located just near the M1 highway). The maximum sound levels in all points are within the permissible levels set by sanitary norms. In comparison with baseline values significant changes are not identified. In comparison with previous measurements, in Point N8 the sound levels are little higher, which is due to working machinery near the mentioned Point. Still, the maximum sound levels are within the permissible levels set by sanitary norms and no special actions are needed.
- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **October 24, 2024**, at points **N4, N5** and **N8**.
The following machineries were operating near the measurement point during the measurements (Table 72):

Table 73. Type of machinery worked on site during measurements on Task 2

Point №	1st measurement	2nd measurement	3rd measurement
4	one crane, two excavators, two graders	-	one crane, two excavators, two graders
5	one truck, two excavators, three graders	-	one truck, two excavators, three graders
8	-	-	-

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
4	11:30	13:00	14:20
5	12:05	13:30	14:50
8	12:35	13:55	15:15

Table 74. Results of dust (PM2.5) measurements made on October 24, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
4	0.009	0.007	0.009	0.008	0.033	0.16	0.035	0.025
5	0.010	0.010	0.010	0.010	0.030			
8	0.009	0.007	0.007	0.008	0.016			

Table 75. Results of dust (PM10) measurements made on October 24, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
4	0.018	0.014	0.014	0.015	0.059	0.3	0.06	0.05
5	0.021	0.018	0.024	0.021	0.050			
8	0.015	0.015	0.014	0.015	0.017			

Table 76. Results of noise measurements made on October 24, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

	Sound levels, dBA	Threshold limit values, dBA

Measurement №					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	61.8	60.1	67.0	67.3	55	70	45/55
2	59.7		65.6				
3	63.4		69.2				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 5							
1	59.3	62.4	68.6	69.8	55	70	45/55
2	61.7		69.9				
3	64.4		70.8				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 8							
1	43.1	53.9	50.8	64.4	55	70	45/55
2	44.9		52.7				
3	42.6		50.4				

Table 77. Results of vibration measurements made on October 24, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

	Vibration levels and average values, m/sec2	

Measurement №	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	TLV for corrected and equivalent corrected values
Point 4				
1	0.13	0.12	0.12	0.28
2	0.10			
3	0.14			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 5				
1	0.12	0.11	0.10	0.28
2	0.10			
3	0.11			

Conclusions:

- Dust particles actual concentrations in the measuring points in different daytime periods did not exceed both maximum permissible and daily average concentrations. In comparison with baseline results, dust actual concentrations are even lesser. In comparison with previous results, no significant changes are identified.
- As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels do not exceed the TLV's in point N8 (in points N4 & N5 the noise equivalent levels exceed the TLV's, because the mentioned points are located just near the M1 highway). The maximum sound levels in all points are mainly within the permissible levels set by sanitary norms. In comparison with baseline values significant changes are not identified. In comparison with previous measurements, in Point N8 the sound levels are lesser as no machinery was working nearby.
- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **November 26, 2024**, at points **N3**, **N4**, and **N8**.
The following machineries were operating near the measurement point during the measurements (Table 77):

Table 78. Type of machinery worked on site during measurements on Task 2

Point №	1st measurement	2nd measurement	3rd measurement
3	two excavators, two trucks	-	two excavators, two trucks
4	two excavators, two graders, one crane	-	two excavators, two graders, one crane
8	-	-	-

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
3	11:30	12:55	14:20
4	11:55	13:26	14:46
8	12:28	13:55	15:20

Table 79. Results of dust (PM2.5) measurements made on November 26, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m^3					Maximum permissible concentration, mg/m^3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
3	0.022	0.016	0.020	0.019	0.034	0.16	0.035	0.025
4	0.024	0.020	0.020	0.021	0.033			
8	0.016	0.012	0.013	0.014	0.016			

Table 80. Results of dust (PM10) measurements made on November 26, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

	PM10 dust actual concentration, mg/m^3	Maximum permissible concentration, mg/m^3	
		National	IFC standard

Point №	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
3	0.050	0.040	0.046	0.045	0.061	0.3	0.06	0.05
4	0.052	0.046	0.048	0.049	0.059			
8	0.030	0.025	0.026	0.027	0.017			

Table 81. Results of noise measurements made on November 26, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 3							
1	63.2	62.1	68.4	70.9	55	70	45/55
2	62.2		67.1				
3	64.4		71.2				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 4							
1	57.9	60.1	64.1	67.3	55	70	45/55
2	56.2		62.7				
3	61.4		68.6				

	Sound levels, dBA	Threshold limit values, dBA	
		National	IFC

Measurement №	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	standards night/ day
Point 8							
1	50.2	53.9	57.8	64.4	55	70	45/55
2	48.6		55.4				
3	51.6		59.4				

Table 82. Results of vibration measurements made on June 25, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 3				
1	0.09	0.09	0.09	0.28
2	0.08			
3	0.10			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 4				
1	0.12	0.12	0.12	0.28
2	0.10			
3	0.11			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 8				
1	0.10			

2	0.08	0.09	0.11	0.28
3	0.09			

Conclusions:

- Dust particles actual concentrations in the measuring points in different daytime periods did not exceed both maximum permissible and daily average concentrations. Still, in comparison with previous results, changes are identified, the actual concentrations of dust particles are increased. In comparison with baseline results, dust actual concentrations are still lesser (only in Point N8 PM10 particles concentrations are a little bit higher, than baseline result). Contractor will do watering of construction site areas more intensively in order to prevent the further increase of dust concentrations.
- As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels do not exceed the TLV's in point N8 (in points N3 & N4 the noise equivalent levels exceed the TLV's, because the mentioned points are located just near the M1 highway). The maximum sound levels in all points are mainly within the permissible levels set by sanitary norms. In comparison with baseline values significant changes are not identified. In comparison with previous measurements, in Point N8 the sound levels are a little higher, which is not significant.
- The results of vibration measurements are within the permissible levels set by sanitary norms.

The following points were selected for periodic instrumental measurements conducted on **December 25, 2024**, at points **N4**, and **N8**.
The following machineries were operating near the measurement point during the measurements (Table 82):

Table 83. Type of machinery worked on site during measurements on Task 2

Point №	1st measurement	2nd measurement	3rd measurement
4	one truck, one excavator	-	one truck, one excavator
8	-	-	-

Measurement Results and Evaluation

The time table of measurements presented below:

Point №	1st measurement	2nd measurement	3rd measurement
4	11:30	12:55	14:20
8	11:55	13:26	14:46

Table 84. Results of dust (PM2.5) measurements made on December 25, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM2.5 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
4	0.074	0.068	0.080	0.074	0.033	0.16	0.035	0.025
8	0.066	0.060	0.070	0.065	0.016			

Table 85. Results of dust (PM10) measurements made on December 25, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Point №	PM10 dust actual concentration, mg/m3					Maximum permissible concentration, mg/m3		
						National		IFC standard
	1st measurement	2nd measurement	3rd measurement	Average value	Baseline Value (25.11.2023)	Maximum value	Daily average	Daily average
4	0.122	0.114	0.118	0.118	0.059	0.3	0.06	0.05
8	0.098	0.090	0.105	0.098	0.017			

Table 86. Results of noise measurements made on December 25, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/ day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	

Point 4							
1	58.4	60.1	65.1	67.3	55	70	45/55
2	57.1		64.3				
3	61.3		67.8				

Measurement №	Sound levels, dBA				Threshold limit values, dBA		
					National		IFC standards night/day
	Equivalent to sound level, LAeq	Baseline Value (25.11.2023)	Maximum sound level, LAmax	Baseline Value (25.11.2023)	Equivalent to sound level	Maximum sound level	
Point 8							
1	44.3	53.9	51.6	64.4	55	70	45/55
2	44.0		50.9				
3	46.8		53.1				

Table 87. Results of vibration measurements made on December 25, 2024 compared with dust baseline measurements made on 25.11.2023 and Maximum permissible concentration

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 4				
1	0.10	0.10	0.12	0.28
2	0.10			
3	0.09			

Measurement №	Vibration levels and average values, m/sec2			TLV for corrected and equivalent corrected values
	Vibration levels, m/sec2	Average value, m/sec2	Baseline value, m/sec2	
Point 8				
1	0.12	0.09	0.11	0.28
2	0.10			

3	0.10			

Conclusions:

- As it is shown in the tables, dust particles actual concentrations in the measuring points in different daytime periods exceed the daily average MPC's (both the national and IFC standards). Still, in comparison with baseline values and with previous measurements, several changes are identified. As it is shown in the tables, the dust particles actual concentrations in all points in different daytime periods are significantly increased, which is not caused by construction activities, but is impacted by weather conditions and increase of overall dust concentrations in several regions of RA (especially in Yerevan). Taking into account the above-mentioned, the Contractor was instructed to organize the construction activities (heavy vehicle activities, transportations, etc.) in a strict manner in order to reduce the possible dust emissions as much as possible.
- As a result of noise level measurements conducted during the different daytime periods in the measuring points, the noise equivalent levels do not exceed the TLV's in point N8 (in point N4 the noise equivalent levels exceed the TLV's, because the mentioned point is located just near the M1 highway). The maximum sound levels in all points are mainly within the permissible levels set by sanitary norms. In comparison with baseline values significant changes are not identified.
- The results of vibration measurements are within the permissible levels set by sanitary norms.

3.2 Topsoil Management

1. *Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)*

For Task 1, during the reporting period, no topsoil was generated.

2. *Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)*

For Task 2, during the reporting period topsoil not generated.

3.3 Waste Management

1. *Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)*

For Task 1, suitable excavated materials (common, rocks, stones and etc) were accumulated in the frame of RoW for further use. The following waste was generated and accumulated (in the frame of RoW) during the reporting period. The bio toilets were installed at the construction site, as well as the Contract agreement was signed with "Payl Service" LLC to ensure the sanitary and epidemiological conditions of bio toilets. The Contract agreement is presented.

During the reporting period around 80, 988m³ of non-hazardous unsuitable for construction needs materials generated. Unsuitable for construction needs materials transferred to the approved dump sites. Currently, the Contractor occupies nine dumping sites: Agarak 2 (under contract with the Talin community) and Agarak 4, Agarak 5, Agarak 6, Agarak 7, Agarak 8, Agarak 9, Agarak 10, and Agarak 11 (all under contracts with private owners). The signings for dumping sites were installed.

During the reporting period, 410 m³ of hazardous asphalt waste was generated. Approximately 200 m³ was used for filling entrances and exits to the main road and within the construction camp as a dust mitigation measure. The remaining portion is temporarily stored and is planned to be submitted to the Ashtarak community for secondary use.

Solid/domestic waste (garbage) was collected in bins installed at construction site near construction camp, Ashtarak community communal service transferring garbage from the construction camp on a weekly basis.

Waste generated during the reporting period is presented in the table below.

Type of waste		Waste generated (m³)			Remarks
		Previous total	The reporting period	New total	
July 2024					
Construction waste (included unsuitable for road construction excavated materials)		147659	1820	149479	Transferred to the dump sites
Construction related waste	disposed	0	0	0	-
	Re- used	0	0	0	-
Dangerous/ Hazardous (asphalt)	disposed	0	0	0	-
	Re- used	0	0	0	-
Cumulative waste		147659	1820	149479	-
August 2024					
Construction waste (included unsuitable for road construction excavated materials)		149479	48283	197762	Transferred to the dump sites
Construction related waste	disposed	0	0	0	-
	Re- used	0	0	0	-
Dangerous/ Hazardous	disposed	0	210	210	-

(asphalt)	Re- used	0	200	200	Re-used at the camp and entrances to main roads.
Cumulative waste		149479	48693	198172	-
September 2024					
Construction waste (included unsuitable for road construction excavated materials)		197762	0	197762	Transferred to the dump sites
Construction related waste	disposed	0	0	0	-
	Re- used	0	0	0	-
Dangerous/ Hazardous (asphalt)	disposed	210	0	210	-
	Re- used	200	0	200	Re-used at the camp and entrances to main roads.
Cumulative waste		198172	0	198172	-
October 2024					
Construction waste (included unsuitable for road construction excavated materials)		197762	29247	227419	Transferred to the dump sites
Construction related waste	disposed	0	0	0	-
	Re- used	0	0	0	-
Dangerous/ Hazardous (asphalt)	disposed	210	0	210	-
	Re- used	200	0	200	Re-used at the camp and entrances to main roads.
Cumulative waste		198172	29247	227419	-
November 2024					
Construction waste (included unsuitable for road construction excavated materials)		227009	2011	229020	Transferred to the dump sites
Construction related waste	disposed	29247	2011	31258	-
	Re- used	0	0	0	-
Dangerous/ Hazardous (asphalt)	disposed	210	0	210	-
	Re- used	200	0	200	Re-used at the camp and entrances to main roads.
Cumulative waste		227419	2011	229430	-
December 2024					

Construction waste (included unsuitable for road construction excavated materials)		228647	0	228647	Transferred to the dump sites
Construction related waste	disposed	0	0	0	-
	Re- used	0	0	0	-
Dangerous/ Hazardous (asphalt)	disposed	0	0	0	-
	Re- used	0	0	0	-
Cumulative waste		228647	0	228647	-
TOTAL		**147,659**	**80,988**	**228,647**	***Transferred to the dump sites:***

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, during the reporting period, no significant quantity of non-hazardous materials unsuitable for construction was generated. Additionally, no hazardous waste was produced. Since commencement, a total of 64,585.08 m³ of materials unsuitable for construction has been generated. Currently, the Contractor occupies seven dumping sites: Talin 1 and Talin 2 (under contract with the Talin community), Shamiram 1 (Shamiram community), Kosh 1 and Kosh 2 (Ashtarak community), Kosh 3 (Anania Khachatryan), and Kosh 4 (Arakel Haroyan). The signings for dumping sites were installed.
Solid/domestic waste (garbage) was collected in bins installed at construction site area and Talin community communal service transferring garbage from the construction camp on a weekly basis.

3.4 Tree Cutting/Planting Process

1. Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

For Task 1, field surveys conducted by the Contractor on March 29, April 22, and June 7, 2023, identified trees and shrubs potentially affected by road extension and construction activities. A total of 107 trees (including 26 mature trees and 81 smaller trees) and 193 shrubs were identified for potential removal.

In cooperation with the Ashtarak enlarged community, a designated replanting area was identified within the administrative boundaries of Nor Yedesia settlement, Ashtarak community, Aragatsotn Marz, RA.

During the reporting period, the Contractor engaged in negotiations with various entities to secure the best options for procuring tree and shrub plants and involving relevant specialists for the

replanting activities. A local company was hired for the preparation of the tree replanting design and the procurement of plants. The tree planting design was subsequently reviewed and approved by the Engineer.

Planting activities were carried out during the first ten days of November in the New Yedesia community, covering the designated 23,860-square-meter area. On November 9, the Contractor organized an event with the participation of the Engineer and Employer staff (photos are provided in ANNEX A).

The Contractor implemented the tree planting activities in accordance with the approved Tree Management Plan. The updated TMP was submitted to the Engineer for review on November 7, 2024, and was officially reviewed and approved on November 11, 2024.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, it is worth mentioning that no tree cutting activities are planned during the implementation of the Project. In previous years, all tree cutting activities were carried out by the previous Contractor. Additionally, tree planting activities will be performed if the Contractor removes trees that have not been compensated by LARP during Project implementation.

3.5 Health and Safety

3.5.1 Community Health and Safety

No complaints regarding community health and safety were received for both **Task 1** and **Task 2** during the reporting period.
For both **Task 1** and **Task 2**, warning and safety signs have been installed in the areas where works are ongoing.

3.5.2 Public Consultations and Communication

1. Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

For Taks 1, pre-construction public awareness meeting was organized and conducted on 04 April, 2023 at Agarak, Aghdzk and Ujan villages. During the meetings the upcoming road construction works, environmental concerns and proposed mitigation measures was made available to the public, the relevant authorities and other interested parties.
Constant communication with members of the Ashtarak enlarged community, stakeholders and the general public will be maintained via GRM in accordance with EIA/EMP. Impacted population will

be informed on any inconveniences like interruptions in water supply, electricity, etc. beforehand via boards and posters.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, pre-construction public awareness meetings were held on November 20, 22, and 23 at affected settlements of Ashtarak, Shamiram, and Talin communities. Specialists presented the general characteristics of the Project, construction dates, possible inconveniences, environmental risks, mitigation measures, GRM). The application form for complaints and suggestions was provided to settlement representatives in both Armenian and English languages. Additionally, periodic non-formal interviews are being conducted with local people and APs living along the road to analyse their main issues and concerns regarding the construction process.

3.5.3 Worker Safety and Health

1. Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

Throughout the reporting period for Task 1, a number of significant actions were undertaken to ensure safety and adherence to regulations at the construction site:

- A new bypass road was installed with new road signs, lights, and a highway regulating tool with flashing light.
- All road signs were double-checked and placed in order.
- Traffic lights with shining lights were installed on the bypass road.
- Concrete blocks with reflective stickers and tapes were installed along the road.
- Additional reflectors were added near the road.
- Areas around the fuel tank were kept clean, and all necessary safety measures were ensured.
- Contractor's Safety and Environmental Representative provided safety and environmental training to workers on various topics, including working at height, snakes and scorpions, and environmental safety.
- Workers were provided with safety inductions and reminders to wear safety harnesses properly.
- Workers were reminded to wear appropriate uniforms and safety equipment.
- Water trucks operated during the day, spraying the construction site and existing highways to control dust and mud.
- Open pits were closed with temporary red and white tapes.
- The gravel layer was implemented at all entrances of the public roads.

- All metal light reflectors were cleaned from dust.
- All electrical tools were visually checked for safety.
- The first aid kit was stocked with necessary medications.
- Regular medical check-ups for workers were conducted.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

During reporting period, the following activities were implemented:

- All road signs were double-checked and placed in order.
- Warning signs were placed between monuments and construction areas, as the road construction is in a dense archaeological monument-bearing area. High vigilance is required to prevent damage to archaeological objects.
- Employees were provided with personal protective equipment, including reflective safety jackets, helmets, and gloves.
- Materials stored at the construction camp were covered to ensure protection from environmental conditions.

3.6 Training

Both for ***Task 1*** and ***Task 2***, individual discussions with staff members on SEMP/EMP, ERP, and job-specific EHS were conducted periodically. Medical check-ups and instructions were provided to workers during the reporting period. Additionally, training for workers working at height was performed separately during this period.

4 FUNCTIONING OF THE SEMP

4.1 SEMP Review

1. *Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)*

For Task 1, CEMP was approved on April 24, 2023 with the condition that Annex 3: Tree Management Plan be updated.
The TMP was updated and approved on November 11, 2024.

2. *Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)*

For Task 2, the SSEMP was approved on December 18, 2023, with conditions to include COVID-19 requirements, detailed information about the dumping sites, and the State Environmental Expertise Conclusion. Subsequently, following instructions from ADB and taking into account design interchanges, such as the New Yedesia junction and midfield roads, the Employer requests a Due Diligence report jointly from the Engineer and Contractor.

The DDR was prepared, approved, and disclosed in October 2024. After that, the SSEMP was updated according to the DDR and is awaiting official approval.

5 GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

5.1 Good Practice

For ***Task 1***, as a good practice for this reporting period we can mention the decision to provide the trees to be cut during project implementation as firewood to the poor families of the Ashtarak enlarged community.

For ***Task 2***, during the reporting period, no cases of good practices were recorded. However, it is worth mentioning that a notable good practice is the availability of a canteen in the Construction Camp, where workers can have breakfast, lunch, and dinner. Additionally, for workers stationed far from the Construction Camp, food is delivered to them, and their rest time is organized at the construction site.

5.2 Opportunities for Improvement

During this period of project implementation, no opportunities for improvement have been identified.

6 GRIEVENCE REDRESS MECHANISM

6.1 Grievances

1. *Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)*

Complains recorded during the project implementation presented below:

No.	Community	AP name	Date of complaint received	Description of the issue	Actions implemented	Status of the issue
1	Ujan	Rafik Avetisyan	11.08.2023	APS' crops were damaged due to the impact of dust as a result of construction works.	After discussions and meetings with the APs, the damage caused by dust was evaluated by a specialized company Global Partners Group LLC. Based on the evaluation results, contracts for compensation were prepared and signed with the APs in February 2024.	CLOSED
2	Ujan	Tigran Karapetyan	11.08.2023			
3	Ujan	Svet Aghikyan	11.08.2023			
4	Ujan	Shushik Harutyunyan	11.08.2023			
5	Ujan	Aghavni Baghramyan	11.08.2023			
6	Ujan	Garnik Avetisyan	11.08.2023			
7	Ujan	Sevak Baghramyan	11.08.2023			
8	Ujan	Marusya Avetisyan	11.08.2023			
9	Ujan	Zorik Avetisyan	11.08.2023			
10	Ujan	Davit Yericyan	March, 2024	AP'S complained that his building was damaged during the construction works.	Social specialist of the Contractor inspected damaged building and recorded that Project has no any impact to the mentioned building taking into account the fact that it is located more than 600m far away from the end point of the Project.	CLOSED

11	Agarak	Ashot Aslanyan	April, 2024	The AP complains that the land belonging to him was damaged as a result of the construction works. The complaint was submitted to RD, after which a site visit was made with the Contractor's social specialist to study the AP's issue.	The Specialists met AP of Agarak community Ashot Aslanyan at the construction site area, near Voskevaz Wine Factory, where Ashot Aslanyan presented the issue. As he said, during land acquisition process, 3 from 4 of their lands were alienated, but one territory of 0.08 ha surface was not alienated. After that process several mistakes were done during territory marking and that land plot left out from the place it should be. Ashot Aslanyan presented the Certificate of Land according which that land plot exists and belongs to his mother Araksya Khachatryan. Based on that information the Specialists called the surveyor, who took the coordinates presented in documents of mentioned land plot and 4 marks were placed on the territory based on the document (provided from Cadaster Committee of RA) information. All mentioned information was written and then provided to the RD from Contractor. There are no alienation issues, and as for the problematic part of the owner's land, the Road Department has written a Cadastral committee to address the remaining part of the issue.	**CLOSED**
12	Voskevaz	Ani Injighulyan	06.08.2024	The applicant claims that her land plot near the construction site was damaged during the	The Contractor was instructed to remove trash and a concrete slab from the plot, and they	**CLOSED**

				construction works	confirmed they would restore the land to its previous condition. During a November 2024 field visit, it was reported that the Contractor removed the trash, the concrete slab, and separated the owner's plot from the alienated part, allowing work to proceed. Regarding tree damage, the irrigation flow was disrupted during construction. While the Contractor offered irrigation, the owner declined, and the compensation request is related to the lack of watering and its impact on the trees. *Conclusion:* The applicant acknowledged that the land was restored. The only noted issue was tree damage, which was visible to both the owner and the Engineer. However, damage due to lack of watering can only be assessed by a licensed appraiser, and no further action is required.	
13	Aghdzq	Hovhannes Sargsyan	29.08.2024	After the Contractor implemented the relocation of the irrigation water line at km 34+915 according to the Engineer's and approved working drawing, the owner of the land plot submitted a claim, pointed out that some adjacent plots of land are deprived of	Based on inhabitant request, on 03.09.2024 a meeting was carried out by Engineer's and Contractor Social Specialist. The Contractor has fixed the issue, discussed it with the Supervising Engineer and has tried to implement the necessary appropriate solution.	**CLOSED**

				irrigation water.		
14	Aghdzq	Arkadi Vardanyan	03.09.2024	The applicant claims that he doesn't have the possibility to water his orchard.	There is currently an aqueduct, but several meters of pipe need to be connected to enable orchard irrigation. The Aragatsotn Water Users Committee should provide irrigation upon citizens' request.	**CLOSED**
15	Aghdzq	Gabriel Hakobyan	03.09.2024	The applicant claims that he doesn't have the possibility to water his orchard.	There is currently an aqueduct, but several meters of pipe need to be connected to enable orchard irrigation. The Aragatsotn Water Users Committee should provide irrigation upon citizens' request.	**CLOSED**
16	Aghdzq	Lernik Hakobyan	03.09.2024	The applicant claims that he doesn't have the possibility to water his orchard.	There is currently an aqueduct, but several meters of pipe need to be connected to enable orchard irrigation. The Aragatsotn Water Users Committee should provide irrigation upon citizens' request.	**CLOSED**
17	Aghdzq	Hovhannes Sargsyan	03.09.2024	The applicant claims that he doesn't have the possibility to water his orchard.	There is currently an aqueduct, but several meters of pipe need to be connected to enable orchard irrigation. The Aragatsotn Water Users Committee should provide irrigation upon citizens' request.	**CLOSED**
18	Aghdzq	Nver Petrosyan	03.09.2024	The applicant claims that he doesn't have the possibility to water his orchard.	There is currently an aqueduct, but several meters of pipe need to be connected to enable orchard irrigation. The Aragatsotn Water Users Committee should provide irrigation upon citizens'	**CLOSED**

					request.	

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, pre-construction public awareness meetings were held on November 20, 22, and 23 at affected settlements in Ashtarak, Shamiram, and Talin communities. The general characteristics of the Project, construction dates, possible inconveniences, environmental risks and mitigation measures, grievance redress mechanism were presented.

It is worth mentioning that the vibration issues are currently under discussion with the Engineer. Actions and additional information will be provided in the next reporting period.

Complains recorded during the reporting period presented below:

No.	Community	AP name	Date of complaint received	Description of the issue	Actions implemented	Status of the issue
1	N. Bazmaberd	Armen Ghazaryan	08.02.2024	During the implementation of the Project, it is planned to install the drainage culvert (1458.5m above sea level, 48.5m in length and 2.0 x 2.0m) for rainwater removal at km 57+343 (Nerkin Bazmaberd settlement intersection). Armen Ghazaryan (the proposer) introduced, that there are private lands located to the North from km 37+545 and in future they plan to build a road in order to ensure easy access to mentioned lands. He suggests to increase the length of the drainage culvert for about 10m to the North, which is located about 100m below from the N. Bazmaberd intersection	The proposal was reviewed by the Contractor and as a result the pipe will be 58.5m in length. Other parameters of pipe will not be changed. No more complaints from the AP have been registered.	CLOSED

				and will allow to effectively solve the abovementioned problem in the future.		
2	Kosh	Sanatruk Hadjiyan	September, 2024	Sanatruk Hajiyan insisted in additional survey about the possible impacts of vibration.	The pre-construction survey team with Sanatruk Hajiyan observed the house on 11.09.2024, placed several stickers on the walls, took photos of existing situation and composed an Act.	**OPEN**
3	Ujan	Vahe Papoyan	June, 2024	The land plot became unusable and completely flooded.	Mr. Papoyan was informed that an underpass would be built in that location, and an embankment was constructed to serve as a barrier preventing surface water from flowing onto his land. This explanation resolved his complaint.	**CLOSED**
4	N. Sasnashen	Taron Kirakosyan	June, 2024	Taron claims that the irrigation pipes were damaged during the construction, leaving him unable to cultivate the plot.	A design solution has been developed to provide irrigation water access to Taron's land located at km 59+000, near the field road between km 58+510 and km 59+055. Specifically, the longitudinal profile of the field road has been elevated to ensure the proper installation level for the casing pipe beneath the road. The drawing was presented to Taron, who reviewed, understood, and approved it with his signature.	**CLOSED**
5	Kosh	Miasnik Sadoyan	June, 2024	Miasnik claims that the irrigation pipes were damaged as a result of the construction.	The earth canal in concern is out of our RoW. Their problem is mainly related to the local Water Users Association and Kosh community. The chief engineer of Aragatsotn WUA Mr. Davit	**CLOSED**

					Hovhannisyan said that both the community leader and the WUA are aware of the problem and they are working on the solution.	
6	Kosh	by the residents of the community	June, 2024	The issue related with cattle underpass.	The cattle underpass will be temporarily placed.	**OPEN**
7	Ujan	Hakob Yeritsyan	16.07.2024	Access issue.	The issue will be resolved by constructing additional field roads.	**OPEN**
8	Kosh	Makarianos Harutyunyan	17.07.2024	There is a building on the land plot, serving as a workshop, a trading post. As a result of road construction, the building is cut off from the road. He requests convenient access, as he is the source of his family's income.	The building in question has two entrances accessible from the field roads.	**CLOSED**
9	Kosh	Vardan Grigoryan	10.08.2024	Cracks in the house caused by vibration due to construction work.	The pre-construction survey team with Vardan Grigoryan observed the house on 14.08.2024, placed several stickers on the internal and external walls, on the ceiling, took photos of existing situation and composed an Act.	**OPEN**
10	Kosh	Babken Gabrielyan	29.08.2024	Cracks in the house caused by vibration due to construction work.	The pre-construction survey team with the AP listed observed the houses on 03.09.2024, placed several stickers on the internal and external walls, on the ceiling, took photos of existing situation and composed the Act.	**OPEN**
11	Kosh	Armen Manukyan	04.09.2024	Cracks in the house caused by vibration due to construction work.	The pre-construction survey team with the AP listed observed the houses on 09.09.2024, placed several stickers on the internal and external walls, on the ceiling, took photos	**OPEN**

					of existing situation and composed the Act.	
12	Kosh	Shushanik Khachatryan	13.09.2024	She has no access to her land, has not been able to cultivate it, she has lost the harvest, she demands compensation.	a/ The correct land plot code is 02-061-0127-0040. b/ Water cannot flow to the land plot from the concrete pipe built by the former Contractor on the left side of the road, since the right side of the pipe has not yet been constructed, surface water flows from the right side of the road to the left side. c/ The surface water accumulating on the right side of the road comes to the land plot through a metal pipe installed under the road in Soviet times and coming out at the edge of the applicant's land plot. The water coming out of that pipe should have continued its path through the currently half-filled and heavily vegetated earthen channel and the partially damaged concrete half-pipes to the opposite valley, which does not happen due to the fact that the system has not been repaired or cleaned for years. d/ According to the working drawing developed by the former Contractor, the newly constructed concrete pipe will be connected to the old drainage system mentioned above. We will improve that drawing a little in the future. e/ According to the	**OPEN**

					cadastral map, there is a network of field roads, which also provides access to the complainant's land plot. The entrance connecting the highway to that network is still there, but the last hundred to one hundred and twenty meters are not passable by passenger cars, since it has never been maintained and put in order. Agricultural machinery can approach. f/ According to the project, we will build a new -field road that will run alongside the highway and will also reach the complainant's land.	
13	Aruch	Gayane Mkhitaryan	24.09.2024	Requests to restore access to the only unpaved road leading from the highway to agricultural plots.	Temporary access has been provided for harvesting the crop.	CLOSED
14	Aruch	Norik Shahinyan	02.10.2024	Access road.	A field road just in parallel with M1 road, stretching from km 50+300 to km50+500 LHS will be constructed.	CLOSED
15	Ujan	Vahe Papoyan	11.10.2024	Along the field road (which is about 6 meters above the site) a bridge is being built, and agricultural machinery or passenger vehicles can't enter the land plot.	The applicant will be provided with access by constructing additional field roads.	CLOSED
16	Davtashen	Hayk Hepoyan	18.10.2024	Access road.	The applicant will be provided with access by constructing additional field roads.	CLOSED
17	Davtashen	Zeytun Avoyan	18.10.2024	Access road.	The applicant will be provided with access by constructing additional	CLOSED

					field roads.	
18	Davtashen	Andranik Hepoyan	24.10.2024	Access road.	The applicant will be provided with access by constructing additional field roads.	**CLOSED**
19	Davtashen	Mushegh Grigoryan	25.10.2024	Access road.	The applicant will be provided with access by constructing additional field roads.	**CLOSED**
20	Davtashen	Yurik Hepoyan	25.10.2024	Access road.	The applicant will be provided with access by constructing additional field roads.	**CLOSED**
21	N. Bazmaberd	Hovnan Hovhannisyan	19.11.2024	Land flooding risk, access issue.	The constructed concrete channel will continue with an earthen channel to the drainage channel, additional field roads will be constructed for the Nerkin Bazmaberd settlement.	**CLOSED**
22	Kosh	Shushan Arakelyan	18.11.2024	Cracks in the house caused by vibration due to construction work.	The site visit was organized by Contractor's Social Specialist and Engineer's Social Specialist to Shushan Arakelyan's house on 22.11.2024. The several photos were taken and Act was composed.	**OPEN**
23	Ujan	Vahe Papoyan	22.12.2024	The land has become a construction site and a temporary road to the slaughterhouse.	There is a verbal agreement with the applicant to use his land as a road for the slaughterhouse employees for about three months. The land has been cleared of construction trash and the applicant is satisfied.	**CLOSED**

7 ARCHEOLOGY, PHYSICAL/CULTURAL RESOURCES

1. Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)

During the reporting period, there were no archaeological findings or records of violations.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

Following instructions from ADB and considering design interchanges such as the New Yedesia junction and midfield roads, the Employer requested a Due Diligence Report jointly from the Engineer and Contractor. The report includes an archaeological survey and outlines further actions. It was submitted and approved during the reporting period.

According to the DDR, the construction of 7 field roads poses archaeological risks, requiring an additional survey and coordination with the Ministry of Education, Science, Culture, and Sports.

In July, a meeting was held at the Contractor's office with representatives from the Road Department, the Engineer, and the Contractor to discuss the risks of damage to monument-bearing areas during the construction of field roads based on the new design. During this meeting, a decision was made to revise the previously designed field roads that encroached on the monument preservation zone. After reaching a preliminary agreement, it was decided to send an official letter to the Ministry of Education, Science, Culture, and Sports to initiate discussions and seek permission for further work.

On July 25, a discussion was held at the Ministry, attended by Deputy Minister Mr. A. Kocharyan, regarding the revision of the field road designs. It was decided to conduct an additional survey in the conservation zones related to road construction and, if necessary, modify the road alignments to minimize potential damage to monuments.

Following further discussions and correspondence with the Ministry, it was determined that only 3 field roads require design changes. This process is currently ongoing, and the results will be submitted in the next reporting period.

During this period, the Contractor has carried out work to remove soil and basalt boulders that were previously deposited on the Chalcolithic settlement in Nerkin Sasnashen. While most of the area is now cleared of rubble and earth, some soil remains over the tombs. It is recommended to carefully remove this remaining soil using hand tools to preserve the original outline of the structures. These works should be scheduled for the spring.

From August 9 to 31, 2024, an archaeological expedition from the Institute of Archaeology and Ethnography of the National Academy of Sciences of Armenia conducted excavations in the area

of Shamiram Archaeological Complex 2, covering the segment between pk 37.400 – pk 71.0400. The excavation report is presented in the ANNEX B.

It is worth noting that archaeologists from both the Engineer's and Contractor's teams were fully involved in all processes, including the selection of dumping or borrowing sites.

8 SUMMARY AND RECOMMENDATIONS

8.1 Summary

1. *Task 1 - 8 km road section bypassing Agarak Archaeological complex (M-1 road km 29+600-km 37+545)*

Approval for the CEMP was provided by the Engineer on April 24, 2023, with the condition that Annex 3: Tree Management Plan be updated. The TMP was officially reviewed and approved on November 11, 2024.

Contractor's Environmental, Health and Safety experts with Engineer's EHS and Employer's ES conducted monitoring visits to the Project construction sites to monitor implementation of all mitigation measures of mentioned in the EIA/EMP.

Baseline and periodic instrumental measurements of dust, noise, and vibration were carried out for the project. The purpose of these measurements was to gather baseline data about noise and vibration levels, as well as dust concentration at sensitive points. These measurements were part of the routine operational monitoring process to evaluate and mitigate potential impacts related to these factors. Periodic measurements for dust, noise, and vibration were conducted as follows: in July at points N1, N4 and N5; in August at N2, N4, and N5; in September at N1, N4, and N5; in October at N3, N4 and N5; November at N4 and N5 and in December at N4, and N5.

Throughout the reporting period, actual dust concentrations remained within permissible limits, though baseline concentrations exceeded national and IFC daily averages. A gradual increase in dust levels was noted, particularly during hot summer months and in December due to overall regional dust conditions. Contractor was instructed to increase watering frequency and regulate construction activities to minimize dust emissions.

Noise levels were mostly within TLVs set by sanitary norms. Variations were observed, particularly in Points N1, N2, and N3, due to road traffic and nearby construction machinery. Points N4 and N5 consistently recorded higher noise levels, primarily due to their proximity to the Yerevan-Gyumri highway.

The results of vibration measurements are within the permissible levels set by sanitary norms.

During the reporting period topsoil not generated.

During the reporting period, approximately 80,988 m³ of non-hazardous materials unsuitable for construction were generated and transferred to approved dump sites. The Contractor currently occupies approved 9 dumping sites: Agarak 2 (under contract with the Talin community) and Agarak 4, Agarak 5, Agarak 6, Agarak 7, Agarak 8, Agarak 9, Agarak 10, and Agarak 11 (all under contracts with private owners).

Additionally, 410 m³ of hazardous asphalt waste was generated. About 200 m³ was used for filling entrances and exits to the main road and within the construction camp for dust mitigation. The remaining portion is temporarily stored and planned for submission to the Ashtarak community for secondary use.

During the reporting period, the Contractor received complaints from residents of Voskevaz and Aghdzq communities regarding crop and land damage caused by construction works, as well as irrigation issues. All issues have been addressed and are currently in the resolution stage.

During the reporting period, individual discussions with staff members on SEMP/EMP, ERP, and job-specific EHS were conducted periodically. Medical check-ups and instructions were provided to workers during the reporting period. Additionally, training for workers working at height was performed separately during this period.

During the reporting period, there were no archaeological findings or records of violations.

In general, all the issues and instructions addressed to both the Contractor and the Engineer were proactively resolved. This demonstrates their commitment to environmental protection and prioritizing health and safety considerations throughout the Project.

2. Task 2 - Remaining road section of 34 km (M-1 road km37+545-km 71+500)

For Task 2, the SSEMP was approved on December 18, 2023, with conditions. Meanwhile, the Engineer and the Contractor were requested to prepare a Due Diligence Report for design changes in the project, which was subsequently prepared and approved. Following this, the Contractor was requested to update the SSEMP, which is currently awaiting approval.

Contractor's Environmental, Health and Safety experts with Engineer's EHS and Employer's ES conducted monitoring visits to the Project construction sites to monitor implementation of all mitigation measures of mentioned in the EIA/EMP.

Baseline and periodic instrumental measurements of dust, noise, and vibration were carried out for the project. The purpose of these measurements was to gather baseline data about noise and vibration levels, as well as dust concentration at sensitive points. These measurements were part of the routine operational monitoring process to evaluate and mitigate potential impacts related to these factors. Periodic measurements for dust, noise, and vibration were conducted as follows: in July at points N4, N5, and N8, in August at points N1, N4, N6, and N8, in September at points N3, N4, N8, in October at points N4, N5, N8, in November at points N3, N4 and N8 and in December at N4 and N8.

During the reporting period from July to December 2024, dust particle concentrations in all measuring points remained within permissible limits and were generally lower than baseline values. However, in December, a significant increase in dust levels was recorded, exceeding daily average MPCs (both national and IFC standards). This rise was not linked to construction activities but was influenced by weather conditions and regional dust levels, particularly in Yerevan. To mitigate this, the Contractor was instructed to intensify watering and regulate construction activities to minimize dust emissions.

Noise levels throughout the period were mostly within TLVs, except in Points N4 and N5, where exceedances were recorded due to proximity to the M1 highway. Minor variations were observed in Point N8 due to nearby construction machinery, though levels remained within sanitary norms. Vibration measurements remained within permissible levels across all monitoring periods.

During the reporting period topsoil was not generated. All tree cutting activities were carried out by the previous Contractor and during Project implementation no tree cutting activities are planned.

Since commencement, a total of 64,585.08 m³ of materials unsuitable for construction has been generated. During the reporting period significant quantity of non-hazardous unsuitable for construction needs materials were not generated. Hazardous waste was not generated. Currently, the Contractor occupies approved 7 dumping sites: Talin 1 and Talin 2 (under contract with the

Talin community), Shamiram 1 (Shamiram community), Kosh 1 and Kosh 2 (Ashtarak community), Kosh 3 (Anania Khachatryan), and Kosh 4 (Arakel Haroyan).

Complaints were recorded from Ujan, Davtashen, Aruch, N. Bazmberd, and Kosh communities regarding access to their lands and building damages caused by vibration during the reporting period. All issues have been addressed and will be further resolved. In particular, vibration-related issues are currently under discussion with the Engineer to determine appropriate actions and mitigation measures.

Periodic individual discussions with staff members were conducted on SEMP/EMP, ERP, and job-specific EHS. Workers also received medical check-ups and instructions during the reporting period. Additionally, specialized training was provided separately for workers working at height.

Following ADB's instructions and considering design changes, the Employer requested a Due Diligence Report from the Engineer and Contractor.

The report identified archaeological risks in the construction of 7 field roads, requiring further surveys and coordination with the Ministry of Education, Science, Culture, and Sports. In July, meetings were held with the Contractor, Engineer, and Road Department, leading to a decision to revise the designs and consult the Ministry. On July 25, a discussion was held with Deputy Minister A. Kocharyan, where it was decided to conduct additional surveys and modify road designs to protect monuments. Later, it was agreed that only 3 field roads needed design changes, and work on this is ongoing.

During this period, the Contractor cleared soil and basalt boulders from the Chalcolithic settlement in Nerkin Sasnashen. Some soil still covers the tombs, which will be carefully removed by hand tools in spring.

From August 9–31, 2024, an archaeological team from the Institute of Archaeology and Ethnography carried out excavations in the Shamiram Archaeological Complex 2 (pk 37.400 – pk 71.0400). The excavation report is in the ANNEX B.

Archaeologists from both the Engineer's and Contractor's teams were involved in all processes, including choosing dumping and borrowing sites.

In general, all the issues and instructions addressed to both the Contractor and the Engineer were proactively resolved. This demonstrates their commitment to environmental protection and prioritizing health and safety considerations throughout the Project.

8.2 Recommendations

During this phase of project implementation, we currently do not have any recommendations.

9 ACTION PLAN FOR JULY-DECEMBER 2024

9.1 For RD and Engineer

For both Task 1 and Task 2:

1. Overall management of Environmental, H&S and Archaeological measures
2. Review and approval of Contractor's monthly reports
3. Monthly reporting on environmental safeguards
4. Supervision of the routine instrumental monitoring: dust, noise and vibration
5. Consultation to Engineer and Contractor on any environmental, Health and Safety and Social issues if needed
6. Inspection monitoring site visits, follow up of EH&S open issues
7. Participation in ADB Mission visits
8. Follow-up on corrective actions
9. For Task 1, monitoring of planted trees
10. For Task 2, approval of updated SSEMP

9.2 For Contractor

For both Task 1 and Task 2:

1. Monthly reporting on environmental safeguards
2. Instrumental monitoring: dust, noise and vibration
3. Implementation of EHSS and archaeological mitigation measures during construction activities
4. Participation in ADB Mission, RD and Engineer's site visits
5. Implementation of training sessions addressing Health and Safety (H&S) concerns
6. For Task 1, monitoring of planted trees

7. For Task 2, update of SSEMP

8. For Task 2, addressing the archaeological issue at Nerkin Sasnashen

ANNEX A: PHOTOS OF CONSTRUCTION (MAINTANANCE) PROCESS



Figure 1. December 16, 2024 – km 30+690: Ongoing construction works for Task 1



Figure 1. December 16, 2024 – km 30+690: Ongoing construction works for Task



Figure 2. December 16, 2024 – km 46+859: Ongoing construction works, Task 2

Figure 3. December 16, 2024 – km 46+859: Ongoing construction works, Task 2









Figure 4, 6 and 7. November 9, 2024, New Yedesia community: Task1, tree planting

ANNEX B: EXCAVATION REPORT OF THE SHAMIRAM ARCHAEOLOGICAL COMPLEX 2

Excavation Report of the Shamiram Archaeological Complex 2

Yengibaryan N.

From August 9 to 31, 2024, the dedicated expedition team of the Institute of Archaeology and Ethnography of the National Academy of Sciences of the Republic of Armenia, led by Yengibaryan N. with contributions from Muradyan S. and Ter-Minasyan L., undertook a series of critical rescue excavations. These excavations were part of the ongoing efforts associated with the "North-South Road Corridor" investment project, specifically focusing on the construction works of Section 2 of the Ashtarak-Talin road (pk 37.400 – pk 71.0400). The work concentrated on an area encompassing two significant archaeological objects (pk 48.100) within the Shamiram Archaeological Complex 2, which were directly affected by the planned infrastructural developments (Fig. 1).

The archaeological site is situated within the administrative boundaries of the Shamiram settlement, an area belonging to the enlarged administrative center Talin in the Aragatsotn Province of Armenia. It lies approximately 415 meters northeast of Dprevank village, strategically positioned adjacent to the right side of the Yerevan-Gyumri M1 highway, with geographical coordinates of 40°17'55.19"N, 44°6'6.62"E. Prior to the commencement of excavations, the archaeological survey team conducted preliminary assessments that documented the presence of rows of cover stones and stone circles reminiscent of ancient cromlechs, indicating the site's historical significance.

Over the course of the excavation, the team investigated three main structures: Tomb No. 1 (Fig. 2), a dwelling that was initially misidentified as Tomb No. 2 (Fig. 3), and Sondage No. 1, which served as an exploratory measure to further understand the site's archaeological context.

TOMB No. 1

Tomb No. 1 is situated approximately 15 meters northeast of the right edge of the Yerevan-Gyumri highway. The initial examination of the surface revealed a distinct circular arrangement of medium-sized stones along with larger stones that had evidently been recently displaced (Fig. 4). It became apparent that these larger boulders had rolled down from the nearby hilltop during construction work for high-voltage transmission towers, which had disrupted the site's integrity.

Within the central area of the cromlech, a significant large triangular slab was found, serving as a key feature of the burial site. After carefully removing the upper layer of gravel and earth, the central portion of the cromlech became visible, revealing an oval stone perimeter (Fig. 5). However, it was noted that a small section of the southern part of the cromlech was missing, likely due to disturbances caused by ongoing construction activities in the vicinity. This suggests that the structural integrity of the site may have been compromised over time.

The cromlech appears to have originally featured two rows of stones; however, only four stones were found remaining on the northern side. The burial chamber was notably covered by four large stone slabs, with a sizable stone fragment and a flat triangular stone laid horizontally in the central area (Fig. 6). This flat slab was particularly noteworthy as it seemed to be a unique find, possibly brought from another location, given the absence of similar stones in the immediate vicinity.

Upon further examination, the edge slabs of the tomb were observed to rest securely on the walls of the chamber (Fig. 7). The orientation of the tomb was determined to be east-west, a common alignment in ancient burial practices. Unfortunately, no archaeological artifacts were recovered from within the chamber itself, leading to challenges in determining the chronological context of the site. The walls were constructed of a single layer of large stone fragments, suggesting a robust design intended to withstand the test of time.

The chamber itself extends into the soil, reaching down to a layer of limestone deposits (Fig. 8). Within this space, two individual skeletal remains were uncovered (Fig. 9). One skeleton was located in the western half of the chamber, positioned on its right side, curled up, with the head oriented towards the east and the face directed to the north. The other skeleton was found in the central area of the chamber (Fig. 10). Unfortunately, the preservation of the skeletal remains was found to be very poor, with significant degradation noted and several bones missing, likely due to natural processes over time. The high degree of deterioration complicates our ability to draw conclusions about the positioning of the second skeleton.

As previously mentioned, no artifacts other than the skeletal remains were discovered, making it impossible to definitively ascertain the tomb's chronological framework. Nonetheless, based on the architectural characteristics of the tomb, it is reasonable to propose that it dates from the latter part of the 3rd millennium BC to the first half of the 1st millennium BC. Samples

from the skeletal remains have been collected for radiocarbon dating, which will provide valuable insights into the age of the tomb and enhance our understanding of its historical context.

STRUCTURE (TOMB No. 2)

Approximately 30 meters northwest of Tomb No. 1 lies the second structure, initially thought to be another burial site (Fig. 11). The surface assessment revealed a series of stones arranged in a rectangular formation, accompanied by a subsequent addition of a single-row wall constructed using a dry-stone technique. This construction utilized a variety of stone sizes, with gaps between larger stones filled with smaller fragments (Fig. 12).

While initially considered a tomb, the subsequent excavations revealed that if it was originally a burial site, the chamber had undergone significant modifications and repurposing over time (Fig. 13). The overall layout of the structure is square and aligned along the southern slope of the hill, featuring large stones that measure up to 1.0 x 1.0 meters (Fig. 14). The walls of the structure exhibit a two-faced construction, composed of small to medium-sized stones interspersed with earthen fill, showcasing a technique common in ancient architecture.

Further inspection of the structure's outer face revealed sections with two horizontal stone rows, which may have served as an architectural feature to enhance stability. On the eastern side, a notable additional row of five stones was identified, which likely functioned as a supporting wall for the entire structure. If we accept the premise that this was originally a tomb, it may also represent a segment of the cromlech.

An important discovery was made in the central section of the western wall, where approximately one meter of the wall was found to be missing stones. This absence suggests the potential location of the structure's entrance, offering insight into its original use and access points. The surrounding soil was notably soft and devoid of stones, indicating a history of soil disturbance.

At the level of the lower edges of the walls, a distinct clay floor was documented, suggesting that the structure was designed for prolonged use. In the southeast corner, a clay chimney was found, indicating the potential for heating or cooking activities within the space. Additionally, approximately 55 cm inward from the midpoint of the southern wall, a two-handled vessel was uncovered resting on the clay floor. This vessel was nearly intact, with damage limited to

a small section of the rim (Fig. 15). Soil collected from within the vessel yielded cereal grains, underscoring the structure's functional significance. Both the soil and the seeds were carefully sampled for further laboratory analysis, promising to reveal more about the dietary practices of the individuals associated with this site.

Upon further excavation within the structure, it became apparent that the wall foundations were positioned directly on the surface. However, on the eastern side, it was discovered that the ground had been lowered by about 10 cm to achieve a level surface for construction (Fig. 16). This adjustment indicates thoughtful architectural planning, aimed at ensuring the stability and usability of the structure.

The clay floor was carefully removed, exposing soft soil that extended approximately 90 cm below it. At this depth, another clay floor was uncovered, resting directly on the bedrock (Fig. 17). This discovery suggests that the structure was built on a historical foundation, with layers of occupation indicating a long history of use.

By synthesizing the data collected during the excavation, we can confidently document the following conclusions: the structure is semi-subterranean, with clear indications that the lower floor is much older, likely dating back to prehistoric times. Subsequent to its initial use, when it had largely filled with earth, the structure underwent significant reconstruction and repurposing for later use. Aside from the previously mentioned clay vessel and chimney, no additional archaeological artifacts were identified during this phase of excavation. Preliminary analysis suggests that both of these artifacts date no earlier than the 16th century, providing a time frame for the later use of the site.

Sondage No. 1

To achieve a more comprehensive understanding of the archaeological context surrounding the two excavated objects, the team decided to conduct further exploratory excavations through the establishment of a small exploratory pit (2.5 x 3.5 m). The rationale for this decision was grounded in two key reasons. First, the presence of stone rows around the primary two squares warranted detailed examination to form an overall archaeological picture. Second, since the chronology of Tomb No. 1 and Structure No. 1 remained uncertain by the end of the excavations, the exploratory pit offered a potential avenue to clarify these chronological ambiguities.

4

The pit was strategically positioned approximately 20 meters northeast of Tomb No. 1, atop an elevated edge of the slope where single-row stones forming a corner were visible at the surface. An alignment of eight large stones was observed, extending from the north to the south and continuing towards the east, forming a notable architectural feature. After carefully removing about 10-12 centimeters of black soil, the inner face of a wall was revealed, constructed with relatively smaller stones.

About one meter north of this inner wall, three smaller stones were found standing upright, with their western sides in contact with the wall (Fig. 18). This configuration suggests that these stones were intentionally placed to support a wooden column base, a practice indicative of architectural traditions. Supporting evidence for this hypothesis includes a posthole carved into the inner section of the upright stones (Fig. 19), further reinforcing the idea of structural stability.

Beneath the upper surface of the stones, bedrock and wall foundations were uncovered at a depth of approximately 35 centimeters, revealing the extent of human activity in this location. Regrettably, no archaeological artifacts were recovered during the excavations of this exploration pit, leaving unanswered questions regarding the chronology of the structures. The lack of artifacts presents a challenge, but we can note that such column bases are found in archaeological monuments spanning a wide range of historical periods, from early settlements to medieval constructions.

In conclusion, the excavations at the "Shamiram Archaeological Complex 2" provided valuable insights into the region's historical landscape. We examined a tomb, a dwelling structure, and the corner section of another structure. Based on the collective data gathered, we propose that the initial chronology of the excavated structures likely spans from the Middle Bronze Age to the period of widespread iron use, while the square structure underwent significant alterations during the medieval period. This excavation contributes important knowledge to our understanding of the cultural and historical development in this region of Armenia.

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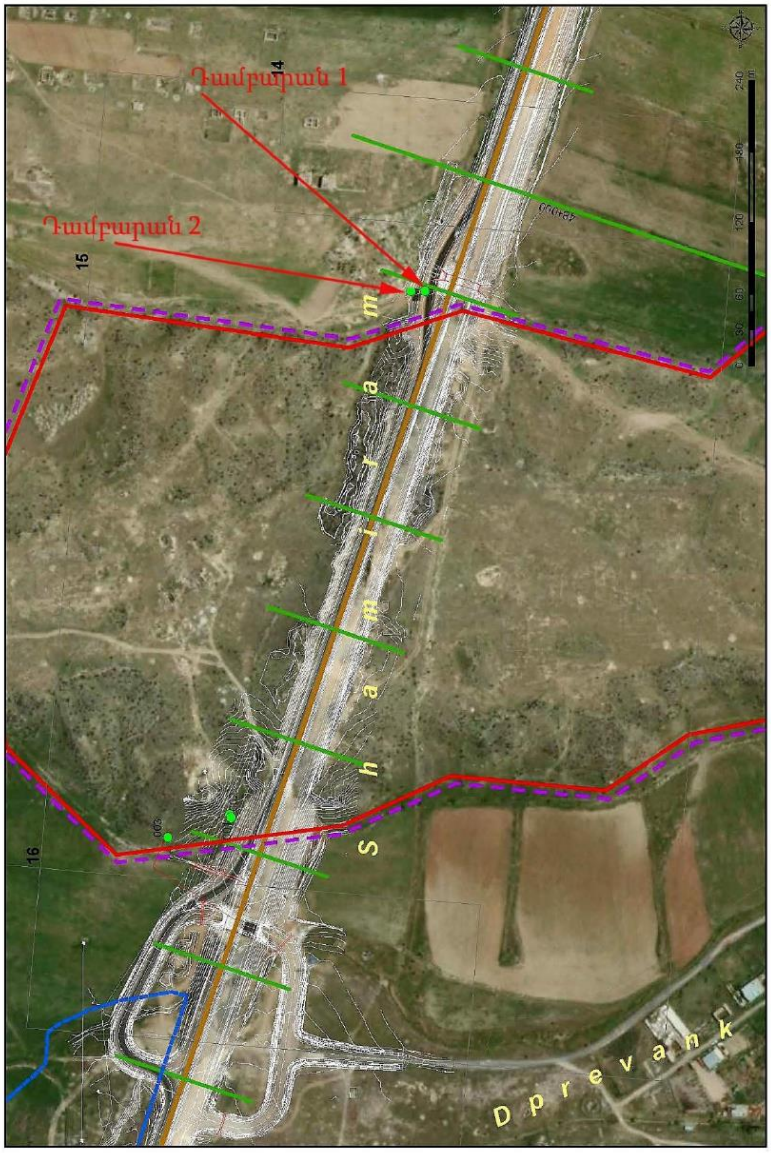


Figure 1

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Figure 2



Figure 3

7



Figure 4



Figure 5

8

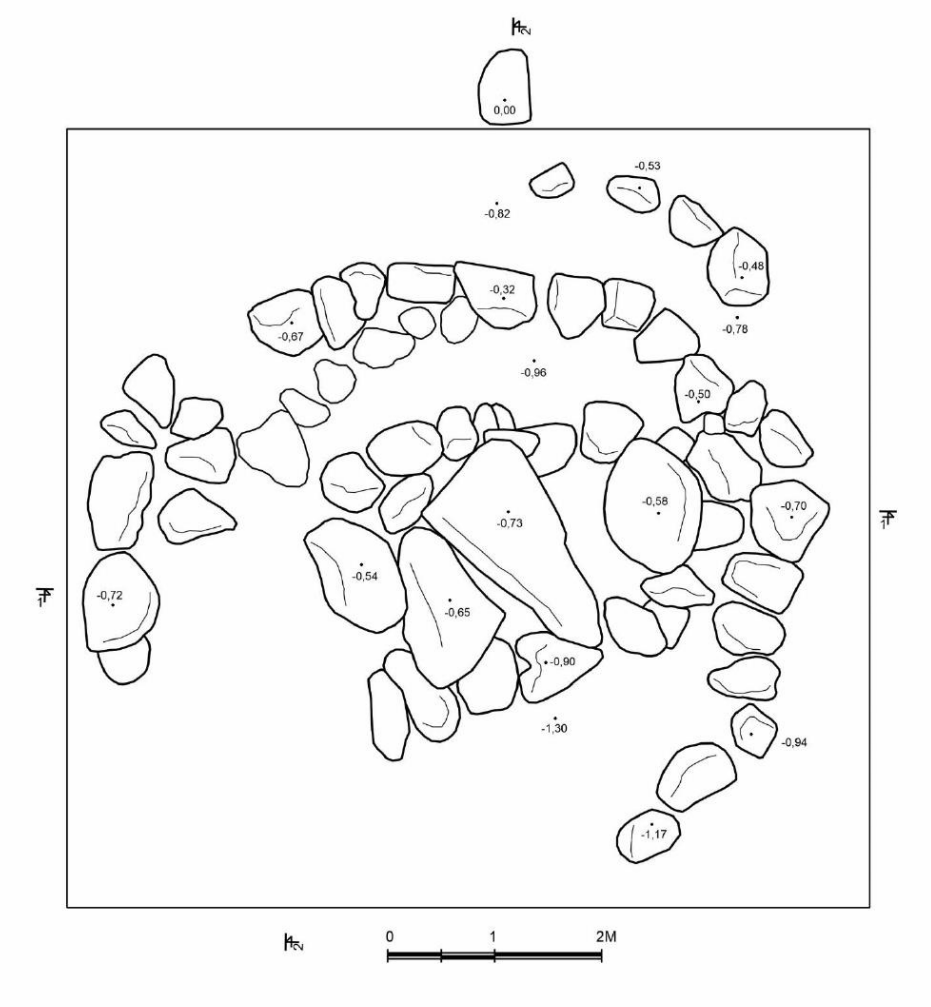

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Figure 6



Figure 7

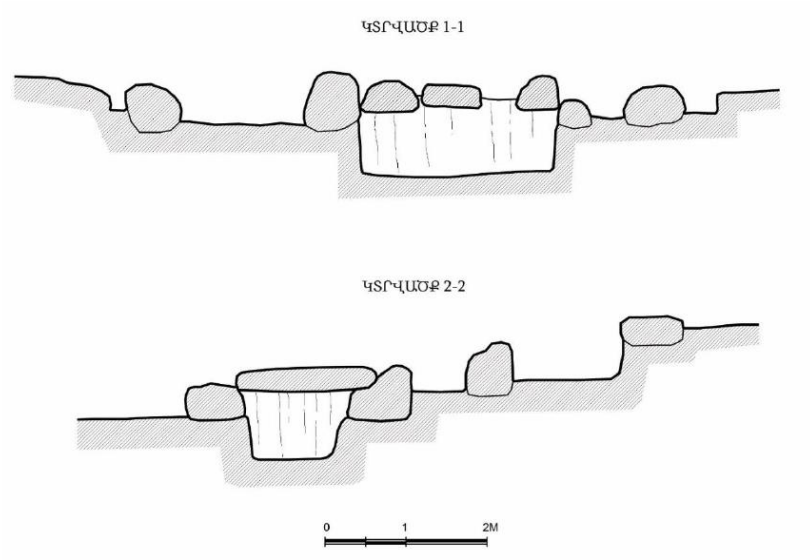


Figure 8

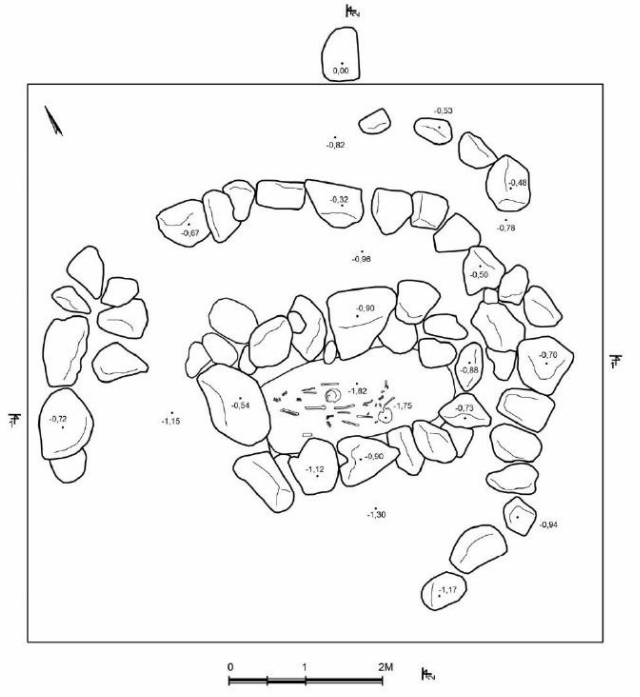


Figure 9



Figure 10

11



Figure 11



Figure 12

12



Figure 13

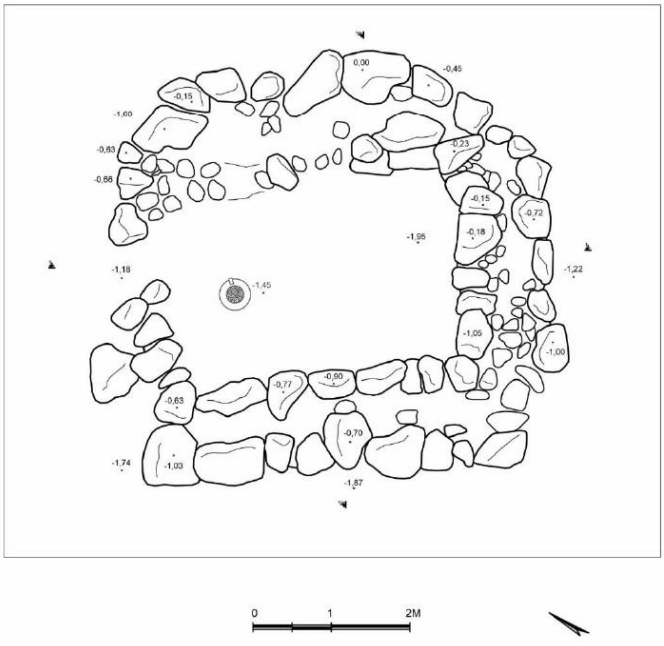


Figure 14

13



Figure 15

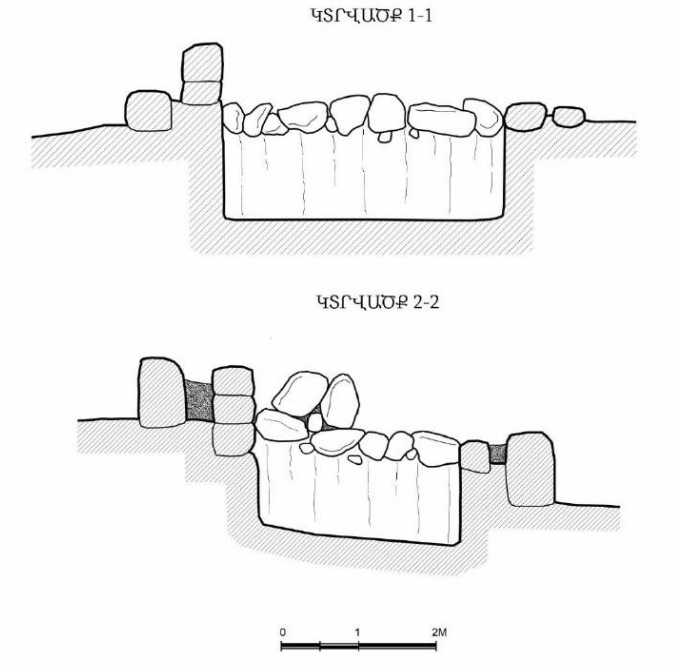


Figure 16

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Figure 17



Figure 18

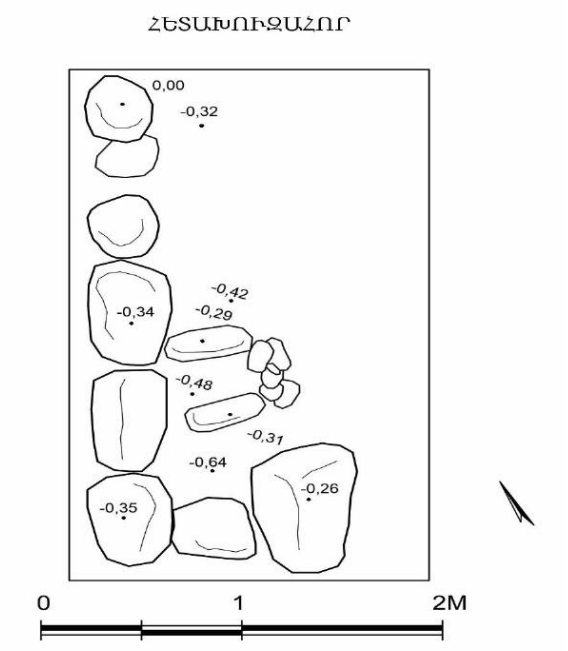


Figure 19

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