

Bi-annual Environmental Monitoring Report

Loan 2993-ARM
July - December 2017

Armenia: North-South Road Corridor Investment Program, Tranche 3

Prepared by the “Transport Project Implementation Organization” State Non-Commercial Organization based on the monthly Environmental Monitoring Reports of the Project Management Consultant

This bi-annual environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

Table of Contents

Part I	Introduction.....	6
1.	Construction Activities and Project Progress during Reporting Period	7
1.1	Talin—Lanjik Road Section (Km 71+500 to Km 90+200) of M1 Talin—Gyumri Road:	7
1.2	Reconstruction/Construction/Rehabilitation of 9 Overpasses on North-South Road Corridor (M2 Yerevan-Artashat and M1 Yerevan-Ashtarak)	7
2.	Environmental Safeguards Staffing.....	8
2.1	TPIO Environmental and Social Staff	9
2.2	The Talin—Lanjik Road Section	9
2.2.1	Consultant Environmental Safeguards Unit.....	9
2.2.2	Contractor's Health and Safety, Environmental, Archaeological and Social Unit	9
2.3	9 Overpasses (M2 Yerevan-Artashat and M1 Yerevan-Ashtarak).....	10
2.3.1	Contractors' Health and Safety, Environmental and Social staff.....	10
Part II	Environmental Management	12
3.	Environmental Safeguards Program	12
3.1	Compliance with National Safeguards	12
3.2	Compliance with ADB Safeguards	12
3.3	Contractor's Compliance with the EMP.....	13
3.4	Approvals of the Site-specific environmental management plans for Quarries, Borrow Pits, Blasting works, Excavated Unsuitable Material Dumping, Topsoil Stockpiling, Concrete Batching Plants and Historical Monuments	13
	<i>9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.....</i>	<i>14</i>
3.5	Tree management plan.....	15
3.6	ADB Mission.....	15
3.7	Trainings and awareness raising orientation.....	15
3.7.2	<i>9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.....</i>	<i>16</i>
3.8	Archaeological Works Program (Talin—Lanjik Road Section).....	16
3.9	Grievance redress mechanism and Consultations	17
3.9.2.2	<i>9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.....</i>	<i>18</i>
3.10	Communication	18
Part III	Environmental Monitoring	20
4.	Monitoring.....	20
4.2	Monitoring of the Compliance with EMPs	20
4.3	Instrumented Measurements and Monitoring of Environmental Parameters of Dust Noise, Vibration and Water Quality in Talin-Lanjik road section.....	21
4.4	Non-compliance Notices.....	22
x	Error! Bookmark not defined.

A N N E X E S

ANNEX A: Status of environmental permits and licenses

ANNEX B: Summary Table on Status of Archaeological Excavations

ANNEX C: Non-Conformances Detected During Monitoring Visits in Reporting Period

ANNEX D: Extracts from Noise, Dust and Vibration Assessment, Initial Baseline Conditions

ANNEX E: Status of Measurements on Dust, Noise, Water Quality and Vibration in July-December 2017

ANNEX F: Points of Measurements on Dust, Noise, Water Quality and Vibration presented via Google map

ANNEX G: Post-Construction Environmental Audit Checklists for Overpasses

List of Abbreviations

ADB	Asian Development Bank
CEMP	Contractor's Environmental Management Plan
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
IEE	Initial Environmental Evaluation
ES	Environmental Specialist
MFF	Multi-tranche Financing Facility
MNP	Ministry of Nature Protection
MOTCIT	Ministry of Transport, Communication and Information Technologies
MoC	Ministry of Culture
SEMP	Site Specific Environmental Management Plan
TMP	Traffic Management Plan
TPIO	Transport Project Implementation Organization" SNCO
EMR	Environmental Monitoring Report

Part I Introduction

This Bi-annual Environmental Monitoring Report covers the time period from July to December of 2017.

The Report was prepared with close cooperation with Supervision Consultant, which is the joint venture of SPEA Engineering & IRD Engineering companies.

1. The RA has selected the Bavra-Yerevan-Agarak route as the North-South Road Corridor to be rehabilitated, reconstructed and expanded and has appointed the “North-South road Corridor Investment Program PIU” SNCO (“NSRP” PIU SNCO) of the Ministry of Transport, Communication and Information Technologies (MOTCIT) to co-ordinate the work.

2. The Multi-tranche Financing Facility (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 (often in poor condition) 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.

3. The Asian Development Bank has provided a loan in the framework of the MFF for the North-South Road Corridor Investment Program to the Government of Armenia to cover the cost of Reconstruction and Improvement of Talin—Lanjik road Section (Km 71+500 to Km 90+200) of M1 Talin—Gyumri Road.

4. The Tranche 3 Project starts at km 71+500 in Talin community and end at km 90+200 close to Lanjik community – about 18.7km. This road is currently a 2nd category and has 2 opposite traffic lanes. After reconstruction this road section is expected to be 1st category with cement concrete pavement.

5. The reconstruction of 9 overpasses on M2 Yerevan-Artashat and M1 Yerevan-Ashtarak is financed from cost savings from Tranche 3. These works are being carried out by local contractors and are supervised by the Supervising Consultant/Engineer for Tranche 3.

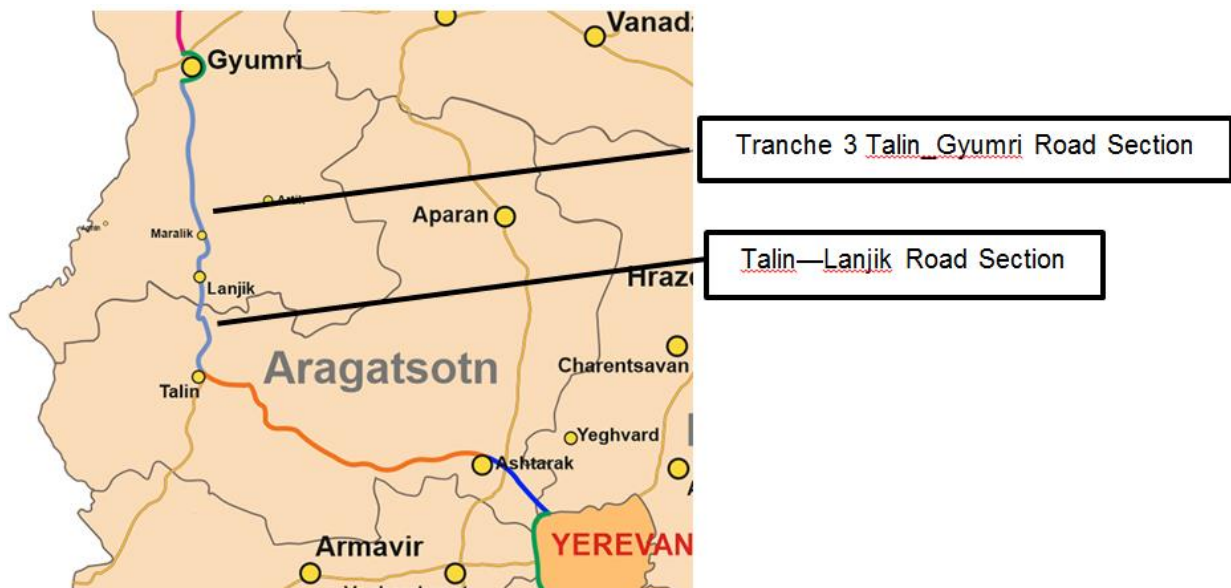


Figure 1. Tranche 3 of North-South Road Corridor

1. Construction Activities and Project Progress during Reporting Period

1.1 Talin—Lanjik Road Section (Km 71+500 to Km 90+200) of M1 Talin—Gyumri Road:

Sinohydro Corporation Ltd was hired for reconstruction and improvement of the road section and JV SPEA Engineering & IRD Engineering was recruited for providing supervision consulting services.

Construction works were implemented by Sinohydro Corporation Ltd and its subcontractor Stones LLC.

During the reporting period all sections was handed over to the Contractor.

The following construction activities were implemented: soil excavation, clearing and grubbing works, construction of culverts and underpass, embankment. Traffic regulating signs/signals have been installed for safety/security purposes and maintenance of road has been implemented.

1.2 Reconstruction/Construction/Rehabilitation of 9 Overpasses on North-South Road Corridor (M2 Yerevan-Artashat and M1 Yerevan-Ashtarak)

The reconstructions of 9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak are being carried out by local contractors and are supervised by the JV SPEA Engineering & IRD Engineering. Works on 9 overpasses are financed from cost savings from Tranche 3. The Environmental monitoring is implemented by TPIO.

1.2.1 Overpasses on M2 km 10+943 I n Ayntap, M2 km 22+850 in Masis, M2 km 25+630 in Azatavan and M1 km 21+550 in Ashtarak (M1 Yerevan-Ashtarak). The local contractor is Montagetransshin CJSC. During reporting period all the construction works have been finalized and during December all four overpasses have been handed over for final approval.

Non-compliances haven't been recorded during final environmental monitoring implemented by the TPIO (see final checklists of audits in annex G).

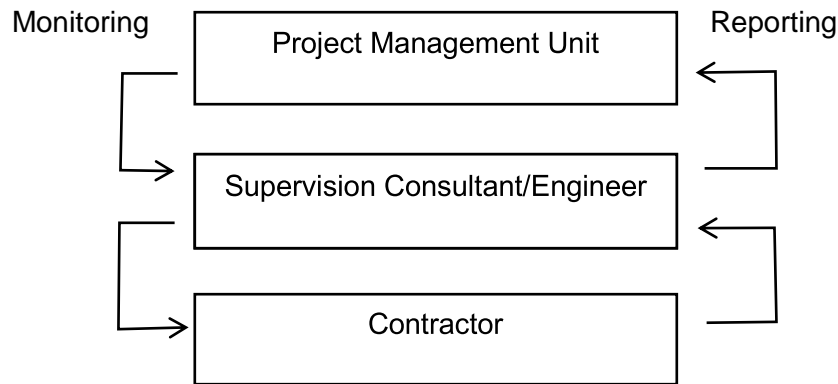
- 1.2.2 Overpass on M2 km 13+029 in Ayntap and Masis city. The local contractor is Ararat Chanshin LLC and Factory of Reinforce Bridge Concrete Structures CJSC JV. During reporting period all the construction works have been finalized and during December overpass has been handed over for final approval. Non-compliances haven't been recorded during final environmental monitoring implemented by the TPIO (see final checklists of audits in annex G).
- 1.2.3 Overpasses on M2 km 15+444 in Masis and Marmarashen, M2 km 24+147 in Burastan, M2 km 28+900 in Artashat. The local contractor is Sahakyanshin CJSC. During reporting period all the construction works have been finalized and during December all three overpasses have been handed over for final approval. Non-compliances haven't been recorded during final environmental monitoring implemented by the TPIO (see final checklists of audits in annex G).
- 1.2.4 Overpass on M2 km 21+800 (M2 Yerevan-Artashat) in Araqsavan and Dimitrov communities. The local contractor is Dorozhnik LLC and Hayk-Shin LLC JV. During reporting period all the construction works have been finalized and during December overpass has been handed over for final approval. Non-compliances haven't been recorded during final environmental monitoring implemented by the TPIO (see final checklists of audits in annex G).

2. Environmental Safeguards Staffing

Transport Project Implementation Organization is implementing day-to-day management of project execution. The TPIO includes a Social and Environmental staff whose responsibilities include the management of all 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.



2.1 TPIO Environmental and Social Staff

2.1.1 The Project Impact Management activities are undertaken by Head of Environmental Impact Management Service; and Environmental and archaeological Specialist:

Mr. Gevorg Afyan - Head of Environmental Impact Management Service 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.

Mr. Mikael Tevosyan - Environmental and Archaeological Specialist is responsible for the compliance of the projects to to safeguard policies of financing Donors and RA legislation.

2.2 The Talin—Lanjik Road Section

2.2.1 Consultant Environmental Safeguards Unit

Presently the Consultant Environmental Safeguard Unit consists of:

Ms. Edita Vardgesyan - Environmental Specialist (ES), responsible for handling environmental issues in the road section, ensuring Contractor's compliance with contractual environmental mitigation measures and Armenian environmental related legislation, monitoring and reporting.

Mr. Boris Gasparyan - Archaeological Specialist (AS), responsible for the consultancy on archaeological issues in the road section, compliance of the construction activities to the Armenian archaeological related legislation and inspection visits to the borrow pit, dumping and concrete plant sites with archaeological evaluation purposes.

2.2.2 Contractor's Health and Safety, Environmental, Archaeological and Social Unit

The Unit is staffed by five people:

Mr. Liu Mingjian, the HSE Director, is responsible for the overall management of the Unit;

Mr. David Ghambaryan - Environmental Specialist, to assist the HSE director on the environmental management plan implementation. He replaced Mr. Hovhannes Tovmasyan in the Talin-Lanjik section of the Tranche 3 Project;

Mr. Martin Asatryan - Social Impact Specialist, is responsible for the compliance of the Contractor's activities to social part of the ADB Safeguard Policy Statement;

Mr. Ashot Revazyan - Security and Health Specialist is responsible for the compliance of the Contractor's activities to health and safety part of the ADB Safeguard Policy Statement.

Mr. Artur Petrosyan - Archaeologist, is responsible for protection of historical, cultural and archaeological monuments from negative impacts of the construction activities within framework of the EMP implementation;

2.3 9 Overpasses (M2 Yerevan-Artashat and M1 Yerevan-Ashtarak)

2.3.1 Contractors' Health and Safety, Environmental and Social staff

2.3.1.1 Overpass on M2 km 13+029 in Ayntap and Masis city. The site responsible chief, foreman was Vigen Avagyan and environmental specialists, responsible on environmental, emergency, health and safety management is Minas Minasyan and Sargis Sargsyan.

2.3.1.2 Overpass on M2 km 21+800 (M2 Yerevan-Artashat) in Araqsavan and Dimitrov communities. The site responsible chief, foreman was Karapet Mikaelyan and environmental specialist responsible on environmental, emergency, health and safety management is Ruzanna Voskanyan.

2.3.1.3 Overpass on M2 km 10+943 in Ayntap. The site responsible chief, foreman was Yura Mnatsakanyan and environmental specialist responsible on environmental, emergency, health and safety management is Narek Qochryan.

2.3.1.4 Overpass on M2 km 22+850 in Masis. The site responsible chief, foreman was Artavazd Stepanyan and environmental specialist responsible on environmental, emergency, health and safety management is Narek Qocharyan.

2.3.1.5 Overpass on M2 km 25+630 in Azatavan. The site responsible chief, foreman was Gagik Gevorgyan and environmental specialist responsible on environmental, emergency, health and safety management is Narek Qocharyan.

2.3.1.6 Overpasses on M2 km 15+444 in Masis and Marmarashen, M2 km 24+147 in Burastan, M2 km 28+900 in Artashat. The site responsible chief, foreman was Ruben Sahakyan and environmental specialist responsible on environmental, emergency, health and safety management is Armine Hayrapetyan.

2.3.1.7 Overpasses on M2 km 28+900 in Artashat. The site responsible chief, foreman was Hamoz Avagyan and environmental specialist responsible on environmental, emergency, health and safety management is Armine Hayrapetyan.

2.3.1.8 M1 km 21+550 in Ashtarak. The site responsible chief, foreman was Manvel Khachatryan and environmental specialist responsible on environmental, emergency, health and safety management is Narek Qocharyan.

Part II Environmental Management

3. Environmental Safeguards Program

3.1 Compliance with National Safeguards

3.1.1 In order to comply with national safeguard system and national legislation, Contractor has obtained permits and licenses for construction activities the list of which is presented in Annex A.

3.1.2 As an environmentally active economic agent Contractors provide regular environmental reports to MNP in accordance with Armenian legislation. The quarterly reports for 2nd and 3rd quarters of the 2017 are being submitted by Contractor during the reporting period.

3.1.3 The Contractors of Talin-Lanjik road section and 9 Overpasses ensure all necessary communication with local (communities) and territorial administrative authorities (marzes) to comply with Armenian legislation.

3.1.4 Topsoil stockpiling operations are being implemented in accordance with applicable Armenian legislation and regulations, particularly RA Land Code (2001), RA Government Decision No.1396-N (2011) and RA Government Decision No.1404-N (2017).

3.1.5 The thresholds for monitoring of environmental parameters of dust, water, noise and vibration are set in accordance with standards and norms set by Armenian legislation as well as by the guidance for ADB funded projects.

3.2 Compliance with ADB Safeguards

3.2.1 In order to implement construction activities with minimum impact on the environment, it was requested that the implementation of construction activities meet requirements of EIA/EMP for Tranche 3 (Talin-Lanjik road section) and IEE/EMP for Tranche 1 (9 overpasses), which were prepared in accordance with ADB Environmental Policy and RA legislation.

3.2.2 Prior to operating any site for topsoil stockpiling and excavated material disposal the contractor is requested to prepare Site-specific Environmental Management Plan containing the identification of site-specific environmental impacts, risk assessment and mitigation measures in accordance with the Environmental Safeguards Information kit prepared by ADB Central & West Asia Department Safeguards Unit. The TPIO adopted and requests the Engineer and Contractor to pursue following procedures: (i) Contractors select the site for topsoil stockpiling or dumping of excavated material; (ii) Consultant ES and AE visit the site and provide Contractor with site evaluation report with identified sensitive receptors and recommendations on the site use; (iii) Contractor secures the site and prepares SEMP based on the findings of evaluation report and submits for Consultant approval; (iv) Consultant ES reviews the SEMP and Consultant issues an approval; (v) Then Contractor is permitted to start the site operation. In case of reconstruction of the 9 overpasses, there are not needed to select site for topsoil stockpiling and organize AE visit to the site (excavated material disposal sites located on constructed and modified landscapes). The SEMP of overpass is included risk assessment and mitigation measures of a dump site.

3.2.3 As Tranche 3 is “A” category project, ADB continues to conduct review missions at least every 6 months to check compliance of “North-South Road Corridor Investment Program” activities to ADB SPS (2009) requirements. The ADB conducts at least one review on 9 overpasses reconstruction

project as it is “B” category project. ADB mission conducted loan reviews in Talin-Lanjik road section and 9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak of North-South road corridor investment program during their sites visits in August, September and November, 2017. To monitor the ongoing situation joint visits were organized to the Talin—Lanjik Road Section by the environmental specialists of the TPIO, Consultant and Contractor with the ADB National Environmental Consultant on 23 August 2017, 19 September 2017 and also with ADB International Environmental Consultant on 10 July 2017 and on 15 November 2017. Site visit to 9 overpasses took place on 30 November, 2017 with the ADB National Environmental Consultant.

3.3 Contractor’s Compliance with the EMP

3.3.1 The Contractor is guided by the EIA and EMP for Tranche 3 as a part of the Bid and Contract documents. Compliance with EMP is being monitored and reported. The Engineer and TPIO are expressed their positions through official letters, regular weekly meetings as well as meetings related to the environmental issues.

3.3.2 As reported previously, the Contractor is requested to obtain permit for maximum permissible concentrations regarding the air emissions at Maralik concrete batching plant from Ministry of Nature Protection. The Contractor finally obtain the required permit during the reporting period, so they are requested to provide update on the CEMP as soon as possible, details of the progress will be reported in the future report.

3.3.3 During the reporting period construction activities haven’t taken place in those communities, where pre-construction public awareness meetings haven’t been implemented.

3.3.4 The SEMP’s for reconstruction of 9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak are available.

3.4 Approvals of the Site-specific environmental management plans for Quarries, Borrow Pits, Blasting works, Excavated Unsuitable Material Dumping, Topsoil Stockpiling, Concrete Batching Plants and Historical Monuments

Talin—Lanjik Road Section.

3.4.1 Series of evaluation site visits are implemented by Engineer's Environmental Specialist and Archaeology Expert to observe the sites proposed by Contractor for temporary topsoil stockpiling and for dumping of excavated unusable material located in Mastara and Talin communities.

3.4.2 Contractor has disposed the excavated unusable material without any approval of Engineer in 3 sites (at Km 79+500, Km 86+200 and at Km 87+000).

3.4.3 During the reporting period Contractor submitted separately SEMP’s for Mastara 2 (82+300) and Mastara 3 (km 80+800) dump sites, which has been approved.

3.4.4 The Contractor provides SEMP’s for Mastara-6 at km 79+500 and Km 87+000 dump sites, but approvals is still pending.

3.4.5 The status of topsoil stockpiling sites and excavated material dump sites, and the SEMP’s are presented below as of 29 December 2017.

No	Name of site	purpose	SEMP approved (Y/N)	Status of operation
1	Lanjik- 1 TSS	Topsoil stockpiling	Y/ approved on January 13, 2017	Operated
2	Lanjik-2 DS	Excavated subsoil dump site	Y/ approved on March 9, 2017	Operated
3	Lanjik-4 TSS	Topsoil stockpiling	Y/ approved on January 13, 2017	Operated
4	Mastara-4 TSS at Km 80+800	Topsoil stockpiling	Y/ SEMP is approved on October 12, 2017	Operated
5	Mastara-3 DS at Km 80+800	Excavated subsoil dump site	Y/ SEMP is approved on October 24, 2017	Operated
6	Mastara-1 TSS at Km 81+200	Topsoil stockpiling	Y/ SEMP is approved on October 12, 2017	Operated
7	Mastara-2 DS at Km 82+300	Excavated subsoil dump site	Y/ SEMP is approved on October 24, 2017	Operated
8	Site at Km 83+000	Excavated subsoil dump site	N/SEMP is not submitted	Operated
9	Mastara-5 TSS at Km 85+200	Topsoil stockpiling	Y/ SEMP is approved on October 12, 2017	Operated
10	Site at Km 87+000	Excavated subsoil dump site	N/SEMP is not submitted	Operated
11	Mastara-6 DS at km 79+500	Excavated subsoil dump site	N/ SEMP is submitted	Non Operated
12	Mastara-7 TSS at km 76+600	Topsoil stockpiling	Y/ SEMP is approved on November 6, 2017	Operated
13	Mastara-8 DS at km 80+000	Excavated subsoil dump site	N/ SEMP is not submitted	Non Operated

3.4.6 It is worth mentioning that Contractor submitted in a proper manner all the SEMP's for the topsoil stockpiling sites during the reporting period, which has been approved. But still, approvals for 2 SEMP's for currently operated dump sites are awaited, because there were some comments and remarks from the Engineer, which should be fixed by the Contractor.

9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.

3.4.7 During the reporting period all the Contractors finished their work. Final audit took place for each site. checklists was prepared by the Contractors reviewed and approved by the Engineer and TPIO (approved checklists presented in Annex G).

3.5 Tree management plan

3.5.1 During the reporting period Contractor hired a specialized company, the Armenian tree Project for the tree survey. Contractor provided to Engineer the results of survey containing the record of quantities and the types of hindering vegetation and their locations and applied for Engineer's permission on tree cutting.

3.5.2 The tree cutting permission was conditionally issued to Contractor by the letter 489 dated October 24 based on the submitted Tree management plan containing the results of survey. The conditions were that Contractor shall revise the Tree management plan according to provided comments, the process shall be properly documented and Contractor shall confirm his commitment to re- plant the cut trees in the impacted communities in the amounts 10: 1 (10 trees/ shrubs instead of 1 cut tree/ shrub).

3.5.3 Contractor re-submitted to Engineer the Tree management plan revised according to Engineer's comments on November 1, 2017 which was conditionally approved by Engineer on November 3 under the condition that the second part "Tree planting" shall be submitted to Engineer before March 1, 2018.

3.6 ADB Mission

3.6.1 To check compliance of the Program activities to the ADB SPS (2009) requirements an ADB audit missions took place in July, August, September and November, 2017. To monitor the ongoing situation joint visits were organized to the Talin—Lanjik Road Section by the environmental specialists of the TPIO, Consultant and Contractor with the ADB National Environmental Consultant on 23 August 2017, 19 September 2017 and also with the ADB International Environmental Consultant on 15 November 2017. Site visit to 9 overpasses took place on 30 November, 2017 with the ADB National Environmental Consultant. The following non-conformances are identified:

3.6.1.1 Talin—Lanjik Road Section. Non-permitted operation of the borrow pits; operation of the dumping sites for excavated material and topsoil stockpiling without prepared and approved SSEMP; dumping of material outside of the ROW; washing trucks outside of the designated areas, trucks carrying excavated material without covers; poor sanitary conditions; some staff worked without PPE; Leakages of oil and fuel, malfunctioning of the refueling system in the construction camp.

3.6.1.2 Reconstruction/Construction/Rehabilitation of 9 Overpasses on North-South Road Corridor (M2 Yerevan-Artashat and M1 Yerevan-Ashtarak. Several remarks on the waste management and workers' health and safety requirements implementation.

3.7 Trainings and awareness raising orientation

3.7.1 Talin—Lanjik Road Section.

3.7.1.1 Regular awareness raising discussions, toolbox talks and environmental compliance trainings on ADB environmental, health & safety safeguard requirements were conducted for the Contractor's staff.

3.7.1.2 The training about archaeological component and chance finds procedure was conducted on 25 of October 2017 in Contractor's Maralik Camp (office).



3.7.1.3 On-site environmental/ health & safety trainings were implemented by Contractor's safeguard staff for the newly hired workers.

3.7.2 9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.

3.7.2.1 Workers of all 4 contractors were briefed on general measures in case of Emergency situations, Occupational Health & Safety, Environmental issues as part of SEMP by contractors' environmental specialists. Briefing has been done on a continuous basis during individual meetings with workers as well. Workers were periodically supervised to ensure requirements set in SEMP.

3.8 **Archaeological Works Program** (Talin—Lanjik Road Section)

3.8.1 Based on the archaeological investigations done during the previous reporting period the Archaeological Work Plan (AWP) was prepared and approved.

3.8.2 During reporting period the Institute of Archaeology and Ethnography SNCO, NAS of RA implemented archaeological excavations at the locations 82 + 900 km - 83 + 600 and 75 + 050 km – km 75 + 100. The subcontractor NAS RA has completed the excavations at the Complex of Mastara 1 Early Bronze Age settlement at km 80+400 - km 80+500, Km 73+300 - km 73+400 and km 73+800 - km 73+900 in the territory of archaeological site of Yeghnasar Early Bronze Age settlement and tomb field, as well as at km 79+650 - km 79+700 in the territory of Archaeological Complex of Mastara 1 Naolith - Chalcolithic site – settlement. As a result of, all the territories of the aforementioned archaeological monuments articulated as archaeologically free. Information about the results submitted to the RA Ministry of Culture (MoC) for approval. During the reporting period approvals

given for the sites 75 + 050 km – km 75 + 100, km 80+400 - km 80+500 and 82 + 900 km - 83 + 600. For the rest, approvals are still awaited and will be presented in the future reports.

3.8.3 During the archaeological excavations regular monitoring have been conducted by the Engineer's archaeological specialist in cooperation with TPIO environmental and archaeological specialist.

3.9 Grievance redress mechanism and Consultations

3.9.1 Grievance redress mechanism to address the complaints/suggestions of communities on excessive dust, noise, improper waste dumping and on other environmental issues is established. The grievance redress mechanism is additional to the existing channels of petitions in the form of letters and personal pleas established by local governments.

The Grievance Procedure and Redress Mechanism steps are shown graphically in figure 2.

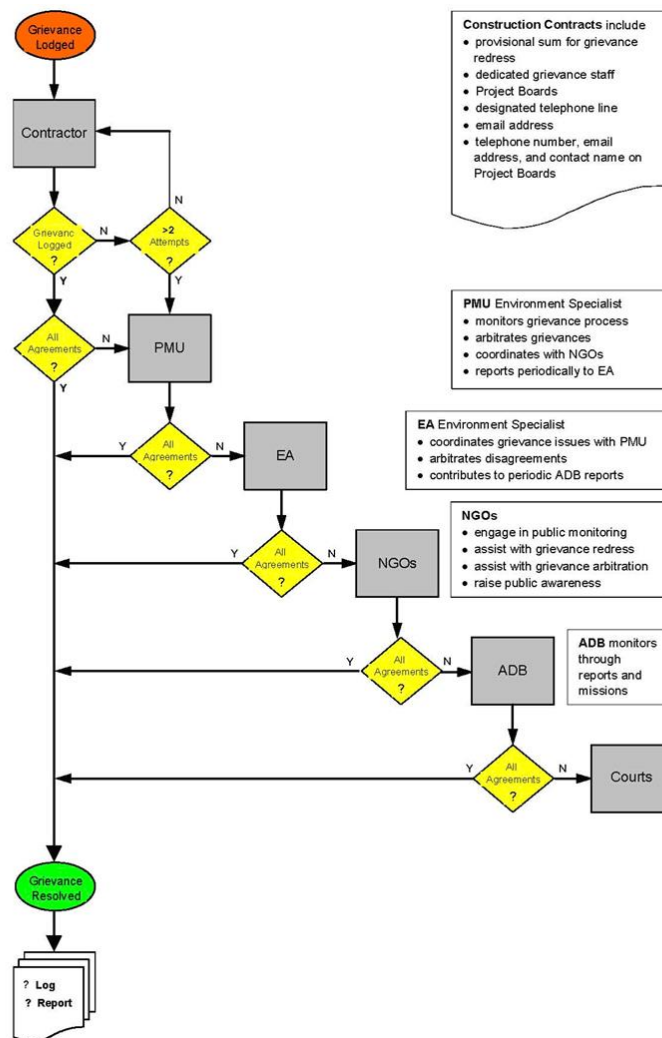


Figure 2. Grievance Procedure and Redress Mechanism

3.9.2 Contractor provided the Complaints Register book to every impacted community which is kept at the office of head of the community and is open accessed to community members. Also the posters

posted in every community containing the contact information where to apply should any disturbances occur. Mr. Martin Asatryan, the Contractor's Social Relation Specialist, is responsible for collecting concerns about project activity. His telephone number, email address, and name are posted on the posters.

3.9.2.1 Talin—Lanjik Road Section. Pre-construction public awareness meetings have been held in all affected communities during previous reporting periods.

3.9.2.1.1 During the reporting period 5 written complaints were logged in Mastara community and 0 in Lanjik community. Complaints were regarding the Contractors activities, which cause damage to the land plots outside RoW. So, as a reply to those issues Contractor has implemented the land restoration works and compensated the damage to the satisfaction of the owners for all the mentioned complaints. Those complaints were closed and written confirmation of the satisfaction received from the APs after completion of the aforementioned activities was received.

3.9.2.1.2 Contractor has implemented relocation of 1 cross-memorial on 20 July, 2017 in Mastara community at 79+900 to the satisfaction of the owner.

3.9.2.2 9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak. The public consultations have been held in all affected communities.

3.9.2.2.1 No complaints and/or suggestions on environmental issues related to construction activities are registered for 9 overpasses.

3.10 **Communication**

3.10.1 Communication with the TPIO, the Consultant and the Contractor's environmental team during the reporting period took place via official correspondence and emails, phone calls and personal contacts. The joint meeting related to environmental issues among the ADB NEC, TPIO, Consultant and Contractor representatives took place on August 23, 2017, September 19, 2017, November 15, 2017 and November 30, 2017. Also environmental issues discussed during regular weekly meetings in the Contractor's office. Particularly the following issues are being raised and processed:

3.10.1.1 Talin—Lanjik Road Section.

- ADB's mission visit;
- on the non- permitted sites used for excavating subsoil and missing information on sources of material and quarries / borrow pits;
- on the Contractor's environmental staff;
- on the non- permitted sites used by Contractor for topsoil and subsoil disposal;
- the progress in development of SEMP's;
- data on stripped topsoil quantities;
- on instrumental measurements on dust, noise, water quality and vibration;
- trees that need to be removed from the RoW during the construction process;

- the findings of the monitoring visits, on the repeated non-conformances detected during the monitoring and on correction action;
- on the missing information on sources of material for embankment;
- on the archaeological issues;
- on the missing weekly monitoring and monthly reports;
- other routine issues.

3.10.1.2 9 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.

- ADB's mission visit;
- on the findings of monitoring visits;
- other routine issues.

Part III Environmental Monitoring

4. Monitoring

4.1.1 Talin-Lanjik road section. Regular monitoring has been performed during the reporting period according to the monitoring program developed based on the ADB safeguards and EMP requirements. The Monitoring program includes:

- a. Regular monitoring site visits on monthly basis to check compliance of construction activities to the EMP requirements, as well as monitoring of topsoil stockpiling and excavated material disposal;
- b. Unscheduled inspection visits when needed;
- c. Instrumented measurements and monitoring of environmental parameters of air quality, noise and vibration, water quality;
- d. Completion of the monitoring checklist and summary of compliances and non-compliances;
- e. Issue the non-compliance notices to the Contractor;
- f. Collection of monitoring data and providing to the PPMS
- g. Review of the Contractor's weekly monitoring and monthly reports.

4.1.2 Overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak. The Monitoring program includes:

- a. Regular monitoring site visits on monthly basis to check compliance of construction activities to the EMP requirements, as well as monitoring of excavated material disposal;
- b. Unscheduled inspection visits when needed;
- c. Completion of the monitoring checklist and summary of compliances and non-compliances;
- d. Issue the non-compliance notices to the Contractor;
- e. Collection of monitoring data and providing to the PPMS
- f. Review of the Contractor's weekly monitoring reports.
- g. Participation on site visits in the final phase of the hand over process of each overpass during final audit.
- h. Checking and approving final audit checklists.

4.2 Monitoring of the Compliance with EMPs

Regular monitoring visits have been implemented during the reporting period until civil works stopped in December because of unfavorable weather conditions. The regular monitoring were carried out by Contractor's environmental specialist on a weekly basis and by the PMC/Engineer's environmental specialist on a monthly basis.

To demonstrate deviations from accepted practices for protection of environment two terms are used in the report. Non-conformance is a detected issue that can be solved immediately or is not significant. Non-compliance is a detected issue that cannot be solved immediately, is significant or

repeated periodically. In case of non-compliances, the non-compliance official letter is issued to the Contractor and works are stopped in an affected section until an issue is solved. In case of non-conformances, the non-conformances are reported to the contractor through monthly monitoring checklist with determined deadline when an issue should be solved.

4.2.1 The detected non-conformances during the reporting period are:

4.2.1.1 Tranche 3 Talin-Lanjik road section.

- Contractor is operating topsoil stockpile and dump sites without Engineer's approval;
- Contractor operate borrow pits without proper approvals and permits;
- the Contractor entered the surrounding private fields without permission;
- defects detected at concrete batching plant area;
- dumping of material outside, at the edge of the ROW;
- the trucks were overloaded and not covered entering public roads;
- insufficient sanitary conditions for workers in the construction sites;
- leakages of oil and fuel;
- contractor is not implementing mud spread preventive measures and cleaning of public roads;
- insufficient water spraying as a dust control measure;

4.2.1.2 9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak.

- Some spills of oil, construction and asphalt waste were detected in construction site;
- Some workers were not using safety belts, helmets and other relevant PPE's;
- The debris and garbage were detected in construction site;
- Health and safety concerns recorded due to site establishment, particularly stairways; for climbing to the bridge were installed not in a proper way and etc.;
- insufficient water spraying as a dust control measure;

4.3 Instrumented Measurements and Monitoring of Environmental Parameters of Dust Noise, Vibration and Water Quality in Talin-Lanjik road section

4.3.1 Baseline data collection. Contractor has completed the baseline data collection for dust, noise and vibration in 2016.

4.3.2 Routine measurements and monitoring. Contractor has implemented measurements of the required parameters on monthly basis during the reporting period. The points were selected based on the principle of on- going construction works.

4.3.3 Noise level in all measured points slightly exceeds the baseline but was within Armenian legislative standards. Impacts are not thought significant as works at each location are temporary and no complaints were received. Nevertheless, to further reduce noise impacts Contractor have been advised to reduce working hours and intensiveness in the mentioned locations as a first step so the Project team can evaluate effectiveness of those measures in the future and understand is it enough to solve the issue or not. Dust level was almost the same as the baseline and far below the legislative standards (both daily average and maximum). According to the results of vibration instrumental measurements, no vibration exposures were detected in all vibration measurement points. The details are presented in Annex D.

4.4 **Non-compliance Notices**

4.4.1 Two non-compliance notices have been issued to the Contractor on August 22, 2017, September 15 by the Engineer. The Contractor was notified on the non-compliances to EIA/EMP with regard to:

- Borrow pit operations at km 86+400 and km 87+400 without Engineers approval and operation permit,
- Health and Safety concerns,
- The stripped topsoil is mixed with unsuitable material and disposed in dumpsites,
- The topsoil and dump sites operate without the Engineer's approval,

4.4.2 Draft version of the SEMP for the borrow pit at km 86+400 have been provided by the Contractor during the reporting period. Engineer provides their comments and remarks to the Contractor, so the document should be updated according that comments. As a support to the Contractor TPIO has forced the preparation of the special decision by which the Contractor will get a chance to receive the relevant legal permit for the borrow pit operation by a simplified procedure. Government of RA should ratify the aforementioned decision and then only simplified procedure could be available for the Contractor.

4.4.3 Contractor was notified on all the non-conformities and requested to correct before the deadline set for correction. Some of defects were corrected by Contractor but the most remain non- corrected (detailed table presented in Annex B).

4.4.4 Health and safety is continuously managed on the sites and no accidents or near misses were recorded within reporting period.

Conclusions and Recommendations

4.4.5 As an environmentally active economic agent the Contractors provide regular environmental reports to MNP. The thresholds for monitoring of environmental parameters of dust, water, noise and vibration are set in accordance with standards and norms set by Armenian legislation as well as by the guidance for ADB funded projects.

4.4.6 In order to implement construction activities with minimum impact on the environment, it was requested that the implementation of construction activities meet EIA/EMP for Tranche 3 (Talin-Lanjik road section) and IEE/EMP for Tranche 1 (9 overpasses) requirements. The contractors are requested to prepare Site-specific Environmental Management Plans containing the identification of

site-specific environmental impacts, risk assessment and mitigation measures in accordance with the Environmental Safeguards Information kit prepared by ADB Central & West Asia Department Safeguards Unit. ADB mission conducted loan reviews in North-South road corridor investment program. (3.2.1-3.2.3)

4.4.7 Environmental and archaeological evaluation visits to the sites for dumping and temporary stockpiling of stripped topsoil have been implemented. Site-specific environmental management plans for used topsoil stockpiling sites: Mastara-1 (km 81+200), Mastara-4 TSS (km 80+800), Mastara-5 (km 85+200) and Mastara 7 (km 76+600) have been approved by the Engineer during the reporting period. SEMP's for Mastara 2 (82+300) and Mastara-3 (km 80+800) dump sites also were approved during the reporting period, for other dump sites SEMP's were submitted and the approval process is ongoing. The SEMP's for Maralik concrete plant and camp area were approved.

4.4.8 All four contractors reconstructing 9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak implemented post-construction audits with the environmental specialists of Engineer and TPIO. Final audit checklists submitted by the contractors, checked and approved by the TPIO specialists.

4.4.9 Environmental safeguard reviews were conducted within ADB audit missions. The Contractors are requested to implement the construction works in accordance with the recommendations of ADB missions. (3.6.1)

4.4.10 Regular awareness raising discussions and environmental compliance trainings on ADB safeguards and Armenian legislative requirements for environment and Health & Safety, measures planned in EMP were conducted for Engineer's site inspectors and the Contractor's newly hired workers. All workers of 4 contractors reconstructing 9 overpasses were briefed on general measures in case of Emergency situations, Occupational Health & Safety, Environmental issues by the contractors' environmental specialists. (3.7.1 – 3.7.2)

4.4.11 Site visits have been implemented by Engineer's AE for archaeological evaluation of sites proposed by Contractor for topsoil stockpiling, dump sites, quarries/borrow pits and other territories that they want to use outside of the RoW. No construction works have been implemented in next proximity to other archaeologically sensitive areas. (Talin—Lanjik Road Section) (3.8.1-3.8.3)

4.4.12 In the concrete plant area Contractor improved waterproof inside walls of the washout pits by a lining of concrete and construct appropriate drainage channels.

4.4.13 During reporting period TPIO has initiate an inter-agency working group within the governmental structures of RA for examination of the Borrow pit issue. Several meetings of that group took place and as a result TPIO prepared draft government decision, which is in a circulation phase within the relevant governmental parties of RA. By the aforementioned decision TPIO proposed a new simplified procedure for getting the permission for use of Borrow pits for implementation of the NSRP.

4.4.14 Specialized company hired by the Contractor for preparation of the Tree Management Plan. Surveys took place for record of the quantities and the types of hindering vegetation and their locations. During the reporting period tree management plan was submitted by the Contractor and approved by the Engineer under condition that the second part "Tree planting" shall be submitted to Engineer before March 1, 2018.

4.4.15 Archaeological excavations implemented in all archaeological monuments. Results presented to the Engineer and TPIO, as well as submitted to the MoC for approval. Regular monitoring of those excavations conducted.

4.4.16 Grievance redress mechanism has been established. Contractor's social specialist met with the head of Mastara community and organized the re-location of the 1 memorial hindering construction works. During the reporting period 5 written complaints was logged in register book by the residents of Mastara community. No complaints and/or suggestions on environmental issues related to construction activities are registered for 9 overpasses as of today (3.9.1-3.9.3).

4.4.17 Communication among environmental specialists of the TPIO, the Consultant and the Contractors took place during the reporting period (3.10).

4.4.18 Monitoring activities implemented during the reporting period included monitoring site visits on monthly basis to check compliance of civil works to the EIA/EMP. Required correction actions have been implemented and some of detected non-conformances have been neutralized. Routine measurements of the dust, noise and vibration monitoring parameters have been carried out during the reporting period.

4.4.19 The non-conformances detected during the monitoring visits were reflected in the monitoring checklists. Some of them were improved immediately or during the time period set for improvement. Some non-conformances were improved partially. Those non-conformances which will not be improved during the time set for correction action will result in non-compliance notices to the Contractor. The non-conformances detected during the monitoring visits were presented in Annex B.

Action plan for the reporting period from January to June 2018:

N	Action	Time frame	Responsible
1.	Consultancy provided to Contractor's environmental team on ADB Safeguard Policy Statement	Every month during January-June 2018	Consultant
2.	Consultancy provided to Contractor's environmental team on the Armenian Environmental legislation requirements	Every month during January-June 2018	Consultant
3.	Evaluation site visits and assistance to the Contractor in the development of Site-specific Environmental Management Plans for topsoil stockpiling and excavated material dump sites and other routine working documents.	Upon Contractor's request	TPIO/Consultant
4.	Assistance on preparation of the SEMP's and other relevant documents for quarries/borrow pits, as well as strictly follow up on compliance with the SEMP requirements during the exploitation period. Evaluation site visits for identification of the environmental and safety risks in the existing borrow pit sites.	Every month during January-June 2018	TPIO/Consultant
5.	Preparation and approval of Site-specific Environmental Management Plans for topsoil stockpiling, excavated material dump sites, concrete plant and construction camp	Upon the need	TPIO /Consultant/ Contractor
6.	Review and approval of weekly and monthly reports, method statements and other documents submitted by Contractor	January-June 2018	TPIO /Consultant/ Contractor
7.	Placement of signboards with project information and safety warning signs along the road sections, all disposal sites and topsoil stockpiles.	Upon new road section construction will be commenced, and new disposal site and topsoil stockpile will be established	Consultant/ Contractor
8.	Regular awareness orientation sessions for newly recruited staff	Upon the need	Consultant/ Contractor
9.	Review the outputs of the construction monitoring program with regard to measurement of dust, noise, water quality and vibration.	Every month during January-June 2018	Consultant
10.	Monitor the Contractor's construction works to ensure the compliance with EMP, CEMP and SEMP requirements	By the end of every month	TPIO /Consultant
11.	Collect and provide the relevant information on environmental indicators to PPMS	By the end of December and end of June 2018	TPIO /Consultant
12.	Implementation of chance find procedure in case of discovery of an archaeological artifacts during construction	Upon the need	Consultant/ Contractor
13.	Review and addressing the GRM	End of every month	TPIO /Consultant

14.	Other routine issues like unscheduled site visits, follow up of the detected defects, environmental assessment of re-designs, management of tree cutting, review and approval of Contractor's documents, etc.	Upon the need	TPIO /Consultant
15.	Reporting on environmental safeguards	Monthly Bi-annual	TPIO /Consultant/ Contractor

ANNEX A: Status of environmental permits and licenses

Environmental Permits and Licenses	In Place	Name/Place	Comment (Name of the authority, License number, Date)
Tranche 3 Talin-Lanjik road section			
Environmental expertise conclusion	Yes	RA MNP	Environmental Impact assessment and Expertise Centre SNCO/ 15 July 2016/ EE 61
Borrow pits	No	-	Contractor was recommended either cooperate with the partners who has the legal permits already, or wait until the government decision will be ratified, by which special regulation for the borrow pit operation will be available only for North South Road Corridor Investment Program implementation.
Quarries	Yes		Contractor buys material form the existing quarry (Ministry of Energy infrastructures and natural resources of the RA, Mining Permit No. SHATV- 29/112 dated 20.10.2012)
Topsoil stockpiling site	Yes	Local self-governmental bodies/relevant marzpetarans	All the agreements provided by the relevant authorities (Shirak and Aragatsotn marzpetarans) and contracts with the local self-governmental bodies are available.
Dumping site	Yes	Lanjik-2 DS/ Mastara-2 DS Mastara-3 DS/ Lanjik community/ Mastara community/ Shirak marz	Contracts on handing over the excavated subsoil to Lanjik and Mastara communities signed with the Head of those communities.
Disposal of municipal and construction waste	Yes	Municipal landfill/ Maralik city	Contract N 9 on disposal of garbage at Maralik municipal landfill signed on 1 Aug 2016
Concrete Batching plant	Yes	RA MNP	Permit from MNP on maximum acceptable concentrations regarding the emissions at Maralik concrete batching plant
9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak			
Disposal of municipal and construction waste Overpass on M2 km 10+943 in Ayntap.	Yes	Masis town municipal landfill (waste disposal facility)	Agreement between Masis city "Masis housing & utilities" OJSC and Montagetransshin CJSC on hand over the disposed construction waste dated 05 September 2016
Disposal of municipal and construction waste	Yes	Masis town municipal landfill (waste	Agreement between Masis city "Masis housing & utilities" OJSC and Araratchanshin LLC on hand over the

Overpass on M2 km 13+029 in Ayntap and Masis city.		disposal facility)	disposed construction waste dated 01 July 2016
Dumping site Overpass on M2 km 15+444 in Masis and Marmarashen.	Yes	Burastan DS/ Burastan Community	Permit from Head Burastan community leader on hand over the excavated subsoil and disposed non-hazardous construction waste dated 01 June 2015
Disposal of municipal and construction waste Overpass on M2 km 21+800 in Araqsavan and Dimitrov communities	Yes	Dimitrov DS / Dimitrov community	Contract on handing over the demolished and excavated materials to Dimitrov community signed with the Head of community signed 27 of June 2016
Disposal of municipal and construction waste Overpass on M2 km 22+850 in Masis village.	Yes	Masis town municipal landfill (waste disposal facility)	Agreement between Masis city "Masis housing & utilities" OJSC and Montagetransshin CJSC on hand over the disposed construction waste dated 05 September 2016
Dumping site Overpass on M2 km 24+147 in Burastan.	Yes	Burastan DS/ Burastan Community	Permit from Head Burastan community leader on hand over the excavated subsoil and disposed non-hazardous construction waste dated 01 June 2015
Disposal of municipal and construction waste Overpass on M2 km 25+630 in Azatavan.	Yes	Masis town municipal landfill (waste disposal facility)	Agreement between Masis city "Masis housing & utilities" OJSC and Montagetransshin CJSC on hand over the disposed construction waste dated 05 September 2016
Disposal of municipal and construction waste Overpass on M2 km 28+900 in Artashat.	Yes	Artashat town municipal landfill (waste disposal facility)	Permit from Head Artashat community leader on hand over the excavated subsoil and disposed non-hazardous construction waste N 025/413 dated 27 July 2016
Disposal of municipal and construction waste Overpass on M1 km 21+550 in Ashtarak	Yes	Ashtarak town municipal landfill (waste disposal facility)	Agreement between "Eco Center" LLC and Montagetransshin CJSC on hand over the disposed construction waste dated 01 November 2016

ANNEX B: Non-Conformances Detected During Monitoring Visits in Reporting Period

Talin—Lanjik Road Section

	Reference	Requirement	Action to date	Action required/comment
1.	Contractor is operating 5 dump sites without Engineer's approval	SEMPs and sites operation shall be acceptable by Engineer	Partially improved	All the SEMP's for the dump sites are prepared and submitted to the Engineer. 2 SEMP's have been approved during the reporting period, but the others still pending.
2.	Contractor is operating 4 topsoil stockpiling sites without Engineer's approval	SEMPs and sites operation shall be acceptable by Engineer	Improved	All the SEMP's presented and approved during the reporting period.
3.	The Contractor entered the surrounding private fields without permission	The Contractor is required do not enter surrounding private fields without permission and restore impacted lands	Improved	The Contractor is required do not enter surrounding private fields without permission.. Appropriate instruction were provided by TPIO and Engineer. Toolbox talks for the Contractors staff provided by TPIO during the reporting period. Damage to the lands have been compensated to the owners satisfaction, as well as land restoration works done as per need.
4.	Defects detected at concrete batching plant area	Ensure proper drainage and proper construction and lining of a waste water collection basin	Improved	No further actions are required Appropriate instruction were provided by TPIO and Engineer
5.	Dumping of material outside, at the edge of the ROW, without Engineer's approval	The Contractor is required to move the all dumped material from outside of the ROW to the approved dumping sites	Improved	No further actions are required Appropriate instruction were provided by TPIO and Engineer

6.	Some of the trucks were overloaded and not covered entering public roads	trucks entering the public road loaded with earth or bulked material shall be covered	Partially improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
7.	Insufficient sanitary conditions for workers in the construction sites	Adequate toilets, water as well as proper lunch facilities need to be provided	Partially improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
8.	Leakages of oil and fuel	Ensure Leakage managed immediately in accordance with SEMP	Partially improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
9.	The Contractor is not implementing mud spread preventive measures and cleaning of public roads	Place gravel layer at every entrance to the existing HW from construction site	Improved	No further actions are required
10.	Insufficient water spraying as a dust control measure	Ensure proper dust control increasing frequency of water sprinkling	Partially improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
11.	The stones scattering into the private areas, as well as on the road.	Ensure community safety and compensate the damage to the land owners after land restoration	Not improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
12.	The concrete block placed in the garden outside the Talin camp area should be removed.	Remove concrete blocks and restore area	Partially improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
13.	Borrow pit operation at km 86+400 without Engineers approval and operation permit	Stop operation of the borrow pit until obtaining required approval and permit	Not improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued
14.	Borrow pit operation at km 87+400 without Engineers approval and operation permit	Stop operation of the borrow pit until obtaining required approval and permit	Not improved	The Contractor shall follow the instruction otherwise non-compliance shall be issued

9 overpasses on M2 Yerevan-Artashat and on M1 Yerevan-Ashtarak

	Reference	Requirement	Action to date	Action required/comment
1.	Spills of oil, construction and asphalt waste were detected in construction site	Detected construction waste should be hauled from construction sites and organize dumping in a proper way	Improved	No further actions are required
2.	Construction waste was detected in construction site	Detected construction waste should be hauled from construction site	Improved	No further actions are required
3.	Some workers were not using safety belts, helmets and other relevant PPE's	Workers are required to use PPE's immediately during site visits	Improved	No further actions are required
4.	The debris and garbage were detected in construction site	Detected debris and garbage should be hauled from construction sites	Improved	No further actions are required
5.	Health and safety concerns recorded due to site establishment, particularly stairways; for climbing to the bridge were installed not in a proper way and etc.	Reinforce stairways and ensure safety at the construction sites.	Improved	No further actions are required
6.	Insufficient water spraying as a dust control measure	Water spraying should be implemented upon need.	Improved	No further actions are required

ANNEX C: Summary Table on Status of Archaeological Excavations

	Community	Name of site	Exacavating entity	Contract signed	Status of works
1	Talin, Mastara, Akunk	Yeghnasar Archaeological Complex	IAE of NAS	Yes	Finished
2	Mastara	Mastara Great Kurgan	IAE of NAS	Yes	Finished
3	Mastara	Mastara-1 Archaeological Complex	IAE of NAS	Yes	Finished
4	Mastara	Mastara-2 Archaeological Complex	IAE of NAS	Yes	Finished

Measurement time (from- till)	Sound Level (equivalent to sound level), LAeq, dBA		Maximum Sound Level, LAmax, dBA		Threshold limit value (equivalent to sound level), dBA	Threshold limit value (maximum sound level), dBA
	operational	baseline (30.11.16)	operational	baseline (30.11.16)		
№1 (Km 87+400)						
July						
11:35-11:45	68.7	59.8	90.4	75.7	55	70
17:15-17:25	69.9	58.0	88.1	77.5		
August						
11:35-11:45	68.7	59.8	88.6	75.7	55	70
17:35-17:45	69.9	58.0	88.1	77.5		
September						
11:35-11:45	66.8	59.8	83.9	75.7	55	70
16:40-16:50	64.6	58.0	83.4	77.5		
October						
10:40-10:50	74	59.8	88.2	75.7	55	70
14:45-14:55	75.4	58.0	89.7	77.5		
№2 (Km 85+000)						
July						
11:35-11:45	68.7	59.8	90.4	75.7	80	
17:15-17:25	69.9	58.0	88.1	77.5		
August						
11:35-11:45	68.7	59.8	88.6	75.7	80	
17:35-17:45	69.9	58.0	88.1	77.5		
September						
11:35-11:45	66.8	59.8	83.9	75.7	80	
16:40-16:50	64.6	58.0	83.4	77.5		
October						
10:40-10:50	74	59.8	88.2	75.7	80	
14:45-14:55	75.4	58.0	89.7	77.5		
№4 (Km 78+500)						
July						
11:35-11:45	62.5	56.0	83	70.0	55	70
17:15-17:25	62.3	59.2	84.7	71.7		
August						
11:35-11:45	60.1	56.0	79.5	70.0	55	70
17:35-17:45	60.4	59.2	82.9	71.7		
September						

11:35-11:45	59.5	56.0	84.2	70.0	55	70
16:40-16:50	61.3	59.2	85.6	71.7		
October						
10:40-10:50	67.6	56.0	85.8	70.0	55	70
14:45-14:55	69.1	59.2	82.7	71.7		

Table 2: Results of dust (PM2.5 and PM10) measurements made at sensitive points during the reporting period compared with baseline noise measurements made on 30.11.2016

Measurement time (from- till)	Dust actual concentration, mg/m ³		Maximum permissible concentration (MPC) for dust, mg/m ³	
	operational	baseline (30.11.16)	Daily average	Maximum value
№1 (Km 87+400), PM2.5				
July				
Average value	0.01	0.005	0.035	0.16
August				
Average value	0.014	0.005	0.035	0.16
September				
Average value	0.01	0.005	0.035	0.16
October				
Average value	0.01	0.005	0.035	0.16
№1 (Km 87+400), PM10				
July				
Average value	0.024	0.012	0.06	0.3
August				
Average value	0.035	0.012	0.06	0.3
September				
Average value	0.019	0.012	0.06	0.3
October				
Average value	0.019	0.012	0.06	0.3
№2 (Km 85+000), PM2.5				
July				
Average value	0.005	0.007	0.035	0.16
August				
Average value	0.009	0.007	0.035	0.16
September				
Average value	0.009	0.007	0.035	0.16
October				
Average value	0.008	0.007	0.035	0.16
№2 (Km 85+000), PM10				
July				

Average value	0.014	0.015	0.06	0.3
August				
Average value	0.02	0.015	0.06	0.3
September				
Average value	0.017	0.015	0.06	0.3
October				
Average value	0.017	0.015	0.06	0.3
№4 (Km 78+500), PM2.5				
July				
Average value	0.006	0.015	0.035	0.16
August				
Average value	0.01	0.015	0.035	0.16
September				
Average value	0.008	0.015	0.035	0.16
October				
Average value	0.016	0.015	0.035	0.16
№4 (Km 78+500), PM10				
July				
Average value	0.016	0.031	0.06	0.3
August				
Average value	0.025	0.031	0.06	0.3
September				
Average value	0.019	0.031	0.06	0.3
October				
Average value	0.032	0.031	0.06	0.3

Table 3: Results of vibration measurements made at sensitive points during reporting period (baseline vibration measurements)

Measurement time (from- till)	Vibration actual exposure value, m/s ²		Vibration exposure action value (EAV), m/s ²	Vibration exposure limit value (ELV), m/s ²
	operational	baseline (30.11.16)	Daily average	Maximum value
№1 (Km 87+325)				
Average value of all the measurements during the reporting period	0	0	0.5	1.15
№3 (Km 81+650)				
Average value of all the measurements	0	0	0.5	1.15

during the reporting period				
№4 (Km 78+500)				
Average value of all the measurements during the reporting period	0	0	0.5	1.15

1) As a TLV for evaluation of noise actual levels at measurement point №2 (Talin-Lanjik section) 80 dBA should be applied, as this point is considered as workplace. 55 dBA as equivalent and 70 dBA as maximum noise levels (applied as TLVs for the residential houses) are used for actual noise levels evaluation at point №1 and №4 of Talin-Lanjik section (see Table 3).

2) As a result of noise level measurements during the reporting period conducted twice a day at point №1 and №4 of Talin-Lanjik section, the equivalent and maximum noise actual levels were above the TLVs (55 dBA as equivalent and 70 dBA as maximum) set by Sanitary norms.

3) Equivalent noise actual levels at point №2 of Talin-Lanjik section were within the 80 dBA TLV set for workplaces, while the maximum noise level were above the 80 dBA.

4) The main noise source in both measurement points is operation of construction equipment and movement of cars and vehicles along the highway.

5) PM2.5 and PM10 (dust particles of 2.5um and 10um accordingly) actual concentrations in both dust measurement points (№1, №2 and №4 of Talin-Lanjik section) don't exceed the daily average and maximum permissible concentrations (MPC) for residential areas set by the RoA Government Decree №160-N "Norms of maximum permissible concentrations of atmospheric air pollutants in residential areas".

6) According to the results of vibration instrumental measurements, no vibration exposures were detected near the both vibration measurement points (№1, №3 and №4 of Talin-Lanjik section).

Annex E: Status of Measurements on Dust, Noise, Water Quality and Vibration in July-December 2017

Measurement parameter	Location PK	Community	Measurements implemented during reporting period
DUST			
Dust 1	87+400	Lanjik	monthly
Dust 2	85+000	Mastara	monthly
Dust 3	81+400	Mastara	monthly
Dust 4	78+500	Mastara	monthly
Dust 5	77+500	Mastara	N/A
Dust 6	75+700	Talin	N/A
NOISE			
Noise 1	87+400	Lanjik	monthly
Noise 2	85+000	Mastara	monthly
Noise 3	78+500	Mastara	monthly
Noise 4	77+500	Talin	N/A
WATER			
None			
VIBRATION			
Vibration 1	87+400	Lanjik	monthly
Vibration 2	81+400	Mastara	monthly
Vibration 3	78+500	Mastara	monthly
Vibration 4	77+500	Udjan	N/A

N/A – The measurements were not taken at the measurements points because there were no on-going construction works near the points during the reporting period.

Annex F: Points of Measurements on Dust, Noise, Water Quality and Vibration presented via Google map




Annex G: Post Construction Audit Checklists for 9 Overpasses.

Suggested Post-Construction Environmental Audit Checklist

Site: Km 28+900 - / Yerevan-Ararat

Date/Time: 29.12.2017/15:30

No.	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	checked checked	Proper landscaping with drainage was implemented.
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	Checked checked	It's done properly.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.	Checked Checked	Spillages were not observed.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location.	Checked	It's done properly.
			Dumping sites restored and submitted officially to local communities	checked	It's done properly.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	checked	The works were implemented far from sensitive receptors. Complaints were not observed.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	checked	It's done properly. Complaints were not observed.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked checked	It's done properly.
8	Road reinstatement	Road damages causing pollution, traffic disturbance and accidents	Streets with installed network reinstated to pre-construction or better conditions. Trees replanted as needed	checked checked	It's done properly. N/A
9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Access road reinstated to pre-construction or better conditions Borrow sites and quarries restored	checked checked	It's done properly.
10	Existing Infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	checked	N/A
11	Camp site facilities	Residual pollution and disturbance to the localities	All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered.	checked checked	N/A N/A

			All temporary facilities removed and cleaned up	checked	It's done properly.
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and AP's satisfied	checked	No complaints have been registered during the construction period.
					

Prepared by: "Sahakyanishin" CJSC
Environmental Specialist

Armine Hayrapetyan


Checked by: TPIO, Environmental and
Archeology Specialist



Mikael Tevosyan

Suggested Post-Construction Environmental Audit Checklist

Site: -"North-South road corridor investment program" SNCO's reconstruction of overpass in Yerevan-Ararat section (Reconstruction of overpass at road M-2 Yerevan - Ararat at km 25+630)

Time: 26 December 2017

No.	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	N/A	Site vegetation rehabilitation haven't been done during construction period.
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	N/A	No topsoil was removed and/or stored during the construction period.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.	checked	There are no oils or other wastes to open soil. Leakages of hazardous materials and/or oils haven't been recorded during final audit.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location. Dumping sites restored and submitted officially to local communities	checked checked	Construction waste generated during construction was transferred into the appropriate landfill All the construction waste disposed at the approved dump site.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	checked	Noise and vibration levels were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by affected peoples (AP) during the construction period.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	checked	Air quality parameters were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by APs during the construction period.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked	All the accesses are ensured according to the design. Road safety is ensured, proper signage is implemented. 
8	Road reinstatement	Road damages causing pollution, disturbance and accidents	Streets with installed network reinstated to pre-construction or better conditions. Trees replanted as needed Access road reinstated to pre-	checked N/A N/A	N/A N/A

9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	construction or better conditions Borrow sites and quarries restored	N/A	N/A There were no borrow site and quarries used for the Project.
10	Existing Infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	checked	Existing infrastructures had been reinstated up to pre-construction conditions. Oral satisfaction of service companies is achieved. 
11	Camp site facilities	Residual pollution and disturbance to the localities	All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered. All temporary facilities removed and cleaned up	checked N/A	N/A After construction period All temporary facilities removed and cleaned up 
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and AP's satisfied	checked	No complaints were lodged by APs during the construction period.

Prepared by: "Montajtranshin" CJSC, Narek Qocharyan, Environmental specialist

Checked by: TPFO, Mikael Tevosyan, Environmental and Archaeology specialist




Suggested Post-Construction Environmental Audit Checklist

Site: "North-South road corridor investment program" SNCO's reconstruction of overpass in Yerevan-Ararat section (Reconstruction of overpass at road M-2 Yerevan - Ararat at km 10+943)

Time: 26 December 2017

No.	Activity	Impacts	Measures suggested as per	Check	Measures implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	N/A	Site vegetation rehabilitation haven't been done during construction period
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	N/A	No topsoil was removed and/or stored during the construction period.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken in concrete cover area.	checked	There are no oil or other wastes to open soil. Leakages of hazardous materials and/or oils haven't been recorded during final audit.
4	Waste management	Waste accumulation, air and soil pollution	Collect and dispose all wastes including construction debris at designated location. Dumping sites restored and submitted officially to local communities	checked	Construction waste generated during construction was transferred into the appropriate landfill. All the construction waste disposed at the approved dump site.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	checked	Noise and vibration levels were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by affected peoples (AP) during the construction period.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints.	checked	Air quality parameters were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by APs during the construction period.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked	All the accesses are arranged according to the design. Road safety is ensured, proper signage is implemented.
8	Road	Road damages causing	Streets with installed network	checked	N/A

	reconstruction	pollution, disturbance and accidents	restoration to pre-construction or better conditions. Traffic regulated as needed	N/A	
9	Borrow sites and quarries	Land slide, soil erosion, change in floristic and landscape, accidents	Access road maintained to pre-construction or better conditions Borrow sites and quarries restored	N/A	There were no borrow site and quarries used for the Project.
10	Existing infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Restoration to pre-construction conditions or proper relocation, to be certified by the service companies	checked	Existing infrastructures had been maintained up to pre-construction condition. Oral satisfaction of service companies is achieved.
11	Camp site facilities	Residual pollution and disturbance to the locations	All temporary field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/dismantled. All temporary facilities removed and cleaned up	checked	N/A
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and APs satisfied	checked	No complaints were lodged by APs during the construction period.

Prepared by: "Montagranashin" CJSC, Narek Qocharyan, Environmental specialist

Checked by: TPIO, Mikael Tevosyan, Environmental and Archaeology specialist




Suggested Post-Construction Environmental Audit Checklist

Site: "North-South road corridor investment program" SNCO's reconstruction of overpass in Yerevan-Ararat section (Reconstruction of overpass at road M-2 Yerevan - Ararat at km 22+850)

Time: 26 December 2017

No.	Activity	Impacts	Measures suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	N/A	Site vegetation rehabilitation (trees) has been done during construction period.
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	N/A	No topsoil was removed and/or stored during the construction period.
3	Oil management	Equipment and machinery spilling	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.	checked	There are no leaks or other wastes to open soil. Leakages of hazardous materials and/or oils haven't been recorded during final audit.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated locations. Dumping sites restored and submitted officially to local communities.	checked	Construction waste generated during construction was transferred into the appropriate landfill. All the construction waste disposed at the approved dump site.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	checked	Noise and vibration levels were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by affected peoples (AP) during the construction period.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints.	checked	Air quality parameters were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by APs during the construction period.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities. Appropriate signage is installed	checked	All the accesses are ensured according to the design. Road safety is ensured, proper signage is implemented.
8	Road environment	Road damages causing pollution	Success with installed network, reinstated to pre-construction or better	checked	N/A

9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Reinstatement to pre-construction conditions or better conditions. Borrow sites and quarries restored	N/A	N/A
10	Existing infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	checked	Existing infrastructure had been reinstated up to pre-construction conditions. Gas relocation to service companies is achieved.
11	Early site facilities	Residual pollution and disturbance to the locality	All temporary/first plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Formerly operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/unmanned. All temporary facilities removed and cleaned up	checked	N/A
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and APs satisfied	checked	No complaints were lodged by APs during the construction period.

Prepared by: "Montajtranshin" CJSC, Narek Qocharyan, Environmental specialist


Checked by: TPIO, Mikael Tevosyan, Environmental and Archaeology specialist




Suggested Post-Construction Environmental Audit Checklist

Site: "North-South road corridor investment program" SNCO's reconstruction of overpass in Yerevan-Ararat section (Reconstruction of overpass at road M-2 Yerevan - Ararat at km 21+550)

Time: 30 September 2017

No.	Activity	Impacts	Measures suggested as per	Check	Measures implemented
1	Proper site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	N/A	Planting and vegetation has been done in accordance with the design requirements. 
2	Top soil management	Erosion of soil	Soiling and managing removal signed for re-use for landscaping activities	N/A	No topsoil was removed and/or stored during the construction period.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover area	checked	There are no oils or other wastes to open soil. Leakages of hazardous materials and/or oils haven't been recorded during final audit.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location Dumping sites restored and submitted officially to local communities	checked checked	Construction waste generated during construction was transferred into the appropriate landfill. All the construction waste disposed at the approved dump site.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints	checked	Noise and vibration levels were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by affected peoples (AP) during the construction period.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	checked	Air quality parameters were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by APs during the construction period.
7	Traffic management	Security and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked	All the accesses are ensured according to the design. Road safety is ensured, proper signage is implemented.

8	Road reconstruction	Road damages causing pollution, traffic disturbance and accidents	Streets with installed network returned to pre-construction or better conditions Trees replanted as needed Access road returned to pre-construction or better conditions Borrow sites and quarries restored	checked	N/A N/A N/A N/A
9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents		N/A	N/A There were no borrow site and quarries used for the Project.
10	Existing infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Restoration to pre-construction conditions or proper relocation, to be certified by the service companies	checked	Existing infrastructures had been returned up to pre-construction conditions. Onl satisfaction of service companies is achieved. 
11	Camp facilities	Residual pollution and disturbance to the location	All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered. All temporary facilities removed and cleaned up	checked	N/A N/A After construction period All temporary facilities removed and cleaned up
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and APs satisfied	checked	No complaints were lodged by APs during the construction period.

Prepared by: "Monttranshain" CJSC, Narek Qocharyan, Environmental specialist:

Checked by: TPIO, Mikael Tevosyan, Environmental and Archaeology specialist

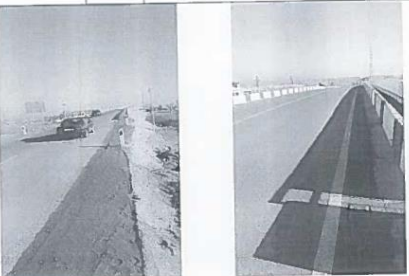



Suggested Post-Construction Environmental Audit Checklist

Site: Km 24+147, 5 - Burastan overpass

Date/Time: 27.12.2017/15:30

No.	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	checked checked	Proper landscaping with drainage was implemented.
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	Checked checked	It's done properly.
3	Oil management	Equipment machinery repairing and	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.	Checked Checked	Spillages were not observed.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location. Dumping sites restored and submitted officially to local communities	Checked checked	It's done properly. It's done properly.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	checked	The works were implemented far from sensitive receptors. Complaints were not observed.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	checked	It's done properly. Complaints were not observed.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked checked	It's done properly.
8	Road reinstatement	Road damages causing pollution, traffic disturbance and accidents	Streets with installed network reinstated to pre-construction or better conditions. Trees replanted as needed Access road reinstated to pre-construction or better conditions	checked checked checked	It's done properly. N/A It's done properly.
9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Borrow sites and quarries restored	checked	It's done properly.
10	Existing Infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	checked	N/A
11	Camp site facilities	Residual pollution and disturbance to the localities	All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered.	checked checked	N/A No plants (asphalt, concrete, crushing, etc.) have been installed during the construction period. N/A

12	GRM	Unresolved complaints from Affected People	All temporary facilities removed and cleaned up All grievances have been solved and APs satisfied	checked checked	It's done properly. No complaints have been registered during the construction period.
					

Prepared by: "Sahakyanshin" CJSC
Environmental Specialist



Armine Hayrapetyan

Checked by: TPIO, Environmental and
Archeology Specialist

Mikael Tevosyan

Suggested Post-Construction Environmental Audit Checklist
Site: Km 15+444 – Marmarashen overpass
Date/Time: 27.12.2017/15:00

No.	Activity	Impacts	Measures suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover; erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass, etc.) Proper landscaping with drainage	checked checked	Proper landscaping with drainage was implemented.
2	Top soil management	Erosion of soil	Storing and managing reserved soil for re-use for landscaping activities	checked checked	It's done properly.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.	checked checked	Spillages were not observed.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location. Dumping sites restored and submitted officially to local community.	checked checked	It's done properly. It's done properly.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints	checked	The works were implemented far from sensitive receptors. Complaints were not observed.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	checked	It's done properly. Complaints were not observed.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public services Appropriate signage is installed	checked checked	It's done properly. It's done properly.
8	Road reinstatement	Road damages causing pollution, disturbance and accidents	Screens with installed network related to pre-construction or better conditions. Trees replanted as needed Access road reinstated to pre-construction or better conditions	checked checked checked	N/A It's done properly.
9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Borrow sites and quarries restored	checked	It's done properly.
10	Existing infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	checked	N/A
11	Camp site facilities	Residual pollution and disturbance to the localities	All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered.	checked checked	N/A No plants (asphalt, concrete, crushing, etc.) have been installed during the construction period.

12	GRM	Unresolved complaints from Affected People	All temporary facilities removed and cleaned up. All grievances have been solved and AP's satisfied.	checked checked	It's done properly. No complaints have been registered during the construction period.
<div style="display: flex; justify-content: space-around;">   </div>					

Prepared by: "Sahakyanshin" CJSC
Environmental Specialist

Armine Hayrapetyan

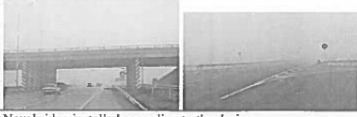
Checked by: TPIO, Environmental and
Archeology Specialist

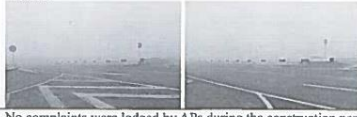
Mikael Tevosyan

Suggested Post-Construction Environmental Audit Checklist

Site: -"North-South road corridor investment program" SNCO's reconstruction of overpass in Yerevan-Ararat section (Reconstruction of overpass at road M-2 Yerevan - Ararat at km 21+800)

Time: 22 December 2017

No.	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	N/A	No project site vegetation rehabilitation done during the construction period.
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	N/A	No topsoil was removed and/or stored during the construction period.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover area.	checked	There were no oils or other spillages. During the project implementation oil management issues had been carried out in compliance measure prescribed by IEE/EMP and respective SEMP.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location; Dumping sites restored and submitted officially to local communities	checked checked	During construction period all the construction waste was temporarily disposed of within the construction area, then removed to and disposed at the approved dump site. No waste was generated during the post-construction period. During construction period all the construction disposed at the approved dump site. No waste was generated during the post-construction period.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	N/A	Noise and vibration levels were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by affected peoples (AP) during the construction period.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	N/A	Air quality parameters were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by APs during the construction period.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked	All the accesses are ensured according to the design. Road safety is ensured, proper signage is implemented. 
8	Bridge reinstatement	Bridge damages causing pollution, traffic disturbance and accidents	Bridge reinstated to pre-construction or better conditions. Access road reinstated to pre-construction or better conditions	checked	New bridge installed according to the design.
9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Borrow sites and quarries restored	checked	N/A There were no borrow site and quarries used for the Project.

10	Existing Infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	checked	Existing infrastructures had been reinstated up to pre-construction conditions. Oral satisfaction of service companies is achieved.
11	Camp site facilities	Residual pollution and disturbance to the localities	All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered. All temporary facilities removed and cleaned up	checked checked	N/A There were no permanent plants used for the Project. N/A There were no permanent plants used for the Project. The mobile houses are being dismantled and removed. All the machinery is being removed. Area is cleaned. 
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and APs satisfied.	checked	No complaints were lodged by APs during the construction period.

Prepared by Ruzanna Voskanyan

Checked by Mikael Terosyan TPI/O

Suggested Post-Construction Environmental Audit Checklist

Site: -"North-South road corridor investment program" SNCO's reconstruction of overpass in Yerevan-Ararat section (Reconstruction of overpass at road M-2 Yerevan - Ararat at km 13+029)

Time: 26 December 2017

No.	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1	Project site vegetation rehabilitation (re-vegetation)	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) Proper landscaping with drainage	N/A	No project site vegetation rehabilitation done during the construction period.
2	Top soil management	Erosion of soil	Storing and managing removed topsoil for re-use for landscaping activities	N/A	No topsoil was removed and/or stored during the construction period.
3	Oil management	Equipment and machinery repairing	Avoid oil spill to open soil. Repair works to be taken on concrete cover areas.	checked	There are no oils or other wastes to open soil. During construction there were no leaks.
4	Waste management	Waste accumulation, air and soil pollution	Collect and disposal all wastes including construction debris at designated location; Dumping sites restored and submitted officially to local communities.	checked	Construction waste generated during construction was dropped into the appropriate landfill. All the construction disposed at the approved dump site.
5	Noise and vibration, air management	Excessive noise and vibration due to new road	Noise has been monitored on a periodic basis and in response to any complaints.	checked	Noise and vibration levels were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by affected peoples (AP) during the construction period.
6	Air management	Air quality deterioration due to new road	Air quality has been monitored associated with vehicle emissions on a periodic basis and in response to any complaints	checked	Air quality parameters were not measured during the construction period as the works are implemented far from sensitive receptors. No complaints were lodged by APs during the construction period.
7	Traffic management	Hazards and safety issues related to traffic	Public access and access to the housing, shops, business and public activities Appropriate signage is installed	checked	All the accesses are ensured according to the design. Road safety is ensured, proper signage is implemented.



8	Road reinstatement	Road damages causing pollution, traffic disturbance and accidents	Streets with installed network reinstated to pre-construction or better conditions. Trees replanted as needed	checked	N/A
9	Borrow sites and quarries	Land slide, soil erosion, change in riverbed and landscape, accidents	Access road reinstated to pre-construction or better conditions	N/A	N/A
10	Existing Infrastructure facilities	Damage or disturbance to existing services (supply of electricity, water, gas, telecom etc.)	Borrow sites and quarries restored	checked	N/A
11	Camp site facilities	Residual pollution and disturbance to the localities	Reinstatement to pre-construction conditions or proper relocation, to be certified by the service companies	N/A	There were no borrow site and quarries used for the Project.
			All temporary/field plants (asphalt, concrete, crushing, etc.) have been dismantled and removed. Permanently operating plants (asphalt, concrete, crushing, etc.) have been properly handled and closed/surrendered.	checked	N/A
			All temporary facilities removed and cleaned up		After construction period All temporary facilities removed and cleaned up
12	GRM	Unresolved complaints from Affected People	All grievances have been solved and APs satisfied	checked	No complaints were lodged by APs during the construction period.



Prepared by:

Sargsyan

Sargsyan Sargis Environmental specialist of the Contractor

Checked by:

Michael Terosyan, BnV environmental specialist, TPID