SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT

#13 Semi-annual Report

(Reporting Period: January-June 2024)

Loan Number: 3441

Project Number: 43405-028

GEORGIA: URBAN SERVICES IMPROVEMENT INVESTMENT PROGRAM (TRANCHE 6)

(FINANCED BY THE ASIAN DEVELOPMENT BANK)

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For: The Ministry of Regional Development and Infrastructure of Georgia and the Asian Development Bank

July 2024

ABBREVIATIONS

ADB	Asian Development Bank
CC	Construction Company
CCTV	Closed-Circuit Television Video
CAP	Corrective Action Plan
DC	Design Consultant
DPEPSA	Department of Permits, Environmental Protection and Social Affairs
DFPMD	Donors Funded Project Management Department
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EHS	Environmental Health & Safety
EIA	Environmental Impact Assessment
EIP	Environmental Impact Permit
EMP/ SSEMP	Environmental Management Plan/ Site-Specific Environmental Management Plan
ERP	Emergency Response Plan
ES/ SES	Environmental Specialist/ Senior Environmental Specialist
GoG	Government of Georgia
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IA	Implementing Agency
IPMO	Investment Program Management Office
IEE	Initial Environmental Examination
LLC	Limited Liability Company
MFF	Multi-tranche Financing Facility
MEPA	Ministry of Environmental Protection and Agriculture
MRDI	Ministry of Regional Development & Infrastructure
NEA	National Environmental Agency
NCN	Non-compliance Notice
OJSC	Open Joint Stock Company
RE	Resident Engineer
SAEMR	Semi-Annual Environmental Monitoring Report
SC	Supervision Consultant
T6	Tranche 6
USIIP	Urban Sector Improvement Investment Program
UWSCG	United Water Supply Company of Georgia
WHO	World Health Organization
WS	Water Supply
WSS	Water Supply & Sewerage
WWTP	Waste Water Treatment Plant

Contents

I. INTRODUCTION

1.1 Preamble

1. This report represents the Semi-annual Environmental Monitoring Review (SAEMR) for the Urban Services Improvement Investment Program (USIIP), Tranche 6 and describes the period of January-June 2024. USIIP/T6 is financed by the ADB through its Multi-tranche Financing Facility (MFF).

2. This report is the 14Th Environmental Monitoring Review (EMR) of Urban Services Improvement Investment Program /Tranche 6.

1.2 Headline Information

Tranche 6 of USIIP include the following sub-projects:

3. **Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Waste Water System and Collector in Bolnisi (MAR-01).** The contract for implementation of the MAR-01 sub-project was signed in September 2022. Initial project completion date was March 2024, but the construction works have not been completed and currently are continued under the Government financing as MFF was closed in March 2024. Project completion date is December 2024. (more detailed information is provided in para 14-16 below).

4. **Construction of Waste Water Treatment Plant for Marneuli and Bolnisi in Marneuli (MAR-02).** The contract for implementation of the MAR-02 sub-project was signed in October 18, 2019. Initial project completion date was March 2024, but the construction works have not been completed and currently are continued under the Government financing as MFF was closed in March 2024. Project completion date is December 2024. (more detailed information is provided in para 18-19 below).

5. **The Construction of Water Supply System in Chiatura (CHI-01).** The contract for construction of the Chiatura Water Supply Sub-project (CHI-01) was signed in August 21, 2017 with “Akkord Industry Construction Investment Corporation” OJSC (Azerbaijan). Civil works for Section 1 of the CHI-01 sub-project were successfully completed within the contractual timeframe, 30 June 2021 and are now under operation by the local service center of Chiatura.

6. For Section 2 of the CHI-01 sub-project, the contract period was extended until April 5, 2022. However, these works remain incomplete, as the works were suspended by contractor in April 2022 and “Akkord” has stopped construction activities and abandoned the site. Approximately 43% of the Section 2 works still need to be finalized, following works are incomplete under Section 2 of the Chi-01 sub-project that steel need to be finalized:

Construction of water supply system for Avarioni & Safari areas sub-component:

Construction of Avarioni Reservoir:

- Avarioni reservoir fencing to be done;
- Mechanical and Electrical works to be completed;
- Guard house to be constructed;

- Some house connection work remains to be done.

Construction of BISI Pumping Station

- Bisi pumping station to pump water from Bisi reservoir to Avarioni reservoir is incomplete. The pump house building foundation slab was laid but other works not done, such as instolation of the booster pump for providing water in two houses near Navradzeti reservoir.
- Purchase of generators for BISI pumping stations to ensure smooth operation of PS.

7. A new tender under CHI-01 sub-project will be issued by the end of December 2024 to complete these remaining tasks with funding provided through the central government budget. The Tender Documentation are under finalization by the Supervision Company HILL . UWSCG is responsible for ensuring the completion of the CHI-01 sub-project.

8. During the reporting period, civil work within the USIIP/T6 were conducted under the MAR-01 (Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Waste Water System and Collector in Bolnisi) and MAR-02 (Construction of Waste Water Treatment Plant in Marneuli) sub-projects. Therefore, only activities related to these sub-projects are included in this report.

Post construction Environmental Audit Report

9. A Post Construction Environmental Audit Report for the CHI-01 sub-project was prepared by SC – HILL in March 2024 and subsequently approved by UWSCG. This report outlines all identified non-compliances, proposed corrective actions, responsible agencies, and the timeframe for implementation. PCEAR is attached to this document (please see Annex E).

Flooding under MAR-02 sub-project, 26 May 2024

10. Flooding in River Algety was observed on 26 May 2024 in morning. The water level in River appeared to be about 20-40 cm below top of the retaining wall. Thus, the water level in River was about 380 m which is the maximum design flood level (for more detailed information please see Annex F to this report).

2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 Project Description

11. The Urban Services Improvement Investment Program was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services, and is financed by the ADB through its Multi-tranche Financing Facility. The Ministry of Regional Development and Infrastructure is the Executing Agency and the "United Water Supply Company of Georgia", LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.

12. The Investment Program improves infrastructure through the development, design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply and/or sanitation) in one town. Sub-projects rehabilitate existing infrastructure and/or create new and expanded infrastructure to meet the present and future demand. Water supply improvements include source augmentation and head works, pumping systems, treatment facilities, transmission and distribution network; and, sewerage improvement works include sewer network, pumping stations, main collectors and waste water treatment plants.

13. Tranche 6 of the Investment Program includes:

- Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Waste Water System and Collector in Bolnisi (MAR-01);
- Construction of Waste Water Treatment Plant for Marneuli and Bolnisi in Marneuli (MAR-02);
- Construction of Water Supply System in Chiatura (CHI-01).

The following projects are financed under Tranche 6:

14. Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Waste Water System and Collector in Bolnisi (MAR-01 - LOT-01; LOT-02; LOT-03 and LOT-06): The contract for the implementation of the Lot-01, Lot-02, Lot-03 and Lot-06 under MAR-01 has been awarded to China Geo-engineering Corporation (CGC) (Peoples Republic of China) in September 2022**.** Project completion date was March 2024. As it was already mentioned above construction works have not been completed yet and will be continued until the end of March 2024.Currently works are on-going under the government financing as MFF was closed in March 2024. Brief Description of LOT-01; LOT-02; LOT-03 and LOT-06 and scope of works are presented below:

Lot 1: Marneuli city is divided in 6 zones. Zone 1 under LOT-01 mainly includes remaining house connection work. The components of the subproject that will involve civil works under LOT-01 are as follows:

- Construction of new distribution water system 63 mm PE 100 pipes (4.6 km),
- Commission new distribution 39.5 KM laid earlier
- Approximately 44,1km road reinstatement works[1]

[1] Is it simple overlay of the road no new road will be constructed

Lot 2: The geographical boundary for Lot 2 covers zone 2, 3 & 6 of Marneuli. It provides for both water supply & sewerage lines. It is in Northeast directions. Sewer pipeline and water supply pipeline are to be laid. In parallel with the construction works, testing will be carried out on the previously laid water supply and sewage lines by AKELIK GROUP OJSC to ensure its commissioning. The civil works under LOT-02 comprise mainly the following items:

- New distribution water system 40,16 km
- New sewers lines 34,5 km
- Rehabilitation of existing sewers 3.9 km
- New sewage pumping stations 2

Lot 3: The geographical boundary for Lot 3 covers zone 4 & 5 of Marneuli. It covers both water supply & sewerage lines. It is in West direction. Sewer pipe and water supply pipes are to be laid. In parallel with the construction works, testing will be carried out on the previously laid water supply and sewage lines by AKELIK GROUP OJSC to ensure its commissioning. The civil works under LOT-03 comprise mainly the following items:

- New distribution water system (44,3 km)
- Construction of new sewer lines (49,0 km)
- Construction of new sewage pumping stations (3 no.)

Lot 6: It includes Conclusion of new pumping station at Kolagiri and one booster station at Jandhari with mechanical, electrical and SCADA works; Rehabilitation of bore wells at Kolagiri; Finalization of new Reservoir at Jandhari and construction of city reservoir; Transmission line DCI pipes 700 mm, 600 mm & 400 mm pipes from Kolagiri to City reservoir and city reservoir to Jandhari. Also, a chlorination facility is to be installed near Jandhari reservoir. The works under LOT-06 comprise mainly the following items:

- Three new transmission mains DCI pipes 250 mm to 700 mm (total length almost 15.9 km)

15. Post Construction Environmental Audit Report under MAR-01 (LOT-01, LOT-02, LOT-03 and LOT-06) sub-project will be prepared in September 2024 by the Supervision Consultant – HILL and submitted to UWSCG for approval.

16. **Construction of Water Supply and Sewerage System in Marneuli and Sewerage System and Collector in Bolnisi, Lot 4 and lot 5**. The contract for the implementation of Lot-O4 and Lot-o5 under MAR-01 sub-project has been awarded to POLAT Yol Yapi Sanayi ve Ticaret Anonim Sirkei (Turkey). Physical works has started in lot 4 and lot 5 in October 2022. Project completion date was March 2024. Construction works have not been completed yet and will be continied until the end of March 202,Currently works are ongoing under the government financing as MFF was closed in March 2024. Brief Description of LOT-04; LOT-05 and scope of works are presented below:

Lot 4: It covers sewer network in Bolnisi city. Bolnisi is distinctly separate habitation and is about 22 km from Marneuli. new sewer lines are to be laid under LOT-04. Earlier laid sewer lines by AKELIK GROUP OJSC would also need to be tested and commissioned. The components of the subproject that will involve civil works under LOT-04 are as follows:

- Construction of new sewer lines (28,6 km)
- Rehabilitation of existing sewer lines (7,5 km)

Lot 5: Sewerage Interceptor (Collector) from Bolnisi to Marneuli. It includes one sewage pumping station to be laid. Earlier laid sewer lines by AKELIK GROUP OJSC would also need to be tested and commissioned. The works under LOT-05 comprise mainly the following items:

- Construction of new sewerage lines (15, 8 km).
- Rehabilitation of earlier laid sewers (7,9 km)

17. Post Construction Environmental Audit Report under MAR-01 (LOT-04 and LOT-05) sub-project will be prepared in September 2024 by the SC – HILL and submitted to the UWSCG for its approval.

18. **Construction of Waste Water Treatment Plant for the Cities of Marneuli and Bolnisi** in Marneuli (MAR-02). The project comprises of the construction of new Wastewater Treatment Plant in Marneuli with the capacity of 9,931 m^3/day.

19. The contract No UWSCG-ICB-MAR-02-2019 was signed in October 18, 2019 with Joint venture of Toshiba Water Solutions Pvt. Ltd and IN-SI LLC (JV partner) (India/Georgia). The scheduled completion date was May 2021, Completion date has been proposed to be extended by SC. Revised completion date was March 2024. As it was already mentioned above construction works have not been completed yet and will be continued until the end of March 2024. Currently works are ongoing under the government financing as MFF was closed in March 2024.

20. Post Construction Environmental Audit Report under MAR-02 sub-project will be prepared in December 2024 by the SC – HILL and submitted to the UWSCG for its approval.

21. **Construction of Water Supply System in Chiatura (CHI-01).** The contract for construction of the Chiatura Water Supply Sub-project was signed on August 21, 2017 with "Akkord Industry Construction Investment Corporation" OJSC (Azerbaijan), the initial completion date was April 15, 2019.The original date for the defect notification was April 14, 2020. Subsequently the works were divided in two sections, section 1 comprised original contract works and section two included: generators for pumping stations, additional water connections, fencing etc. The Contract time for section 1 was extended up to 30 Jun 2021 and these works are taken over and now operated by local service center. Contract time for Section 2 works was extended up to 5 April 2022. However, section 2 works are incomplete, and the Contractor has stopped and abandoned site. More detailed information is provided in para 5-7 above.

22. The work under the CHI-01 project comprises the rehabilitation and construction of the water supply network, transmission pipeline and Reservoirs and pumping stations. In particular, Chi-01 project consists of the following works:

1. The rehabilitation of the existing WS system by replacing the old pipework;
2. Connection of the new pipes to the existing pipes;
3. Rehabilitation of the reservoirs:
    - Bisi (3,000 m^3). Through a central pumping station, it supplies water to all Chiatura streets, except for Pataridze and Sopromadze streets, additional pumping station (under construction in the reservoir area) and the addition of 200 meters of network. (60% of the work is completed).
    - Memorial (1,000 m^3),
    - Lezhubani (3,000 m^3),
    - Rustaveli (350 m^3),
    - Perevisa (50 m^3)
    - Village Perevisa (50 m^3)

- Tehisa (1,000 m3)
- Navardzeti (350 m^3)

4. Construction of two new reservoirs – one in Sachkhere and another one alongside the existing Bisi reservoir – Avarioni 1000 m3.;
5. Rehabilitation of Pumping Stations – one in Lezhubani (170 m3/h) and two in Perevisa (105 m3/h);
6. Construction of new transmission lines to the reservoirs Sachkhere – Bisi and Perevisi – Tehisa (with the exception of the one going from Central Pumping Station (CPS) to Perevisi reservoir);
7. New water supply wells in the neighbouring town of Sachkhere

Post Construction Environmental Audit under CHI-01 sub-project

23. **Post Construction Environmental Audit Report** under CHI-01 sub-project was prepared in March 2024 by the SC – HILL and approved by the UWSCG. Chiatura post-construction environmental audit report is presented in Annex E to this report. The table below provides a summary of non-compliances identified during the post-construction environmental audit, the required corrective actions, possible timelines for their implementation and the progress of implementation of the corrective actions.

Table 1: Summary information of post-construction environmental audit, CHI-01 sub-project, April 2024

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishment Responsibility	Progress of Corrective Actions
Avarioni Reservoir					
1	Avarioni Reservoir, uncontrolled disposal of construction waste were fixed.	Construction Waste must be collected and disposed from the project area.		**UWSCG** **End of June 2024**	**Completed June 2024** 
2	Avrioni Reservoir Oil spill Fuels and lubricants spills to be eliminated	Containers with fuel/lubricant should be managed properly (stored at the proper organized		**UWSCG** **End of June 2024**	**Completed June 2024** No traces of leakage were identified in the project area.

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishment Responsibility	Progress of Corrective Actions
		place with concrete floor and roofing) to avoid leakage and ground contamination.			
3	Avarioni Reservoir surplus waste soil soil were piled up on the construction area	Avarioni Reservoir surplus waste soil should be removed completely removed from the disposed area		**UWSCG** **End of June 2024**	**Completed June 2024** 
4	Prevent access of public to the reservoir site - The fence of the reservoir should be done properly and equipped with Signs, information and warnings	Reservoirs sites should be properly fenced equipped with proper warning signs		**UWSCG** **UWSCG**	**Not yet completed** [2]A new tender will be issued to complete these remaining tasks, with funding provided through the central government budget. UWSCG is responsible for ensuring the completion of the CHI-01 sub-project.

[2] At this stage, it is impossible to indicate the exact deadline for improvement, as soon as the date is known, this table will be updated

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishment Responsibility	Progress of Corrective Actions
5	There are deep Trenches around the Avarioni Reservoir without Protection	Trenches on the Avarioni Reservoir should be filled or fenced off their borders.			
BISI Reservoir and Pumping Station					
6	Open trenches of the BISI Pumping Station are observed	Trenches on the BISI reservoir should be filled or fenced off their borders.		**UWSCG**	**Not yet completed** A new tender will be issued to complete these remaining tasks, with funding provided through the central government budget. UWSCG is responsible for ensuring the completion of the CHI-01 sub-project.
7	Uncontrolled disposal of construction waste were outside the BISI reservoir was fixed.	Construction Waste must be collected and disposed from the project area.		**UWSCG** **End of May 2024**	**Completed May 2024** 

2.2 Project Contracts and Management

24. The main institutions that are involved in implementation of the IEE/EMP under USIIP/T6 are UWSCG executing agency (EA), Supervision Consultant (SC) the Construction Company (CC) and to a lesser extent the Ministry of Environmental Protection and Agriculture of Georgia (MoEPA).

25. The Investment Program Management Office (IPMO) under UWSCG, is the Department of Management of Projects Financed by Donor Organizations, which is responsible for the day-to-day management of the project, including the implementation of the EMP. IPMO has an Environmental Specialist Ms. Kate Chomakhidze who is responsible for managing the environmental aspects of the USIIP. The acting head of the department is Mr.David Akhvlediani.

26. The IPMO Environmental Specialist's responsibilities in respect of implementation of the EMP are as follows:

(i) Approve the Site Specific Environmental Management Plan (SSEMP) before Contractor takes possession of construction site;
(ii) Monitor implementation of EMP and ensure the environmental safeguards compliance;
(iii) Review the updated IEE and/or SEMP and send it for clearance to ADB;
(iv) Ensure that contractors have access to the EMP and IEE report;
(v) Develop SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB's comments until SAEMR disclosure; Provide ENG and summary of GEO final versions of SAEMRs to be uploaded on UWSCG website;
(vi) Review and approve the Corrective Action Plan and provide to ADB for review and comments if any;
(vii) Participate in public consultations during project implementation;
(viii) In case of need assist IPMO Social/Resettlement Consultant in resolving process of environmental safeguards related complaints;
(ix) Assist in organizing trainings for the Contractors in coordination with ADB/RETA consultant;
(x) Participate in external trainings in environmental management and environmental auditing

27. The SC/HILL hires a full time Environmental Specialist, Mr.Nikoloz Neparidze to assist the IPMO oversee day-to-day implementation of EMPs by contractors under USIIP/T6, including compliance with all government rules and regulations; Support IPMO in the review and endorsement of contractor's SSEMP; Conduct inspections on contractor's implementation of SSEMP and compliance with government rules and regulations; Ensure contractors comply with health and safety requirements per approved SSEMP's Health and Safety Management Plan; Conduct investigations on grievances/complaints, incidents and accidents; Assist IPMO in addressing any grievances in a timely manner as per the GRM; Issue non-compliance notifications to CC; Monitor corrective actions as required in CAPs, and ensure non-compliances are resolved immediately and are not occurring repeatedly; Prepare recommendations for contractors repeated non-compliances on safeguards and EHS requirements; Submit monthly and quarterly environmental monitoring reports to IPMO.

28. The Construction Companies also appointed a full time Environmental specialists under MAR-01 and MAR-02 sub-project. Mr.Guram Tandilashvili is the Environmental Specialist of the construction management team under MAR-02 sub-project, Mr.Sandro Abzianidze is the ESH&S specialist of MAR-01 (LOT-04 and LOT-05) sub-project, Mr.levan Inashvili is the Environmental Specialist and Mr. Aleksandre Chitadze is the H&S Specialist of MAR-01 (LOT-01, LOT-02, LOT-03 and LOT-06) sub-project, for more detailed information, please see Table 3 below. Environmental Specialists of CCs are responsible for preparing the Specific Environmental Management Plan (SSEMP) for endorsement by Supervision Consultant and

approval by the UWSCG prior to the Contractor taking possession of the construction site and provide pre-works photo documentation; Ensuring the SSEMP is implemented effectively throughout the construction period; Establish and maintain site records of weekly site inspections using checklists based on SSEMP; Establish and maintain environmental accidents/incidents including resolution activities and environmental monitoring data; Developing Corrective action plans in response to non-compliance notices issued by the SC and UWSCG; Conduct Community relations activities including maintaining complaints register; Routine reporting of SSEMP compliance and community liaison activities; Implement Occupational Health and safety requirements. Implement site clean-up measures after civil works finalization.

29. Department of Permits, Environmental Protection and Social Affairs of the UWSCG is working alongside IPMO to address the environmental and social issues of USIIP. The head of the department is Ms. Maka Goderdzishvili. The Department of Environmental Protection consists of two divisions, the Division of Permits and the Division of Environmental Protection and Social Affairs. Ms. Salome Mosidze is the Head of the Division of Environmental protection and Social Affairs. More detailed description of implementation arrangements; responsibilities and staffing are provided in the Table 2 below.

Table 2: Institutionnel Arrangement, Responsabilités and Staffing

#	Millstones/Actions	Contractor (Environmental Specialist)	Construction Supervision Consultant (Environmental Specialist)	IPMO (Environmental Specialist)	Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist)
1	**Environmental planning and management Contractors Environmental Management Plan (site-specific EMP)**	Prepare Specific EMP (SEMP) with supplemented Topic Specific EMPs at pre-construction stage based on IEE/EMP Implement SEMP approved by IPMO.	Review and endorse the SEMP; Monitor implementation of SEMP on daily basis; Monitor monthly environmental monitoring reports or results prepared by the Contractor and report to IPMO.	Review and approve the SEMPs; Monitor implementation of EMP and ensure the environmental safeguards compliance.	Work together with IPMO on addressing the environmental non-compliance issues, if any.
2	**Changes in design**	Provide details of design changes to CSC required to update IEE/EIA, or SEMP; Implement updated SEMP.	Approve the design change to be submitted to IPMO; Make environmental assessment of the change and update the IEE and/or SEMP.	Review the updated IEE and/or SEMP and send it for clearance to ADB	Liaise with CSC in preparing updated IEE and/or SEMP; Upload the approved IEE/SEMP provided by IPMO to UWSCG website for Public Disclosure.
3	**Unanticipated impacts**	Inform CSC about unanticipated impact and follow the instructions received from IPMO.	Make environmental assessment of the unanticipated impact and update the IEE and/or SEMP	Review the updated IEE and/or SEMP and send it for clearance to ADB	Liaise with CSC in preparing updated IEE and/or SEMP

#	Millstones/Actions	Contractor (Environmental Specialist)	Construction Supervision Consultant (Environmental Specialist)	IPMO (Environmental Specialist)	Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist)
4	**Reporting**	Prepare monthly environmental monitoring reports and send it to CSC and IPMO	1. Prepare inputs to environmental part of quarterly construction progress reports; 2. Prepare inputs to semi-annual environmental monitoring report (SAEMR) to be submitted to IPMO for further review, comments and improvement. 3. Conduct Post-Construction Final Environmental Audit and prepare final environmental audit report.	1. Prepare SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB's comments until SAEMR disclosure; 2. Provide ENG and GEO final versions of SAEMRs to be uploaded on UWSCG website.	Upload the approved reports (ENG and GEO) provided by IPMO to UWSCG website for Public Disclosure
5	**Permits and clearances**	NA	NA	NA	Obtaining environmental permits and clearances
6	**Non-compliances**	Prepare a corrective action plan (CAP)	Assist contractor in preparing the CAP.	Review and approve the CAP and provide to ADB for review and comments if any.	
7	**Public consultations**	Participate in public consultations during project implementation	Organize public consultations: inform people about activities and prepare the record of consultations.	Participate in public consultations during project implementation	UWSCG & IPMO host PCs, CSC will present the topics related to environmental issues

#	Millstones/Actions	Contractor (Environmental Specialist)	Construction Supervision Consultant (Environmental Specialist)	IPMO (Environmental Specialist)	Department of Permits, Environmental Protection and Social Affairs (Environmental Specialist)
8	**Grievance Redress Mechanism**	Project site Focal person to record environmental grievances in the logbook and follow up with UWSCG established practice for grievance redress	1. Ensure that grievances, if any, are being properly documented and addressed timely and effectively. 2. Assist IPMO to develop consolidated GRM database and consolidation of GRM cases both for ENV and Social safeguards	In case of need assist IPMO Social/Resettlement Consultant in resolving process of environmental safeguards related complaints; Assist IPMO Social/Resettlement Consultant in GRM database consolidation and data analysis.	UWSCG maintains GRM applicable to all projects. UWSCG will ensure IPMO information on grievances is consolidated into the UWSCG grievances (both - environmental and social) without duplication.
9	**Trainings**	Attend on-site trainings organized by IPMO and ADB/RETA Consultant	Assist the IPMO in organization of trainings for the Contractors on environmental safeguards requirements.	Organize trainings for the Contractors in coordination with ADB/RETA consultant. Participate in external trainings in environmental management and environmental auditing	Participate in external trainings in environmental management and environmental auditing

30. Main organizations involved in the project and related to environmental safeguard are presented in the Table 3 below:

Table 3: List of Main Organizations under USIIP/T6

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Lender	Asian Development Bank	Country Environmental Focal	Ninette R. Pajarillaga, E-mail: npajarillaga@adb.org
		Safeguards Officer Georgia Resident Mission Asian Development Bank	Nino Nadashvili Tel: +995 595 070442 E-mail: nnadashvili@adb.org
		ADB RETA, Environmental Consultant	George Kobaladze Tel: +995 599 689834 E-mail gkobaladze.consultant@adb.org, me
Borrower	UWSCG	UWSCG, Department of Permits, Environmental Protection and Social Affairs, Head	Ms. Maka Goderdzishvili Tel: +995 599 229925 E-mail: m.goderdzishvili@water.gov.ge
		UWSCG/IPMO Department of Management of Projects Financed by Donor Organizations, Acting Head	Mr. David Akhvlediani E-mail: d.akhvlediani@water.gov.ge
Borrower	UWSCG/USIIP/T6	Environmental Specialist	Ms. Ketevan Chomakhidze Tel: +995 577 380309 E-mail: Chomakhidzek@yahoo.com
Supervision Consultant	Supervision Consultant: Hill International N.V. (Netherlands)	Environmental Specialist	Mr. Nikoloz Neparidze Tel: 599 346 821 E-mail: nikonep7@outlook.com

Type of project participant	Name of Agency/Company	Environmental Staff	Name and contact details
Contractor CHI-01	"Akkord Industry Construction Investment Corporation" OJSC (Azerbaijan)	EH&S Specialist	Environmental Specialist of CC: Name: Mr. Teodor Kalmakhelidze Tel: +995 598 977 977 E-mail: kalmakhelidzetedore@gmail.com
Contractor MAR-01 Lot-01 Lot-02 Lot-03 Lot-06	China Geo-engineering Corporation (CGC) (Peoples Republic of China)	Environmental Specialist	Mr. Levan Inashvili Tel: +995 591 199 991 E-mail:
		H&S	Mr. Aleksandre Chitadze Tel:+995 577 969 736
Contractor MAR-01 Lot-04 Lot-05	POLAT Yol Yapi Sanayi ve Ticaret Anonim Sirkei (Turkey).	Environmental, H&S Specialist	Mr.Sandro Abzianidze Tel: +995 599 45 29 02 E-mail: sandroabzianidze@gmail.com
Contractor MAR-02	Toshiba Water Solutions Pvt. Ltd and IN-SI LLC (JV partner) (India/Georgia)	Environmental H&S Specialist	Mr. Guram Tandilashvili E-Mail: guram.tandilashvili@gmail.com Mob: +995 577 36 37 29

2.3 Project Activities during Current Reporting Period

2.3.1 Construction Progress under CHI-01 Sub-project, Construction of Water Supply System in Chiatura

31. The physical progress for section of CHI-01 sub-project is 99.7% and for section 2 it is 52.89%. The aggregate progress for all works (section 1 and section 2) is 96.16%. However, actual physical progress for Avarioni works & other miscellaneous works is detailed below.

Table 4: Physical Progress of Works under CHI-01 sub-project

Item No	Description	Unit	Quantity Project	Quantity Completed as of 31.12.2023	Percentage
Works related to Avarioni Water Supply					
1	HDPE Pipes installation including fittings and end cups as required.	M	7,384.00	6052	81.96%
2	Cleaning, flushing and disinfection with chlorine of installed pipelines, including supply and disposal of water	m	7384	0	0.00%
3	Trenches for pipe installation	m3	5,320.00	4845.15	84.75%
4	Valves		44.00	16.00	36.36%
5	House connections implementation and administrative requirements	n	340.00	187.00	55.00%
6	Hydraulic Chambers	n	12.00	10.00	83.33%
7	New Reservoir 500 m3	n	1.00	93.00%	88.65%
8	Reservoir Mechanical Installation	ls	1.00	25.00%	25.00%
9	Pumping Station Mechanical Installation	ls	1.00	-	0.00%
10	Electrical Equipment	ls	1.00	-	0.00%
11	Instruments and SCADA system	ls	1.00	-	0.00%
12	New Pumping Station Construction	ls	1.00	-	0.00%
13	Construction of New PS building in front of Bisi Reservoir	ls	1.00	65.00%	65.00%
B: Misslenious Works					
1	Installation of Generators	ls	1.00	0	0.00%
2	Installation of Boosters in Navradzeti area	ls	1.00	0	0.00%
3	Installation of Boosters in Memorial Area	ls	1.00	85.00%	85.00%

32. The physical progress concerning the main contract is given in the Table 5 below.

Table 5: Progress Concerning the Main Contract

Pipeline	Unit	Quantity	Executed up to May 2022	Executed in year 2022 & 2023	Total executed up to Dec 2023	% Progress
Main Transmission Line	m	16.038	16038	0	16038	100.00%
Distribution Network	m	68.391	68.391	0	68.391	100.00%
DN355 Bisi-CPS Transmission	m	745	745	0	745	100.00%

Pipeline	Unit	Quantity	Executed up to May 2022	Executed in year 2022 & 2023	Total executed up to Dec 2023	% Progress
DN160 CPS-Lezhubani	m	2,165	2165	0	2165	100.00%
DN160 CPS-Perevisi	m	1,810	1810	0	1810	100.00%
DN225 CPS-Rustaveli	m	1,264	1264	0	1264	100.00%
DN225 Lezhubani Res to PS	m	341	341	0	341	100.00%
Q200 ST Lezhubani PS - Memorial Res	m	2025	2025	0	2025	100.00%
Q100 ST Perevisi PS - Tekhisa	m	2053	2053	0	2053	100.00%
DN160 Memorial-Navardzeti	m	1,470	1470	0	1470	100.00%
Giorgadze area	m	1,540	1450	0	1450	100.00%
Total Laid Pipe	**m**	**97,306**	**97,306**	**0**	**97,306**	**100.00%**
House Connection	n	8,457	8,457	0	8,457	100%
Crossings	n	10	0	0	0	100%
Hydraulic Chambers	m3	1,219	1219	0	1219	100%
Hydrants	n	205	205	0	205	100%

33. The Cumulative Progress of Structures Chiatura is given in the Table 6 below.

Table 6: Cumulative Progress of Structures Chiatura

Cumulative Progress	Up to Previous Month				Up to 31 Dec 2023			
	Civil	Mech	Elec	SCADA	Civil	Mech	Elec	SCADA
Wellfield	100%	100%	100%	100%	100%	100%	100%	100%
Sachkhere Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
Bisi - New Reservoir	98%	100%	100%	100%	100%	100%	100%	100%
Bisi - Old Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
CPS	95%	100%	100%	100%	100%	100%	100%	100%
Lezhubani Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
Perevisi Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
Rustaveli Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
Tekhisa Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
Memorial Reservoir	100%	100%	100%	100%	100%	100%	100%	100%
Perevisi PS	100%	100%	100%	100%	100%	100%	100%	100%
Lezhubani PS	100%	100%	100%	100%	100%	100%	100%	100%
Memorial PS	100%	100%	100%	100%	100%	100%	100%	100%
New Memorial PS	100%	100%	100%	100%	100%	100%	100%	100%

34. The cumulative total physical progress is given in the Table 7 below.

Table 7: Cumulative Total Physical Progress under CHI-01 sub-project

Location	Previous Month	Current Month
Wellfield	100%	100%
Sachkhere Reservoir	100%	100%
Bisi – New Reservoir	99%	100%
CPS	99%	100%
Lezhubani Reservoir	100%	100%
Perevisi Reservoir	100%	100%
Tekhisa Reservoir	100%	100%
Memorial Reservoir	100%	100%

2.3.2 Construction progress under MAR-01 project, Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Collector in Bolnisi (MAR-01/LOT-01/LOT-02/LOT-03/LOT-06)

35. The physical progress of construction activities under MAR-01 sub-project as done by China Geo-engineering Corporation (CGC) is presented in the Table 8 below.

Table 8: Physical Progress by 30 June 2024

#	Contract	As per contractor forecast		Executed by May 2024		
	Amount	Amount	Percentage %	0	Percentage %	Delay
Lot 2	13,411,604.13	5,773,281.50	43.05%	4,568,530.91	34.06%	8.98%
Lot 3	11,762,518.74	5,751,740.64	48.90%	4,826,666.09	41.03%	7.86%
Lot 6	12,298,261.90	10,715,913.03	87.13%	10,691,368.40	86.93%	0.20%

36. Progress under different lots is given below.

Table 9: Physical progress of Lot 2

MAJOR ITEMS	PROGRESS				
	As per BOQ	this period	to date	% executed	Remaining
Provide and lay HDPE sewer pipes	34609	6805	21792	62.97%	12817
Provide and lay water supply pipes, m	43213	1915.89	21198.89	49.06%	22014.11
Valves	343	0	76	22.16%	267
Manhole	1005	92	377	37.51%	628
Inspection shafts	1005	53	540	53.73%	465

MAJOR ITEMS	PROGRESS				
	As per BOQ	this period	to date	% executed	Remaining
House connection	4027	98	668	16.59%	3359
water meter in apartment blocks, Nos	320	0	0	0.00%	320
Pressure testing meter length	40163	0	0	0.00%	40163
Pumping station	2	0	0	0.00%	2
Crossings	56	0	0	0.00%	56
Sewer pipesCCTV	40163	0	45662.57	113.69%	-5499.57
cleaning of sewer pipes	40163	0	45662.57	113.69%	-5499.57

Table 10: Physical progress of Lot 3

MAJOR ITEMS	PROGRESS				
	As per BOQ	this period	to date	% executed	Remaining
Provide and lay HDPE sewer pipes	49642	2739	23346	47.03%	26296
Provide and lay water supply pipes, m	46360	0	17375	37.48%	28985
Fire Hydrant	295	0	40	13.56%	255
Valves	230	0	45	19.57%	185
Manhole	1200	18	493	41.08%	707
Inspection shafts	1428	0	293	20.52%	1135
House connection	2010	0	195	9.70%	1815
water meter in apartment blocks, Nos	320	0	0	0.00%	320
Pumping station	1	0	0	0.00%	1
Crossings	12	0	0	0.00%	12
Sewer pipesCCTV	59206	0	21262.83	35.91%	37943.17
cleaning of sewer pipes	59206	0	21262.83	35.91%	37943.17

Table 11: Physical progress of Lot 6

Major Items	PROGRESS				
	As per BOQ	this period	to date	% executed	Remaining
Transmission Lines DCI pipe, m	18513	0	15327	82.79%	3186
Crossings	8	0	2	25.00%	6
City Reservoir C30/37 concrete civil works, cum	2612	0	2654	101.61%	-42

Major Items	PROGRESS				
	As per BOQ	this period	to date	% executed	Remaining
Jandhary Reservoir C30/37 Concrete civil, cum	468	0	26	5.56%	442
Kolagiri Pump house civil	100%	5%	90%	90.00%	10%
Mechanical works					
Kolagiri	100%	5%	95%	95.00%	5%
City Reservoir	100%	0%	90%	90.00%	10%
Jandhary Reservoir	100%	5%	95%	95.00%	5%
Electrical					
City Reservoir	100%	10%	10%	10.00%	90%
Jandhary Reservoir	100%	10%	10%	10.00%	90%
Kolagiri Pump house	100%	15%	45%	45.00%	55%
Kolagiri wellfield	100%	5%	15%	15.00%	85%
SCADA	100%	0%	0%	0.00%	100%

2.3.3 Construction progress under MAR-01 project, Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Collector in Bolnisi (MAR-01/LOT-04/LOT-05)

37. The progress of construction works under MAR-01/LOT-04/LOT-05 sub-project is given in table below.

Table 12: Physical & Financial Progress of Lot 4 and Lot 5

Lot 4

Overall Progress	Contract Amount	Amount in US $		% of contract amount	
		Current Month	Cumulative	Current Month	Cumulative
Physical	4,669,179.63	5,235.04	2,770,312.09	0.11	59.33
Financial		2,879.27	2,741,911.16*	0.06	58.72

Lot 5

Overall Progress	Contract Amount	Amount in US $		% of contract amount	
		Current Month	Cumulative	Current Month	Cumulative
Physical	3,302,030.74	246,947.12	3,162,450.78	7.48	95.77
Financial		222,954.21	2,846,907.50*	6.75	86.22

Table 13: Physical progress of Lot 4 and Lot 5

MAJOR ITEMS	CUMULATIVE TOTAL PROGRESS							
	As per BoQ	THIS PERIOD		TO DATE		REMAINING	
		Qty	%	Qty	%	Qty	%
Lot 4							
Pipeline laying 150 mm	5466	0	0.00%	8230	150.56%	-2764	-50.56%
Pipeline laying 200 mm	20500	0	0.00%	10922	53.28%	9578	46.72%
Pipeline laying 400 mm	0	0		196			
Manholes Lot 4	508	0	0.00%	340	66.93%	168	33.07%
Inspection Shafts	850	0	0.00%	1218	143.29%	-368	-43.29%
CCTV inspection	38140	0	0.00%	28558	74.87%	9583	25.13%
Lot 5							

Pipeline laying 300 mm	719	0	0.00%	271	37.70%	448	62.30%
Pipeline laying 315 mm	0	0		2801			
Pipeline laying 400 mm	13168	0	0.00%	11401	86.58%	1767	13.42%
Manholes Lot 5	316	0	0.00%	285	90.19%	31	9.81%
CCTV inspection	28217	0	0.00%	27770	98.42%	447	1.58%

Overall Progress	**Amount in Euro**	**% of contract amount**

Total Lot 4 & 5							
Total Pipe Laying	39853	0	0.00%	33821	84.86%	6032	15.14%
Total manholes	824	0	0.00%	625	75.85%	199	24.15%
Total CCTV	66358	0	0.00%	56328	84.88%	10030	15.12%

2.3.4 Construction progress under MAR-02 sub-project, Construction of Wastewater Treatment Plant in Marneuli (MAR-02)

38. The progress of construction works under MAR-02 sub-project is given table below.

Table 14: Cumulative Schedule wise Progress under MAR-02 Sub-project, up to Dec 2023

	Cumulative Total Progress			
Schedule	**Particulars**	**Up to Previous Month**	**Current Month**	**Total**
(I)	Site Mobilization	99,23%	0%	99,23%
(II)	Excavation work	93,92%	0,53%	95,08%
(III)	Installation Civil work	95,85%	0,15%	96,00%
(III-1)	Installation Architectural work	36,18%	1,98%	49,20%
IV)	Supply of Equipments	74,96%	3,17%	98,95%
(V)	Installation Mechanical	76,00%	9,00%	91,00%
(VI)	İnstallation Electrical	13,23%	11,77%	37,00%
(VII)	Overall piping	56,00%	19,50%	95,00%
(VIII)	Algeti 35kv Power Line relocation (change order 1)	100,00%	0%	100,00%
(IX)	Electrical cable pulling works	95,00%	2,0%	97,00%

39. Structure wise progress under MAR-02 Sub-project is presented in Table 15 below.

Table 15: Structure wise Progress under MAR-02 sub-project

Cumulative Physical Progress	**Up to Previous Month %**					**Current Month %**					**Total %**			
Structures	Civil	Mech.	Elec	Arch.		Civil	Mech	Elec	Arch.		Civil	Mech	Elec	Arch.
Site mobilization & Soil İnvestigations	99,23	No	No	No		0,0	No	No	No		99,23	No	No	No

Cumulative Physical Progress	Up to Previous Month %				Current Month %				Total %			
Permanent Fence	100,0	No	No	No	0,0	No	No	No	100,0	No	No	No
RC Wall	98,97	No	No	No	0,0	No	No	No	98,97	No	No	No
Coarse screen	100,0	90,0	45,0	52,50	0,0	10,0	30,0	0,0	100,0	100,0	75,0	52,50
Inlet PS	100,0	50,0	45,0	52,50	0,0	45,0	30,0	0,0	100,0	95,0	75,0	52,50
Fine screen	100,0	90,0	45,0	52,50	0,0	10,0	30,0	0,0	100,0	100,0	75,0	52,50
Aerated grit chamber	100,0	90,0	100,	No	0,0	0,0	0,0	No	100,0	90,0	100,	No
Primary sed. Tanks	100,0	100,0	100,	No	0,0	0,0	0,0	No	100,0	100,0	100,	No
Aeration tank	100,0	80.0	50,0	No	0,0	0,0	30,0	No	100,0	80,0	80,0	No
Aeration tank distribution chamber	100,0	50,0	50,0	No	0,0	30,0	0,0	No	100,0	80,0	50,0	No
Blower Building	100,0	100,0	50,0	56,10	0,0	0,0	30,0	2,4	100,0	100,0	80,0	58,5
Final sed. Tanks	100,0	100,0	70,0	No	0,0	0,0	10,0	No	100,0	100,0	80,0	No
Final sed. Tanks distribution chamber	100,0	50,0	50,0	No	0,0	0,0	0,0	No	100,0	50,0	50,0	No
Sludge sump cum PS	100,0	92,00	30,0	No	0,0	8,0	40,0	No	100,0	100,0	70,0	No
Digester+thick.sludge pit	100,0	97,00	0,00	No	0,0	3,0	0,0	No	100,0	100,00	0,00	No
Biogas utilization building	100,0	100,0	0,00	45,10	0,0	0,0	0,0	0,0	100,0	100,00	0,00	45,10
Primary sludge thickener & Digested sludge pump	100,0	100,0	45,0	0,00	0,0	0,0	0,0	0,0	100,0	100,00	45,0	0,00
Mechanical Pre thickening building	100,0	99,00	45,0	46,50	0,0	0,0	30,0	8,5	100,0	99,00	75,0	55,0
Emergency sludge storage place	100,0	0,00	0,00	0,00	0,0	0,0	0,0	0,0	100,0	0,00	0,00	0,00
Sludge dewatering building	100,0	99,0	45,0	46,50	0,0	0,0	30,0	8,5	100,0	99,0	75,0	55,0
Outflow Measurement Chamber	100,0	0,00	0,00	0,00	0,0	0,0	0,0	0,0	100,0	0,00	0,00	0,00
Gas holder	100,0	100,0	0,00	0,00	0,0	0,0	0,0	0,0	100,0	100,0	0,00	0,00
Gas torch	75,0	0,00	0,00	0,00	25,0	0,0	0,0	0,0	100,0	0,00	0,00	0,00
Fecl3 dosing system	100,0	0,00	0,00	50,00	0,0	100,0	0,0	0,0	100,0	100,00	0,00	50,00
Administration building	100,0	0,0	50,0	39,80	0,0	0,0	0,0	3,20	100,0	0,0	50,0	43,00
Garage & workshop	100,0	0,0	0,0	51.90	0,0	0,0	0,0	9,80	100,0	0,0	0,0	61,70
Scrubber area & CHP	100,0	100,0	0,0	0,00	0,0	0,0	0,0	0,0	100,0	100,0	0,00	0,00
diesel tank area	100,0	100,0	0,00	0,00	0,0	0,0	0,0	0,0	100,0	100,00	0,00	0,00
substation building-MCC 2	100,0	0,0	40,0	49,80	0,0	0,0	15,0	5,0	100,0	0,0	55,0	54,80
control room - operation	100,0	0,0	0,0	46,30	0,0	0,0	0,0	0,5	100,0	50,0	50,0	46,80
MCC-1	100,0	0,0	40,0	49.80	0,0	0,0	15,0	4,5	100,0	0,00	55,0	54.30
MCC-3	100,0	0,0	40,0	54,35	0,0	0,0	15,0	4.5	100,0	0,0	55,0	58,85
Inter connection pipes	95,0	No	No	No	0,0	No	No	No	95,00	No	No	No
Roads & Landscaping	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Commissioning of WWTP	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

2. NVIRONMENTAL SAFEGUARD ACTIVITIES

2.1 General Description of Environmental Safeguard Activities

40. During the reporting period (January-June 2024), a total of ten site visits were conducted under the USIIP/T6 program. These visits identified a total of 35 non-compliances, resulting in 7 non-compliance notices issued to the contractor by the ESs of SC and UWSCG/USIIP. Specifically, within the MAR-02 subproject, 15 non-compliances were identified and 3 non-compliance notices were issued to the contractor. During this period, under the USIIP/T6 MAR-01 subproject 20 non-compliances were identified, resulting in 6 non-compliance notices issued to the contractor. For more details, refer to Table 16 and Annex C.

2.2 Site inspections/monitoring

41. Environmental, H&S Specialist, Mr. Guram Tandilashvili hired by Contractor under the MAR-02 sub-project conducted the day-to-day monitoring of the Marneuli WWTP construction site and developed monthly monitoring reports and represented to SC / Hill.

42. Environmental Specialist, Mr. Levan Inashvili hired by Contractor under the MAR-01/LOT-01/LOT-02/LOT-03/LOT-6 sub-project conducted the day-to-day monitoring of the Marneuli water supply and waste water systems construction sub-project and developed monthly monitoring reports and represented to SC / Hill.

43. Environmental, H&S Specialist, Mr. Sandro Abzianidze hired by Contractor under the MAR-01/LOT-04/LOT-05 sub-project conducted the day-to-day monitoring of the Marneuli water supply and waste water systems construction site and developed monthly monitoring reports and represented to SC / Hill.

44. During the reporting period Environmental Specialist (ES) Mr. Nikoloz Neparidze hired by SC/HILL for the implementation of the IEE/EMP/SEMPs requirements under USIIP/T6 develops quarterly monitoring reports for UWSCG/USIIP based on the monthly reports submitted by Contractor.

45. Environmental Specialist of UWSCG/USIIP, Ms. Ketevan (Kate) Chomakhidze performed monitoring of contractor's performance with the approved EMPs and SSEMPs, environmental standards and other environmental commitments of the contractor. ES of USIIP develops Semi-annual Environmental Monitoring Reports (SAEMR) for USIIP/T6 and submits to ADB based on the quarterly reports prepared by SC and monitoring results of construction sites.

46. The schedule of Joint inspection and summary of inspections/monitoring carried out under sub-projects during the reporting period January-June 2024 are provided in the Table 16 below. It should be noted also that the majority of non-compliances are improved by contractor during the reporting period, issues pending and need further improvement is presented in the paragraph 51 and 52 below.

Table 16. Summary of site inspections/monitoring for MAR-01 and MAR-02 sub-projects.

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
Continuously during reporting period (January-March 2024) GPC Coordinates: X 44.840296 Y 41.465192	Toshiba Water Solutions Pvt. Ltd and IN-SI LLC **MAR-02**	Environmental, H&S Specialist of Contractor Mr. Guram Tandilashvili	Day to day monitoring of sites Compliance with Environmental and HES requirements	Environmental and Health and Safety issues on construction sites. Workers always should use complete set of PPE.	Prepare Monthly Environmental Monitoring Reports and send to SC	Completed
17 January 2024		Environmental Specialist of Supervision Consultant HILL Mr.Nikoloz Neparidze	Regular monitoring of construction sites	Construction waste materials dumped everywhere, unsystematically, storage conditions are not good Construction waste is not segregated, Photo No.1	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance Notice was issued and is presented in Annex C of this report.	Completed, end January 2024, all construction waste is removed from the territory Photo N1

[3] The USIIP/T6/MAR-01 subproject has several pending non-compliance, which are described in the subsection entitled: Pending issues under MAR-01 and MAR-02 sub-projects and Implemented Measures.

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 Various Waste stored on soil and contacted directly with soil	(Photo-documentations are presented in Annex C, non-compliance note,)	 Completed, end of January 2024
15 March 2024		Environmental Specialist of UWSCG/USIIP Ms.Kate Chomakhidze Environmental Specialist of Supervision Consultant HILL Mr.Nikoloz Neparidze	Regular monitoring of construction sites	**Waste Water Treatment Plant** An appropriate fence must be installed along the entire perimeter of the WWTP site to prevent unauthorized persons from entering the construction site (Photo No. 1) 	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance Notice was issued and is presented in Annex C of this report. (Photo-documentations are presented in Annex C, non-compliance note,)	Will completed after finalization of the Construction Works in December 2024

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				Clearly visible signs/safety tapes and trench side fences should be installed around deep open pits to avoid accidents with workers and visitors of the site (Photo No. 2)  The internal area should be regularly cleaned and organized, construction materials should be placed separately and stored properly (Photo No. 3)	Corrective Action Plan has been developed by contractor and sent to SC and UWSCG	Completed, 1 April 2024  Completed in April 2024, Photo N1

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 Safety electric cables should be arraigned at construction site not to create danger for workers (Photo No. 4)  Workers at height must be protected with appropriate personal protective equipment (Photo No. 5)		 Completed, April 2024, Photo N2  Completed March 2024

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 Burning waste on the construction site is prohibited, Photo N6 		Completed April 2024, Photo N3 
29 March 2024		Environmental Specialist of UWSCG/USIIP Ms.Kate Chomakhidze Environmental Specialist of	Monthly Monitoring of construction sites	Site internally should be arranged properly and cleaned regularly, including construction materials segregation, Photo N1	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance	Completed, I April 2024, Photo N1

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
		Supervision Consultant HILL Mr.Nikoloz Neparidze		 Burning waste on a construction site is strictly prohibited, Photo N2  Workers on height are working without safety and health regulations, without life belts and safety equipment, Photo N3	Notice was issued and is presented in Annex C of this report. (Photo-documentations are presented in Annex C, non-compliance note,) Corrective Action Plan has been developed by contractor and sent to SC and UWSCG	 Completed, 1 April 2024 Completed, April 2024, Photo N2

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 There are open, unprotected trenches on the construction sites that impede the movement of personnel and pose a particular danger at night time, Photo N4 		 Completed April 2024, Photo N3 
5 June, 2024		ADB's Environmental	Semi-annual Environmental Safeguard	Due to the Flooding in River Algety which was observed on 26 May 2024, the territory	Verbal instruction was given to contractor to	Partially Completed, the site should be properly cleaned and the waste

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
		Safeguard Mission, leaded by Mrs. Ninette R. Pajarillaga, Country Environmental Focal and Ms. Nino Nadashvili, Associate Safeguards Officer Georgia Resident Mission Asian Development Bank Environmental Specialist of UWSCG/USIIP Ms.Kate Chomakhidze	Mission	of the WWTP was over flooded, Photo N1 	immediately improve the situation and clean the site	removed from the territory
Continuously during reporting period (January-June 2024)	POLAT Yol Yapi Sanayi ve Ticaret Anonim Sirkei (Turkey).	Environmental, H&S Specialist of Contractor Mr. Sandro Abzianidze	Day to day monitoring of sites Compliance with Environmental and HES	Day to day monitoring of sites Compliance with Environmental and HES requirements	Prepare Monthly Environmental Monitoring Reports and send to SC	Performed monthly during the reporting period

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
	MAR-01 LOT-04, LOT-05		requirements			
15 March 2024		Environmental Specialist of UWSCG/USIIP Ms.Kate Chomakhidze Environmental Specialist of Supervision Consultant HILL Mr.Nikoloz Neparidze		An appropriate fence must be installed along the entire perimeter of the Pumping Station to prevent unauthorized persons from entering the territory, Photo N1  Un-fenced/un secured pipeline cross river near resident areas, where children may use it as a playground make threats to local population and should be adequately fenced and protected, Photo N2	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance Notice was issued and is presented in Annex C of this report. (Photo-documentations are presented in Annex C, non-compliance note,) Corrective Action Plan has been developed by contractor and sent to SC and UWSCG	Will be completed after finalization of the construction works, by the September 2024 Will be completed after finalization of the construction works, by the September 2024

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 Clearly visible signs/safety tapes, trench side fences or proper cover should be installed around deep open pits to avoid accidents with local residents		Will be completed after finalization of the construction works, by the September 2024 Completed, March 2024 Please see Photo N1 
Continuously during reporting period (January-June 2024)	China Geo-engineering Corporation (CGC) (Peoples Republic of China)	Environmental, H&S Specialist of Contractor Mr. Levan Inashvili	Regular Environmental monitoring of sites	Day to day monitoring of sites Compliance with Environmental and HES requirements	Prepare Monthly Environmental Monitoring Reports and send to SC	Performed monthly during the reporting period

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
20 January 2024	MAR-01 LOT-01, LOT-02, LOT-03 and LOT-06	Environmental Specialist of Supervision Consultant HILL Mr.Nikoloz Neparidze	Regular Environmental monitoring of sites	MAR-01/LOT-06, Jandari Reservoir The part of fence and main gate are temporary removed, Photo N1  The information signs are not installed Trash cans are not installed Deep tranches are not protected, Photo N2	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance Notice was issued and is presented in Annex C of this report. (Photo-documentations are presented in Annex C, non-compliance note,) Corrective Action Plan has been developed by contractor and sent to SC and UWSCG	Will be completed after finalization of the construction works, by the September 2024 Will be completed after finalization of the construction works, by the September 2024 Completed, end of January 2024 Completed, February 2024, Please see Photo N1

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 There is no warehouse for building materials on the territory The ladder to the roof does not have handles, Photo N3		 Completed, all building materials are removed from the territory February 2024 Completed, ladder is removed from the territory, February 2024, Please see Photo N2

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				 When the work is not in progress, the gas cylinders should be placed in a special protected place.		 Completed, January 2024
26 January 2024		Environmental Specialist of UWSCG/USIIP Ms.Kate Chomakhidze Environmental Specialist of Supervision Consultant HILL Mr.Nikoloz Neparidze	Regular monitoring of construction sites	**MAR-01/LOT-06 – Kolagiri Pumping Station** The trench, the depth of which is several meters, is bounded only by a protective tape, which cannot protect the personnel from falling into the trench and resulting from severe injuries, Photo N1	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance Notice was issued and is presented in Annex C of this report.	Partially Completed, the adequate fence will be installed after the completion of Construction activities in February 2024, Photo N1

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
				  Waste containers are not located on site There is no hazardous waste container located on site	(Photo-documentations are presented in Annex C, non-compliance note,) Corrective Action Plan has been developed by contractor and sent to SC and UWSCG	 Completed, February 2024 
15 March 2024		Environmental Specialist of UWSCG/USIIP Ms.Kate Chomakhidze Environmental Specialist of Supervision	Monthly monitoring of Sites	Workers should be equipped with PPE on construction site, Photo N1 below When working at height workers must be equipped with specialised equipment and personal protective gear	Verbal instruction was given to contractor to immediately improve the situation. Non-Compliance	Completed, March 2024 Completed, March 2024,

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
		Consultant HILL Mr.Nikoloz Neparidze		Photo N2  Proper access across the deep and open pits should be provided for workers to avoid accident.	Notice was issued and is presented in Annex C of this report. (Photo-documentations are presented in Annex C, non-compliance note)	Photo N1  Completed, March 2024
5 June, 2024	MAR-01, City Reservoir, Jandari Reservoir	ADB's Environmental Safeguard Mission, leaded by Mrs. Ninette R. Pajarillaga, Country Environmental Focal and Ms. Nino Nadashvili, Associate Safeguards Officer	Semi-annual Environmental Safeguard Mission	Some minor waste management issues were observed during the site visit **Jandari Reservoir** Fencing of Jandary Reservoir, Photo N1	Verbal instruction was given to contractor to immediately improve the situation.	Will be completed after finalization of the MAR-01/LOT-01 in September 2024

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
		Georgia Resident Mission Asian Development Bank		 **City Reservoir** Site internally should be cleaned regularly and construction waste should be removed from the site, Photo N2 		Completed, Mid. June 2024, Photo N1

Date of Visit	Name of Company Name of Contract	Auditors Name	Purpose of audit	Summary of any Significant Findings	Implemented Actions	[3]Implementation Status
						

2.3 Issues Tracking (Based on Non-Conformance Notices)

47. As it was mentioned above a total 10 site visits were carried out during the reporting period, January-June 2024. 35 Non-compliances were identified and 7 NCNs were issued to contractor by the ESs of SC and UWSCG/USIIP in compare with 8 NCNs and 59 non-compliances during the previous reporting period.

48. The contractors were always informed on the detected non-conformances and were demanded to improve on the deadline set and send photos of improvements. Environmental team of HILL and UWSCG/USIIP monitored the improvements during the next monitoring visits. Corrective action plans were developed by contractors and improved photos of sites were send to SC and UWSCG.

49. A summary of the identified environmental issues for January-June 2024 under MAR-01 (LOT-01, LOT-02, LOT-03, LOT-04, LOT-05 and LOT-06) sub-project is presented in Table 17 below. There are three issues: (i) fencing of Jandari Reservoir and (ii) providing with signs and information board (MAR-01/LOT-06) and (iii) open pipe over the water channel (MAR-01/LOT-04) under MAR-01 sub-project. These non-compliances will be completed by the end of civil works in September 2024. All other non-compliances were corrected by contractor within the indicated deadlines.

Table 17: Summary of Issues Tracking Activity for Current Period MAR-01 (LOT-01, LOT-02, LOT-03, LOT-04, LOT-05 and LOT-06)

Total Number of Issues for Project	20
Issues Opened This Reporting Period	3
Issues Closed This Reporting Period	17
Percentage Closed	85%

50. A summary of the identified environmental issues for January-June 2024 under MAR-02 sub-project is presented in Table 18 below. There is one open issues under MAR-02 sub-project: (i) to organize site after the flooding of the construction area.

Table 18: Summary of Issues Tracking Activity for Current Period MAR-02

Total Number of Issues for Project	15
Issues Opened This Reporting Period	1
Issues Closed This Reporting Period	14
Percentage Closed	93%

2.4 Trends

51. Information from reports for the previous period and for the current period is used to determine trends in environmental issues opened and closed under the USIIP/T6 sub-

projects. The status of the main issues for the previous and current reporting periods is presented in table 22 below.

52. Although the total number of non-compliance notices decreased from 59 (July-December 2023) to 35 during the reporting period, the number of outstanding issues including both projects (MAR-01 and MAR-02) increased from 4% to 15% and mainly include the fencing of the construction areas after completion of the construction works.

53. There are some outstanding issues that still need to be resolved under Mar-01 and MAR-02 sub-projects, including fencing of the Jandari reservoir and Bolnisi Open pipe over the channel as well as elimination of the flooding impact on the Marneuli WWTP.

54. A summary of identified trends for the MAR-01 and MAR-02 sub-projects for the reporting period January-June 2024 compared to July-December 2023 is presented in Table 19 below.

Table 19: Summary of identified trends in environmental issues

Semi-Annual EMR No	Total No of Issues	% issues Closed	% issues closed late
July-December 2023	59	96	4%
January-June 2024	35	85%	15%

2.5 Unanticipated Environmental Impacts or Risks

55. There were no unanticipated Environmental Impacts and risks under USIIP/T6 during the reporting period.

3. RESULTS OF ENVIRONMENTAL MONITORING

3.1 Overview of Monitoring Conducted during Current Period

56. During the reporting period Environmental measurements of Noise level and ambient air Quality were carried out by contractor under MAR-02 sub-project.

57. Noise standards defined by IFC/WHO 1999, are presented in the Table 20 below.

Table 20: Noise Level Guidelines

Noise	dBA National Regulations		dBA WHO	
Receptor	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00	Daytime 07:00- 22:00	Nighttime 22:00- 07:00
Residential; institutional; educational	55	45	55	45
Industrial; commercial	70	70	70	70

58. Air pollution standards by IFC/WHO 1999, are presented in the Table 21 below.

Table 21: Air pollution Guidelines

Contaminants	IFC/WHO Guideline Value (Limit) mg/m^3))
1	2
Inorganic dust	(*IFC does not have a standard for "inorganic dust". Instead IFC applies standards for PM2.5 and PM10). PM10 – 0,02/1 Year 0,05/24 Hour PM2,5-0,01/1 Year 0,025/24 Hour
Carbonic monoxide	n/a
Nitrogen dioxide (NO_2)	0,2/ 1 Hour 0,04/1 Year

Contaminants	IFC/WHO Guideline Value (Limit) mg/m^3))
1	2
Aldehyde	n/a

59. Georgian Standards for noise level is presented in the table 22 below.

Table 22: Georgian Standards for Noise Levels

Purpose/use of area and premises	**Allowable limits (A-Weighted Decibels (dBA))**		
	L_{day}		**23:00 – 08:00 L_{night}, Night**
	08:00 - 19:00, Day	**Evening 19:00-23:00**	
Educational facilities and library halls	35	35	35
Medical facilities/chambers of medical institutions	40	40	40
Living quarters and dormitories	35	30	30
Hospital chambers	35	30	30
Hotel/motel rooms	40	35	35
Trading halls and reception facilities	55	55	55
Restaurant, bar, cafe halls	50	50	50
Theatre/concert halls and sacred premises	30	30	30
Sport halls and pools	55	55	55
Small offices (≤100m^3) – working rooms and premises without office equipment	40	40	40
Small offices (≤100m^3) – working rooms and premises without office equipment	40	40	40
Conference halls /meeting rooms	35	35	35
Areas bordering with houses residential, medical establish-ments, social service, and children's facilities (>6 story buildings)	55	50	45
The areas bordering with hotels, trade, service, sport, and public organizations	60	55	50

Note: in case noise generated by indoor or outdoor sources is impulse or tonal, the limit must be 5dBA less than indicated in the Table.

60. Table 23 shows the threshold values of the major air pollutants as defined by the GEO, IFC and EU legislation.

Table 23: Ambient Air Quality Standards

Parameter	**Averaging Period**	**Limit (µg/m^3)**		
		Maximum Permissible Concentration (MPC) in Georgia	**IFC Guideline Value**	**EU Ambient Air Quality Guidelines**
Nitrogen Dioxide (NO_2)	30 minutes	200	-	-
	1 Hour	-	200	200
	24 Hours	40	-	-

Parameter	Averaging Period	Limit (µg/m^3)		
		Maximum Permissible Concentration (MPC) in Georgia	IFC Guideline Value	EU Ambient Air Quality Guidelines
	1 Year	-	40	40
Sulphur Dioxide (SO_2)	10 minutes	-	500	-
	30 minutes	500	-	-
	1 Hour	-	-	350
	24 Hours	50	20	125
Carbon Monoxide (CO)	30 minutes	5,000	-	-
	24 Hours	3,000	-	-
Total Suspended Particulates (TSP) / Dust	24 Hours	150	-	-
	30 minutes	500	-	-
PM10	1 year	40	20	40
	24 hours	50	50	50
PM2.5	1 year	25	10	25
	24 hours		25	-
Ozone	8-hour daily max.	120	100	120

61. The Georgian Standards for vibration are designed for human comfort. These are shown in Table 24 below. Note that no standards for building damage exist.

Table 24: Georgian vibration values

Average Geometric Frequencies of Octave Zones (Hz)	Allowable Values X0, Y0, Z0			
	Vibro-acceleration		Vibro-speed	
	m/sec^2	dB	m/sec 10^{-4}	dB
2	4.0	72	3.2	76
4	4.5	73	1.8	71
8	5.6	75	1.1	67
16	11.0	81	1.1	67
31.5	22.0	87	1.1	67
63	45.0	93	1.1	67

Note: It is allowable to exceed vibration normative values during daytime by 5 dB during daytime. In this table of incon-stant vibrations, a correction for the allowable level values is 10dB, while the absolute values are multiplied by 0.32. The allowable levels of vibration for hospitals and rest houses have to be reduced by 3dB.

62. Since no construction activities were undertaken within the CHI-01 sub-project during the reporting period, environmental quality measurements were not conducted under this sub-project.

Environmental Quality Measurement of noise, air quality, vibration under MAR-02 Sub-project

63. Environmental instrumental measurements of ambient air quality, noise and vibration within the framework of the MAR-02 subproject were carried out by the Ltd. “ECO-Spectri” on 25 January 2024, 22 February 2024, 28 March 2024 and 26 April 2024 (Please see Annex A to this report). The results of the measurement are presented in the Tables 25 and 36 below.

64. The above mentioned measurements were carried out in Marneuli, at the WWTP construction site (measurement point N1) and the nearest residential house, which is located at 50m distance (measurement point N2).

NOISE, MAR-02

Results of the Measurement of Noise under MAR-02 sub-project on 25 January 2024

65. As can be seen from the obtained data (see Tables 25 and 26 below), the noise level at point N1 is lower than the permissible norm of "NIOSH" (85 dBA) and is 63.6 dBA. The noise level recorded at point N2 (the area surrounding the house) is also lower than the permissible noise norm established by the legislation of Georgia and amounts to 49.8 dBA and therefore no additional mitigation measures are required. As mentioned, during the measurement, construction works were being carried out with high intensity. During the measurement period, self-loading and loading vehicles moved on the construction site.

66. At point N2 (near the residential building), the peak noise level was recorded in the five-minute interval from 11:40 - 13:40, which was 58.5 dBA.

67. Noise measurement data N1 and N2 are presented in the table 25 and 26 below.

Table 25: Noise Measurement Results, N1

N1 Measurement		
Date	Location	Distance from Project Area
25.01.2024	Construction Site	10 m.
N1 Measurement Result		
Average	11:40 - 13:40	
	63,6	
5 Minute Average		
1	25.01.2024 11:45	75,8
2	25.01.2024 11:50	74,1
3	25.01.2024 11:55	77,7
4	25.01.2024 12:00	72,2
5	25.01.2024 12:05	70,4

6	25.01.2024 12:10	64,5
7	25.01.2024 12:15	62,0
8	25.01.2024 12:20	70,3
9	25.01.2024 12:25	74,8
10	25.01.2024 12:30	68,4
11	25.01.2024 12:35	76,4
12	25.01.2024 12:40	66,8
13	25.01.2024 12:45	68,8
14	25.01.2024 12:50	58,5
15	25.01.2024 12:55	50,9
16	25.01.2024 13:00	56,5
17	25.01.2024 13:05	50,0
18	25.01.2024 13:10	56,3
19	25.01.2024 13:15	54,1
20	25.01.2024 13:20	57,7
21	25.01.2024 13:25	58,7
22	25.01.2024 13:30	50,2
23	25.01.2024 13:35	54,1
24	25.01.2024 13:40	56,6

Table 26: Noise Measurement Results, N2

N2 Measurement		
Date	Location	Distance from Project Area
25.01.2024	Residential Building Yard	50 m.
N2 Measurement Result		
Average	11:40 - 13:40	
	49,8	

5 Minute Average		
1	25.01.2024 11:45	51,7
2	25.01.2024 11:50	51,5
3	25.01.2024 11:55	52,5
4	25.01.2024 12:00	53,5
5	25.01.2024 12:05	54,3
6	25.01.2024 12:10	52,1
7	25.01.2024 12:15	51,8
8	25.01.2024 12:20	50,9
9	25.01.2024 12:25	58,5
10	25.01.2024 12:30	54,3
11	25.01.2024 12:35	54,5
12	25.01.2024 12:40	46,5
13	25.01.2024 12:45	47,1
14	25.01.2024 12:50	44,7
15	25.01.2024 12:55	47,9
16	25.01.2024 13:00	49,1
17	25.01.2024 13:05	44,8
18	25.01.2024 13:10	45,5
19	25.01.2024 13:15	44,8
20	25.01.2024 13:20	44,6
21	25.01.2024 13:25	54,5
22	25.01.2024 13:30	47,2
23	25.01.2024 13:35	50,8
24	25.01.2024 13:40	42,9

Results of the Measurement of Noise under MAR-02 sub-project on 22 February 2024

68. As can be seen from the obtained data (see Tables 27 and 28), the noise level at point N1 is lower than the permissible norm of "NIOSH" (85 dBA) and is 62.6 dBA. The noise level recorded at point N2 (the area surrounding the house) is also lower than the permissible noise norm established by the legislation of Georgia and amounts to 54 dBA and therefore no additional mitigation measures are repaired. As mentioned, during the measurement, construction works were being carried out with high intensity. During the measurement period, self-loading and loading vehicles moved on the construction site.

69. At point N2 (near the residential building), the peak noise level was recorded in the five-minute interval from 11:50 to 11:55, which was 58.6 dBA.

70. Noise measurement data N1 and N2 are presented in the table 27 and 28 below.

Table 27: Noise Measurement Results N1

N1 Measurement		
Date	Location	Distance from Project Area
22.02.2024	Construction Site	10 m.
N1 Measurement Result		
Average	11:20 - 13:20	
	62,6	
5 Minute Average		
1	22.02.2024 11:25	59,4
2	22.02.2024 11:30	63,5
3	22.02.2024 11:35	62,7
4	22.02.2024 11:40	61,7
5	22.02.2024 11:45	77,4
6	22.02.2024 11:50	65,7
7	22.02.2024 11:55	65,3
8	22.02.2024 12:00	63,7
9	22.02.2024 12:05	65,1
10	22.02.2024 12:10	62,6
11	22.02.2024 12:15	59,1

N1 Measurement		
Date	Location	Distance from Project Area
22.02.2024	Construction Site	10 m.
N1 Measurement Result		
Average	11:20 - 13:20	
	62,6	
5 Minute Average		
12	22.02.2024 12:20	61,3
13	22.02.2024 12:25	59,0
14	22.02.2024 12:30	64,8
15	22.02.2024 12:35	63,6
16	22.02.2024 12:40	63,1
17	22.02.2024 12:45	61,1
18	22.02.2024 12:50	61,7
19	22.02.2024 12:55	63,8
20	22.02.2024 13:00	58,5
21	22.02.2024 13:05	57,4
22	22.02.2024 13:10	56,4
23	22.02.2024 13:15	57,3
24	22.02.2024 13:20	68,5

Table 28: Noise Measurement Results N2

N2 Measurement		
Date	Location	Distance from Project Area
22.02.2024	Residential Building Yard	50 m.
N2 Measurement Result		

Average	11:20 - 13:20	
	54,0	
5 Minute Average		
1	22.02.2024 11:25	52,4
2	22.02.2024 11:30	54,6
3	22.02.2024 11:35	56,0
4	22.02.2024 11:40	55,3
5	22.02.2024 11:45	57,9
6	22.02.2024 11:50	56,7
7	22.02.2024 11:55	58,6
8	22.02.2024 12:00	57,1
9	22.02.2024 12:05	58,3
10	22.02.2024 12:10	55,4
11	22.02.2024 12:15	52,3
12	22.02.2024 12:20	52,3
13	22.02.2024 12:25	53,1
14	22.02.2024 12:30	53,4
15	22.02.2024 12:35	50,2
16	22.02.2024 12:40	52,1
17	22.02.2024 12:45	49,3
18	22.02.2024 12:50	54,9
19	22.02.2024 12:55	54,3
20	22.02.2024 13:00	52,7
21	22.02.2024 13:05	51,7
22	22.02.2024 13:10	49,8
23	22.02.2024 13:15	53,1
24	22.02.2024 13:20	54,0

Results of the Measurement of Noise under MAR-02 sub-project on 28 March 2024

71. During the measurement, construction works were being carried out with medium intensity.

72. As can be seen from the obtained data (see Tables 29 and 30), the noise level at point N1 is lower than the permissible norm of "NIOSH" (85 dBA) and is 61.6 dBA. The noise level at point N2 (near the house) is lower than the norm established by Georgian legislation and amounts to 47 dBA and therefore no additional mitigations are required.

73. A building (about 8-9 m high) is located between the point of construction works and the measurement points near the residential house, which is an obstacle (barrier) for noise propagation. Based on this, even during the period when the noise level recorded at the construction site was at its maximum level - 72.4 dBA, there was no significant change in the noise level in the vicinity of the residential house.

74. At point N2 (near the residential building), the peak noise level was recorded in the five-minute interval from 16:05 to 16:10, which was 55.9 dBA.

75. Noise measurement data N1 and N2 are presented in the table 29 and 30 below.

Table 29: Noise Measurement Results N1

N1 Measurement		
Date	Location	Distance from Project Area
28.03.2024	Construction Site	10 m.
N1 Measurement Result		
Average	15:50 - 17:50	
	61,6	
5 Minute Average		
1	28.03.2024 15:55	66,2
2	28.03.2024 16:00	63,6
3	28.03.2024 16:05	62,3
4	28.03.2024 16:10	72,4
5	28.03.2024 16:15	64,1
6	28.03.2024 16:20	60,3

N1 Measurement		
Date	Location	Distance from Project Area
28.03.2024	Construction Site	10 m.
N1 Measurement Result		
Average	15:50 - 17:50	
	61,6	
5 Minute Average		
7	28.03.2024 16:25	60,2
8	28.03.2024 16:30	56,1
9	28.03.2024 16:35	52,0
10	28.03.2024 16:40	60,7
11	28.03.2024 16:45	59,8
12	28.03.2024 16:50	64,5
13	28.03.2024 16:55	62,6
14	28.03.2024 17:00	64,8
15	28.03.2024 17:05	55,1
16	28.03.2024 17:10	58,3
17	28.03.2024 17:15	64,4
18	28.03.2024 17:20	65,8
19	28.03.2024 17:25	66,7
20	28.03.2024 17:30	64,1
21	28.03.2024 17:35	59,1
22	28.03.2024 17:40	60,1
23	28.03.2024 17:45	63,1
24	28.03.2024 17:50	52,3

Table 30: Noise Measurement Results N2

N2 Measurement		
Date	Location	Distance from Project Area
28.03.2024	Residential Building Yard	50 m.
N2 Measurement Result		
Average	15:50 - 17:50	
	47,0	
5 Minute Average		
1	28.03.2024 15:55	54,1
2	28.03.2024 16:00	48,1
3	28.03.2024 16:05	46,4
4	28.03.2024 16:10	55,9
5	28.03.2024 16:15	55,1
6	28.03.2024 16:20	50,1
7	28.03.2024 16:25	47,8
8	28.03.2024 16:30	48,0
9	28.03.2024 16:35	40,7
10	28.03.2024 16:40	47,2
11	28.03.2024 16:45	48,0
12	28.03.2024 16:50	50,0
13	28.03.2024 16:55	46,2
14	28.03.2024 17:00	43,2
15	28.03.2024 17:05	46,6
16	28.03.2024 17:10	47,4
17	28.03.2024 17:15	43,7

N2 Measurement		
Date	Location	Distance from Project Area
28.03.2024	Residential Building Yard	50 m.
N2 Measurement Result		
Average	15:50 - 17:50	
	47,0	
5 Minute Average		
18	28.03.2024 17:20	45,1
19	28.03.2024 17:25	45,0
20	28.03.2024 17:30	47,0
21	28.03.2024 17:35	45,5
22	28.03.2024 17:40	44,3
23	28.03.2024 17:45	41,9
24	28.03.2024 17:50	39,8

Results of the Measurement of Noise under MAR-02 sub-project on 26 April 2024

76. As can be seen from the obtained data, the noise level at point N1 is lower than the permissible norm of "NIOSH" (85 dBA) and is 55 dBA. The noise level recorded at point N2 (the area surrounding the house) is also lower than the permissible noise norm established by the legislation of Georgia and amounts to 46.5 dBA and therefore no additional mitigation measures are required. As mentioned, during the measurement, construction works were being carried out with medium intensity. During the measurement period, self-loading and loading vehicles moved on the construction site.

77. According to the results of 5-minute intervals of noise measurement at measurement location N2 (near the residential house), noise exceeding the permissible norm was not recorded.

78. At point N2 (near the residential building), the peak noise level was recorded in the five-minute interval from 12:45 to 12:50, which was 51.7 dBA.

79. Noise measurement data N1 and N2 are presented in the table 31 and 32 below.

Table 31: Noise Measurement Results, N1

N1 Measurement		
Date	Location	Distance from Project Area
26.04.2024	Construction Site	10 m.
N1 Measurement Result		
Average	11:40 - 13:40	
	55,0	
5 Minute Average		
1	26.04.2024 11:45	60,3
2	26.04.2024 11:50	56,8
3	26.04.2024 11:55	59,9
4	26.04.2024 12:00	60,9
5	26.04.2024 12:05	58,8
6	26.04.2024 12:10	57,5
7	26.04.2024 12:15	51,7
8	26.04.2024 12:20	57,1
9	26.04.2024 12:25	60,6
10	26.04.2024 12:30	60,7
11	26.04.2024 12:35	59,0
12	26.04.2024 12:40	56,9
13	26.04.2024 12:45	63,3
14	26.04.2024 12:50	65,6
15	26.04.2024 12:55	64,9
16	26.04.2024 13:00	50,8

N1 Measurement		
Date	Location	Distance from Project Area
26.04.2024	Construction Site	10 m.
N1 Measurement Result		
Average	11:40 - 13:40	
	55,0	
5 Minute Average		
17	26.04.2024 13:05	48,9
18	26.04.2024 13:10	46,3
19	26.04.2024 13:15	48,5
20	26.04.2024 13:20	43,9
21	26.04.2024 13:25	45,2
22	26.04.2024 13:30	49,5
23	26.04.2024 13:35	46,0
24	26.04.2024 13:40	47,9

Table 32: Noise Measurement Results, N2

N2 Measurement		
Date	Location	Distance from Project Area
26.04.2024	Residential Building Yard	50 m.
N2 Measurement Result		
Average	11:40 - 13:40	
	46,5	
5 Minute Average		

1	26.04.2024 11:45	48,4
2	26.04.2024 11:50	50,0
3	26.04.2024 11:55	48,5
4	26.04.2024 12:00	50,0
5	26.04.2024 12:05	47,8
6	26.04.2024 12:10	47,1
7	26.04.2024 12:15	44,9
8	26.04.2024 12:20	46,0
9	26.04.2024 12:25	46,5
10	26.04.2024 12:30	48,9
11	26.04.2024 12:35	47,7
12	26.04.2024 12:40	45,0
13	26.04.2024 12:45	48,4
14	26.04.2024 12:50	51,7
15	26.04.2024 12:55	51,2
16	26.04.2024 13:00	44,1
17	26.04.2024 13:05	45,0
18	26.04.2024 13:10	42,2
19	26.04.2024 13:15	44,2
20	26.04.2024 13:20	44,7
21	26.04.2024 13:25	45,0
22	26.04.2024 13:30	43,0
23	26.04.2024 13:35	42,3
24	26.04.2024 13:40	43,6

VIBRATION, MAR-02

Results of the Measurement of Vibration under MAR-02 sub-project on 25 January 2024

80. During the measurement on January 25 2024 the vibration level was much lower (about 20 times lower) than the benchmarks of the DIN 4150-3 standard. During the measurement, the highest vibration result was recorded at 0.3 mm/s.

VIBRATION, MAR-02

Results of the Measurement of Vibration under MAR-02 sub-project on 22 February 2024

81. During the measurement on 22 February 2024 the vibration level was much lower (about 20 times lower) than the value of the DIN 4150-3 standard. During the measurement, the highest vibration result was recorded at 0.33 mm/s.

Results of the Measurement of Vibration under MAR-02 sub-project 28 March 2024

82. During the measurement on March 28 2024 the vibration level was much lower (about 20 times lower) than the value of the DIN 4150-3 standard. During the vibration measurement period, a sharp increase in the vibration level was observed in several samples. The mentioned increase was due to the movement of people near the vibration device. During the measurement, the highest vibration result was recorded at 1.77 mm/s.

Results of the Measurement of Vibration under MAR-02 sub-project 26 April 2024

83. During the measurement on 26 April 2024 the vibration level is much lower (about 20 times lower) than the value of the DIN 4150-3 standard. During the measurement, the highest vibration result was recorded at 0.27 mm/s.

AIR POLLUTION, MAR-02

Results of the measurement of the Air Pollution on 26 January 2024

84. As can be seen from the measurement results below, the levels of concentrations of particulate matter in the ambient air exceed the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization. . An appropriate measures were immediately taken, by contractor resulting in dust returning to normal levels. All Mitigation measures to be implemented by contractor to reduce air pollution are presented in the table 46 below.

85. Based on these measurements in the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 50 (µg/m3), and PM10 - 58 (µg/m3).

86. The highest concentration of particulate matter was observed in the sample taken at 12:18, which amounted to PM2.5 - 71 (µg/m3), and PM10 - 109 (µg/m3). The mentioned sharp increase was due to the dust caused by the passage of the construction vehicle.

87. It should be noted here that the concentrations of particulate matter for the two-hour measurement period (and not for the 20-minute section) are PM2.5 - 35 (µg/m3), and PM10 - 40 (µg/m3).

Table 33: Results of Measurements of Particulate Matter

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
1	25 Jan 2024 11:43	1	1	55	50

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
2	25 Jan 2024 11:44	1	1	52	45
3	25 Jan 2024 11:45	1	1	83	97
4	25 Jan 2024 11:46	1	1	59	58
5	25 Jan 2024 11:47	1	1	48	46
6	25 Jan 2024 11:48	1	1	52	47
7	25 Jan 2024 11:49	1	1	52	46
8	25 Jan 2024 11:50	1	1	71	57
9	25 Jan 2024 11:51	1	1	80	64
10	25 Jan 2024 11:52	1	1	70	55
11	25 Jan 2024 11:53	1	1	66	51
12	25 Jan 2024 11:54	1	1	63	47
13	25 Jan 2024 11:55	1	1	73	54
14	25 Jan 2024 11:56	1	1	70	53
15	25 Jan 2024 11:57	1	1	52	43
16	25 Jan 2024 11:58	1	1	44	37
17	25 Jan 2024 11:59	1	1	39	35
18	25 Jan 2024 12:00	1	1	45	37
19	25 Jan 2024 12:01	1	1	42	36
20	25 Jan 2024 12:02	1	1	45	36
20 min. Average				**58**	**50**
21	25 Jan 2024 12:03	1	1	41	35
22	25 Jan 2024 12:04	1	1	36	31
23	25 Jan 2024 12:05	1	1	35	32
24	25 Jan 2024 12:06	1	1	30	28
25	25 Jan 2024 12:07	1	1	33	29
26	25 Jan 2024 12:08	1	1	33	29
27	25 Jan 2024 12:09	1	1	56	41

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
28	25 Jan 2024 12:10	1	1	81	55
29	25 Jan 2024 12:11	1	1	40	35
30	25 Jan 2024 12:12	1	1	36	34
31	25 Jan 2024 12:13	1	1	33	32
32	25 Jan 2024 12:14	1	1	41	34
33	25 Jan 2024 12:15	1	1	39	33
34	25 Jan 2024 12:16	1	1	41	35
35	25 Jan 2024 12:17	1	1	106	62
36	25 Jan 2024 12:18	1	1	109	71
37	25 Jan 2024 12:19	1	1	87	66
38	25 Jan 2024 12:20	1	1	100	76
39	25 Jan 2024 12:21	1	1	102	72
40	25 Jan 2024 12:22	1	1	58	46
20 min. Average				**57**	**44**
41	25 Jan 2024 12:23	1	1	52	40
42	25 Jan 2024 12:24	1	1	55	45
43	25 Jan 2024 12:25	1	1	46	41
44	25 Jan 2024 12:26	1	1	39	34
45	25 Jan 2024 12:27	1	1	34	31
46	25 Jan 2024 12:28	1	1	36	31
47	25 Jan 2024 12:29	1	1	42	35
48	25 Jan 2024 12:30	1	1	40	35
49	25 Jan 2024 12:31	1	1	43	37
50	25 Jan 2024 12:32	1	1	33	30
51	25 Jan 2024 12:33	1	1	28	26
52	25 Jan 2024 12:34	1	1	30	29
53	25 Jan 2024 12:35	1	1	34	30

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
54	25 Jan 2024 12:36	1	1	29	29
55	25 Jan 2024 12:37	1	1	34	28
56	25 Jan 2024 12:38	1	1	27	25
57	25 Jan 2024 12:39	1	1	34	29
58	25 Jan 2024 12:40	1	1	29	27
59	25 Jan 2024 12:41	1	1	28	26
60	25 Jan 2024 12:42	1	1	24	24
20 min. Average				**36**	**32**
61	25 Jan 2024 12:43	1	1	25	23
62	25 Jan 2024 12:44	1	1	27	25
63	25 Jan 2024 12:45	1	1	27	26
64	25 Jan 2024 12:46	1	1	42	40
65	25 Jan 2024 12:47	1	1	32	30
66	25 Jan 2024 12:48	1	1	29	28
67	25 Jan 2024 12:49	1	1	32	32
68	25 Jan 2024 12:50	1	1	36	35
69	25 Jan 2024 12:51	1	1	39	37
70	25 Jan 2024 12:52	1	1	53	51
71	25 Jan 2024 12:53	1	1	71	70
72	25 Jan 2024 12:54	1	1	35	33
73	25 Jan 2024 12:55	1	1	37	34
74	25 Jan 2024 12:56	1	1	38	36
75	25 Jan 2024 12:57	1	1	27	27
76	25 Jan 2024 12:58	1	1	30	28
77	25 Jan 2024 12:59	1	1	39	31
78	25 Jan 2024 13:00	1	1	24	24
79	25 Jan 2024 13:01	1	1	29	27

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
80	25 Jan 2024 13:02	1	1	29	27
20 min. Average				**35**	**33**
81	25 Jan 2024 13:03	1	1	29	26
82	25 Jan 2024 13:04	1	1	29	27
83	25 Jan 2024 13:05	1	1	26	23
84	25 Jan 2024 13:06	1	1	24	24
85	25 Jan 2024 13:07	1	1	25	25
86	25 Jan 2024 13:08	1	1	27	26
87	25 Jan 2024 13:09	1	1	28	25
88	25 Jan 2024 13:10	1	1	26	25
89	25 Jan 2024 13:11	1	1	26	24
90	25 Jan 2024 13:12	1	1	29	26
91	25 Jan 2024 13:13	1	1	26	25
92	25 Jan 2024 13:14	1	1	27	24
93	25 Jan 2024 13:15	1	1	26	24
94	25 Jan 2024 13:16	1	1	28	25
95	25 Jan 2024 13:17	1	1	29	25
96	25 Jan 2024 13:18	1	1	26	25
97	25 Jan 2024 13:19	1	1	24	24
98	25 Jan 2024 13:20	1	1	26	25
99	25 Jan 2024 13:21	1	1	26	25
100	25 Jan 2024 13:22	1	1	25	24
20 min. Average				**27**	**25**
101	25 Jan 2024 13:23	1	1	27	25
102	25 Jan 2024 13:24	1	1	45	44
103	25 Jan 2024 13:25	1	1	28	27
104	25 Jan 2024 13:26	1	1	25	24

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
105	25 Jan 2024 13:27	1	1	28	28
106	25 Jan 2024 13:28	1	1	28	27
107	25 Jan 2024 13:29	1	1	28	28
108	25 Jan 2024 13:30	1	1	26	26
109	25 Jan 2024 13:31	1	1	30	29
110	25 Jan 2024 13:32	1	1	34	32
111	25 Jan 2024 13:33	1	1	31	28
112	25 Jan 2024 13:34	1	1	33	27
113	25 Jan 2024 13:35	1	1	29	25
114	25 Jan 2024 13:36	1	1	29	26
115	25 Jan 2024 13:37	1	1	27	26
116	25 Jan 2024 13:38	1	1	32	28
117	25 Jan 2024 13:39	1	1	28	27
118	25 Jan 2024 13:40	1	1	28	25
119	25 Jan 2024 13:41	1	1	29	27
120	25 Jan 2024 13:42	1	1	30	27
20 min. Average				**30**	**28**
2 Hour Average				**40**	**35**

Results of the measurement of the Air Pollution on 22 February 2024

88. As can be seen from the measurement results below, please see table 34, the levels of concentrations of particulate matter in the ambient air exceed the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization. An appropriate measures were immediately taken, by contractor resulting in dust returning to normal levels. All Mitigation measures to reduce air pollution are presented in the table 46 below.

89. Based on the measurement results in the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 52 (µg/m3), and PM10 - 43 (µg/m3);

90. The highest concentration of particulate matter was observed in the sample taken at 11:27, which amounted to PM2.5 - 46 (µg/m3), and PM10 - 59 (µg/m3);

91. It should be noted here that the concentrations of particulate matter for the two-hour measurement period (and not for the 20-minute section) are PM2.5 - 36 (µg/m3), and PM10 - 42 (µg/m3).

Table 34: Results of Measurements of Particulate Matter

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
1	22 Feb 2024 11:25	1	1	57	47
2	22 Feb 2024 11:26	1	1	54	46
3	22 Feb 2024 11:27	1	1	59	46
4	22 Feb 2024 11:28	1	1	55	46
5	22 Feb 2024 11:29	1	1	56	46
6	22 Feb 2024 11:30	1	1	51	42
7	22 Feb 2024 11:31	1	1	50	42
8	22 Feb 2024 11:32	1	1	51	42
9	22 Feb 2024 11:33	1	1	46	40
10	22 Feb 2024 11:34	1	1	50	43
11	22 Feb 2024 11:35	1	1	54	43
12	22 Feb 2024 11:36	1	1	49	42
13	22 Feb 2024 11:37	1	1	48	40
14	22 Feb 2024 11:38	1	1	46	40
15	22 Feb 2024 11:39	1	1	53	43
16	22 Feb 2024 11:40	1	1	57	44
17	22 Feb 2024 11:41	1	1	51	45
18	22 Feb 2024 11:42	1	1	51	41
19	22 Feb 2024 11:43	1	1	54	47
20	22 Feb 2024 11:44	1	1	51	44
20 min. Average				**52**	**43**
21	22 Feb 2024 11:45	1	1	52	42
22	22 Feb 2024 11:46	1	1	54	43

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
23	22 Feb 2024 11:47	1	1	53	44
24	22 Feb 2024 11:48	1	1	52	44
25	22 Feb 2024 11:49	1	1	47	39
26	22 Feb 2024 11:50	1	1	53	42
27	22 Feb 2024 11:51	1	1	45	38
28	22 Feb 2024 11:52	1	1	47	39
29	22 Feb 2024 11:53	1	1	47	40
30	22 Feb 2024 11:54	1	1	49	41
31	22 Feb 2024 11:55	1	1	45	37
32	22 Feb 2024 11:56	1	1	43	37
33	22 Feb 2024 11:57	1	1	45	37
34	22 Feb 2024 11:58	1	1	43	39
35	22 Feb 2024 11:59	1	1	43	37
36	22 Feb 2024 12:00	1	1	41	34
37	22 Feb 2024 12:01	1	1	40	35
38	22 Feb 2024 12:02	1	1	44	36
39	22 Feb 2024 12:03	1	1	43	37
40	22 Feb 2024 12:04	1	1	41	38
20 min. Average				**46**	**39**
41	22 Feb 2024 12:05	1	1	49	41
42	22 Feb 2024 12:06	1	1	44	37
43	22 Feb 2024 12:07	1	1	38	35
44	22 Feb 2024 12:08	1	1	42	36
45	22 Feb 2024 12:09	1	1	39	36
46	22 Feb 2024 12:10	1	1	39	35
47	22 Feb 2024 12:11	1	1	37	35
48	22 Feb 2024 12:12	1	1	36	32

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
49	22 Feb 2024 12:13	1	1	37	35
50	22 Feb 2024 12:14	1	1	39	34
51	22 Feb 2024 12:15	1	1	43	36
52	22 Feb 2024 12:16	1	1	43	37
53	22 Feb 2024 12:17	1	1	42	36
54	22 Feb 2024 12:18	1	1	37	34
55	22 Feb 2024 12:19	1	1	38	35
56	22 Feb 2024 12:20	1	1	42	36
57	22 Feb 2024 12:21	1	1	43	37
58	22 Feb 2024 12:22	1	1	42	36
59	22 Feb 2024 12:23	1	1	39	35
60	22 Feb 2024 12:24	1	1	45	37
20 min. Average				**41**	**36**
61	22 Feb 2024 12:25	1	1	43	37
62	22 Feb 2024 12:26	1	1	39	35
63	22 Feb 2024 12:27	1	1	40	36
64	22 Feb 2024 12:28	1	1	41	37
65	22 Feb 2024 12:29	1	1	42	37
66	22 Feb 2024 12:30	1	1	41	36
67	22 Feb 2024 12:31	1	1	39	34
68	22 Feb 2024 12:32	1	1	35	33
69	22 Feb 2024 12:33	1	1	41	34
70	22 Feb 2024 12:34	1	1	37	34
71	22 Feb 2024 12:35	1	1	37	34
72	22 Feb 2024 12:36	1	1	39	34
73	22 Feb 2024 12:37	1	1	39	34
74	22 Feb 2024 12:38	1	1	38	34

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
75	22 Feb 2024 12:39	1	1	37	34
76	22 Feb 2024 12:40	1	1	34	31
77	22 Feb 2024 12:41	1	1	35	34
78	22 Feb 2024 12:42	1	1	37	33
79	22 Feb 2024 12:43	1	1	32	31
80	22 Feb 2024 12:44	1	1	37	31
20 min. Average				**38**	**34**
81	22 Feb 2024 12:45	1	1	35	33
82	22 Feb 2024 12:46	1	1	34	32
83	22 Feb 2024 12:47	1	1	34	32
84	22 Feb 2024 12:48	1	1	35	32
85	22 Feb 2024 12:49	1	1	34	31
86	22 Feb 2024 12:50	1	1	37	34
87	22 Feb 2024 12:51	1	1	36	32
88	22 Feb 2024 12:52	1	1	34	33
89	22 Feb 2024 12:53	1	1	36	33
90	22 Feb 2024 12:54	1	1	37	34
91	22 Feb 2024 12:55	1	1	34	32
92	22 Feb 2024 12:56	1	1	33	31
93	22 Feb 2024 12:57	1	1	35	32
94	22 Feb 2024 12:58	1	1	34	31
95	22 Feb 2024 12:59	1	1	36	33
96	22 Feb 2024 13:00	1	1	36	31
97	22 Feb 2024 13:01	1	1	33	30
98	22 Feb 2024 13:02	1	1	34	32
99	22 Feb 2024 13:03	1	1	36	31
100	22 Feb 2024 13:04	1	1	33	31

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
20 min. Average				**35**	**32**
101	22 Feb 2024 13:05	1	1	37	31
102	22 Feb 2024 13:06	1	1	34	31
103	22 Feb 2024 13:07	1	1	34	32
104	22 Feb 2024 13:08	1	1	46	33
105	22 Feb 2024 13:09	1	1	30	29
106	22 Feb 2024 13:10	1	1	40	32
107	22 Feb 2024 13:11	1	1	37	32
108	22 Feb 2024 13:12	1	1	34	31
109	22 Feb 2024 13:13	1	1	35	31
110	22 Feb 2024 13:14	1	1	39	34
111	22 Feb 2024 13:15	1	1	38	33
112	22 Feb 2024 13:16	1	1	37	34
113	22 Feb 2024 13:17	1	1	48	38
114	22 Feb 2024 13:18	1	1	38	34
115	22 Feb 2024 13:19	1	1	39	33
116	22 Feb 2024 13:20	1	1	37	31
117	22 Feb 2024 13:21	1	1	34	31
118	22 Feb 2024 13:22	1	1	38	33
119	22 Feb 2024 13:23	1	1	36	33
120	22 Feb 2024 13:24	1	1	37	34
20 min. Average				**37**	**33**
2 Hour Average				**42**	**36**

Results of the measurement of the Air Pollution on 28 March 2024

92. As can be seen from the measurement results, please see Table 35 below, the level of concentrations of particulate matter in the ambient air is lower than the norm established by

the legislation of Georgia and the norm/recommendation of the World Health Organization and therefore no additional mitigation measures are required.

93. In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 5 (µg/m3), and PM10 - 13 (µg/m3).

94. The highest concentration of particulate matter was observed in the sample taken at 16:04, which amounted to PM2.5 - 25 (µg/m3), and PM10 - 7 (µg/m3).

95. As determined from the measurement results, the level of carbon monoxide (CO) concentration is lower than the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization. The level of carbon monoxide (CO) concentration in a 20-minute interval was 0.8 µg/m3.

96. As determined from the measurement results, the nitrogen dioxide (NO2) concentration level is lower than the norm established by the Georgian legislation and the norm/recommendation of the World Health Organization. The level of concentration of nitrogen dioxide (NO2) in a 20-minute interval was 155 µg/m3.

97. As determined from the measurement results, the level of ground-level ozone (O3) concentration is lower than the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization. The level of ground-level ozone (O3) concentration in a 20-minute interval was 33 µg/m3.

98. As determined from the measurement results, the concentration level of volatile organic compounds (VOC) is lower than the World Health Organization norm/recommendation. The concentration level of volatile organic compounds (VOC) in a 20-minute interval was 54 µg/m3.

Table 35: Results of Measurements of Major Air Pollutants

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
1	28 Mar 2024 15:50	1	1				10	6	
2	28 Mar 2024 15:51	1	1				9	4	
3	28 Mar 2024 15:52	1	1				14	4	
4	28 Mar 2024 15:53	1	1				9	4	
5	28 Mar 2024	1	1				9	4	

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
	15:54								
6	28 Mar 2024 15:55	1	1				7	4	
7	28 Mar 2024 15:56	1	1				9	4	
8	28 Mar 2024 15:57	1	1				9	4	
9	28 Mar 2024 15:58	1	1				7	4	
10	28 Mar 2024 15:59	1	1				16	4	
11	28 Mar 2024 16:00	1	1				10	4	
12	28 Mar 2024 16:01	1	1				17	5	
13	28 Mar 2024 16:02	1	1				12	4	
14	28 Mar 2024 16:03	1	1				22	6	
15	28 Mar 2024 16:04	1	1				25	7	
16	28 Mar 2024 16:05	1	1				15	5	
17	28 Mar 2024 16:06	1	1				11	5	

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
18	28 Mar 2024 16:07	1	1				18	5	
19	28 Mar 2024 16:08	1	1				22	6	
20	28 Mar 2024 16:09	1	1				12	4	
21	28 Mar 2024 16:14	1	1	2,0					
22	28 Mar 2024 16:15	1	1	2,4					
23	28 Mar 2024 16:16	1	1	2,3					
24	28 Mar 2024 16:17	1	1	2,0					
25	28 Mar 2024 16:18	1	1	1,9					
26	28 Mar 2024 16:19	1	1	1,9					
27	28 Mar 2024 16:20	1	1	1,7					
28	28 Mar 2024 16:21	1	1	1,4					
29	28 Mar 2024 16:22	1	1	0,9					
30	28 Mar 2024	1	1	0,5					

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
	16:23								
31	28 Mar 2024 16:24	1	1	0,0					
32	28 Mar 2024 16:25	1	1	0,0					
33	28 Mar 2024 16:26	1	1	0,0					
34	28 Mar 2024 16:27	1	1	0,0					
35	28 Mar 2024 16:28	1	1	0,0					
36	28 Mar 2024 16:29	1	1	0,0					
37	28 Mar 2024 16:30	1	1	0,0					
38	28 Mar 2024 16:31	1	1	0,0					
39	28 Mar 2024 16:32	1	1	0,0					
40	28 Mar 2024 16:33	1	1	0,0					
41	28 Mar 2024 16:38	1	1			0			
42	28 Mar 2024 16:39	1	1			0			

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
43	28 Mar 2024 16:40	1	1			0			
44	28 Mar 2024 16:41	1	1			0			
45	28 Mar 2024 16:42	1	1			0			
46	28 Mar 2024 16:43	1	1			13			
47	28 Mar 2024 16:44	1	1			11			
48	28 Mar 2024 16:45	1	1			19			
49	28 Mar 2024 16:46	1	1			19			
50	28 Mar 2024 16:47	1	1			30			
51	28 Mar 2024 16:48	1	1			39			
52	28 Mar 2024 16:49	1	1			47			
53	28 Mar 2024 16:50	1	1			49			
54	28 Mar 2024 16:51	1	1			54			
55	28 Mar 2024	1	1			58			

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
	16:52								
56	28 Mar 2024 16:53	1	1			58			
57	28 Mar 2024 16:54	1	1			58			
58	28 Mar 2024 16:55	1	1			66			
59	28 Mar 2024 16:56	1	1			73			
60	28 Mar 2024 16:57	1	1			64			
61	28 Mar 2024 17:06	1	1		139				
62	28 Mar 2024 17:07	1	1		148				
63	28 Mar 2024 17:08	1	1		148				
64	28 Mar 2024 17:09	1	1		146				
65	28 Mar 2024 17:10	1	1		150				
66	28 Mar 2024 17:11	1	1		150				
67	28 Mar 2024 17:12	1	1		150				

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
68	28 Mar 2024 17:13	1	1		150				
69	28 Mar 2024 17:14	1	1		154				
70	28 Mar 2024 17:15	1	1		160				
71	28 Mar 2024 17:16	1	1		160				
72	28 Mar 2024 17:17	1	1		160				
73	28 Mar 2024 17:18	1	1		160				
74	28 Mar 2024 17:19	1	1		164				
75	28 Mar 2024 17:20	1	1		160				
76	28 Mar 2024 17:21	1	1		160				
77	28 Mar 2024 17:22	1	1		158				
78	28 Mar 2024 17:23	1	1		160				
79	28 Mar 2024 17:24	1	1		162				
80	28 Mar 2024	1	1		164				

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
	17:25								
81	28 Mar 2024 17:30	1	1						150
82	28 Mar 2024 17:31	1	1						125
83	28 Mar 2024 17:32	1	1						100
84	28 Mar 2024 17:33	1	1						75
85	28 Mar 2024 17:34	1	1						75
86	28 Mar 2024 17:35	1	1						50
87	28 Mar 2024 17:36	1	1						75
88	28 Mar 2024 17:37	1	1						50
89	28 Mar 2024 17:38	1	1						50
90	28 Mar 2024 17:39	1	1						50
91	28 Mar 2024 17:40	1	1						50
92	28 Mar 2024 17:41	1	1						50

Index	Date Time	Monitor ID	Location ID	CO (µg/m3)	NO2 (µg/m3)	O3 (µg/m3)	PM10 (µg/m3)	PM2.5 (µg/m3)	VOC (µg/m3)
93	28 Mar 2024 17:42	1	1						25
94	28 Mar 2024 17:43	1	1						25
95	28 Mar 2024 17:44	1	1						25
96	28 Mar 2024 17:45	1	1						25
97	28 Mar 2024 17:46	1	1						25
98	28 Mar 2024 17:47	1	1						25
99	28 Mar 2024 17:48	1	1						25
100	28 Mar 2024 17:49	1	1						0
20 min. Average				**0,8**	**155**	**33**	**13**	**5**	**54**

Results of the measurement of the Air Pollution on 26 April 2024

99. As can be seen from the measurement results, the levels of concentrations of particulate matter in the ambient air is lower than the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization and therefore no additional mitigation measures are required.

100. In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 8 (µg/m3), and PM10 - 15 (µg/m3).

101. The highest concentration of particulate matter was observed in the sample taken at 12:27, which amounted to PM2.5 - 10 (µg/m3), and PM10 - 44 (µg/m3).

102. It should be noted here that the concentrations of particulate matter for the two-hour measurement period (and not for the 20-minute section) are PM2.5 - 7 (µg/m3), and PM10 - 14 (µg/m3).

Table 36: Results of Measurements of Particulate Matter

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
1	26 Apr 2024 11:37	1	1	16	9
2	26 Apr 2024 11:38	1	1	14	8
3	26 Apr 2024 11:39	1	1	14	8
4	26 Apr 2024 11:40	1	1	11	8
5	26 Apr 2024 11:41	1	1	16	8
6	26 Apr 2024 11:42	1	1	11	8
7	26 Apr 2024 11:43	1	1	14	8
8	26 Apr 2024 11:44	1	1	15	8
9	26 Apr 2024 11:45	1	1	14	8
10	26 Apr 2024 11:46	1	1	13	8
11	26 Apr 2024 11:47	1	1	13	8
12	26 Apr 2024 11:48	1	1	10	8
13	26 Apr 2024 11:49	1	1	13	8
14	26 Apr 2024 11:50	1	1	10	6
15	26 Apr 2024 11:51	1	1	13	8
16	26 Apr 2024 11:52	1	1	15	8
17	26 Apr 2024 11:53	1	1	15	8
18	26 Apr 2024 11:54	1	1	13	8
19	26 Apr 2024 11:55	1	1	14	8
20	26 Apr 2024 11:56	1	1	9	6
20 min. Average				**13**	**7**
21	26 Apr 2024 11:57	1	1	14	9
22	26 Apr 2024 11:58	1	1	15	8
23	26 Apr 2024 11:59	1	1	16	8
24	26 Apr 2024 12:00	1	1	14	8

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
25	26 Apr 2024 12:01	1	1	11	8
26	26 Apr 2024 12:02	1	1	11	8
27	26 Apr 2024 12:03	1	1	15	9
28	26 Apr 2024 12:04	1	1	15	6
29	26 Apr 2024 12:05	1	1	10	6
30	26 Apr 2024 12:06	1	1	13	8
31	26 Apr 2024 12:07	1	1	16	8
32	26 Apr 2024 12:08	1	1	13	8
33	26 Apr 2024 12:09	1	1	11	8
34	26 Apr 2024 12:10	1	1	13	8
35	26 Apr 2024 12:11	1	1	16	9
36	26 Apr 2024 12:12	1	1	15	8
37	26 Apr 2024 12:13	1	1	16	8
38	26 Apr 2024 12:14	1	1	10	6
39	26 Apr 2024 12:15	1	1	16	9
40	26 Apr 2024 12:16	1	1	11	8
20 min. Average				**14**	**8**
41	26 Apr 2024 12:17	1	1	16	8
42	26 Apr 2024 12:18	1	1	11	6
43	26 Apr 2024 12:19	1	1	10	6
44	26 Apr 2024 12:20	1	1	13	8
45	26 Apr 2024 12:21	1	1	11	6
46	26 Apr 2024 12:22	1	1	16	8
47	26 Apr 2024 12:23	1	1	14	6
48	26 Apr 2024 12:24	1	1	11	6
49	26 Apr 2024 12:25	1	1	14	8
50	26 Apr 2024 12:26	1	1	13	8

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
51	26 Apr 2024 12:27	1	1	44	10
52	26 Apr 2024 12:28	1	1	11	6
53	26 Apr 2024 12:29	1	1	10	6
54	26 Apr 2024 12:30	1	1	18	6
55	26 Apr 2024 12:31	1	1	10	6
56	26 Apr 2024 12:32	1	1	13	6
57	26 Apr 2024 12:33	1	1	13	8
58	26 Apr 2024 12:34	1	1	14	6
59	26 Apr 2024 12:35	1	1	19	6
60	26 Apr 2024 12:36	1	1	14	8
20 min. Average				**15**	**7**
61	26 Apr 2024 12:37	1	1	11	8
62	26 Apr 2024 12:38	1	1	11	6
63	26 Apr 2024 12:39	1	1	15	8
64	26 Apr 2024 12:40	1	1	14	6
65	26 Apr 2024 12:41	1	1	10	6
66	26 Apr 2024 12:42	1	1	18	8
67	26 Apr 2024 12:43	1	1	21	8
68	26 Apr 2024 12:44	1	1	14	6
69	26 Apr 2024 12:45	1	1	13	8
70	26 Apr 2024 12:46	1	1	13	6
71	26 Apr 2024 12:47	1	1	15	6
72	26 Apr 2024 12:48	1	1	15	6
73	26 Apr 2024 12:49	1	1	13	8
74	26 Apr 2024 12:50	1	1	13	6
75	26 Apr 2024 12:51	1	1	18	8
76	26 Apr 2024 12:52	1	1	16	8

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
77	26 Apr 2024 12:53	1	1	13	8
78	26 Apr 2024 12:54	1	1	14	6
79	26 Apr 2024 12:55	1	1	19	8
80	26 Apr 2024 12:56	1	1	14	6
20 min. Average				**14**	**7**
81	26 Apr 2024 12:57	1	1	14	8
82	26 Apr 2024 12:58	1	1	14	6
83	26 Apr 2024 12:59	1	1	10	6
84	26 Apr 2024 13:00	1	1	18	8
85	26 Apr 2024 13:01	1	1	11	6
86	26 Apr 2024 13:02	1	1	16	8
87	26 Apr 2024 13:03	1	1	15	6
88	26 Apr 2024 13:04	1	1	11	6
89	26 Apr 2024 13:05	1	1	14	6
90	26 Apr 2024 13:06	1	1	14	6
91	26 Apr 2024 13:07	1	1	10	6
92	26 Apr 2024 13:08	1	1	14	8
93	26 Apr 2024 13:09	1	1	14	6
94	26 Apr 2024 13:10	1	1	15	6
95	26 Apr 2024 13:11	1	1	15	6
96	26 Apr 2024 13:12	1	1	14	6
97	26 Apr 2024 13:13	1	1	13	6
98	26 Apr 2024 13:14	1	1	11	6
99	26 Apr 2024 13:15	1	1	14	8
100	26 Apr 2024 13:16	1	1	13	6
20 min. Average				**13**	**7**
101	26 Apr 2024 13:17	1	1	13	6

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2,5 (µg/m3)
102	26 Apr 2024 13:18	1	1	14	8
103	26 Apr 2024 13:19	1	1	16	8
104	26 Apr 2024 13:20	1	1	13	6
105	26 Apr 2024 13:21	1	1	11	6
106	26 Apr 2024 13:22	1	1	15	6
107	26 Apr 2024 13:23	1	1	19	8
108	26 Apr 2024 13:24	1	1	15	6
109	26 Apr 2024 13:25	1	1	13	8
110	26 Apr 2024 13:26	1	1	14	6
111	26 Apr 2024 13:27	1	1	15	8
112	26 Apr 2024 13:28	1	1	14	6
113	26 Apr 2024 13:29	1	1	14	8
114	26 Apr 2024 13:30	1	1	14	8
115	26 Apr 2024 13:31	1	1	14	6
116	26 Apr 2024 13:32	1	1	13	8
117	26 Apr 2024 13:33	1	1	13	6
118	26 Apr 2024 13:34	1	1	11	8
119	26 Apr 2024 13:35	1	1	13	6
120	26 Apr 2024 13:36	1	1	14	8
20 min. Average				**14**	**7**
2 Hour Average				**14**	**7**

Environmental Quality Measurement (noise, air, vibration) under MAR-01 Sub-project

103. There were no Environmental Quality Measurements of ambient air quality, noise and vibration within the framework of the MAR-01 (LOT-01, LOT-02, LOT-03 and LOT-06) sub-project, since there were minor construction activities under the above Lots of Mar-01 sub-projects during the reporting period.

Environmental Quality Monitoring under MAR- 01/LOT-04/LOT-05 sub-projects

104. According to contract #FM 3/50 signed on 27.01.2023 between JSC, Polatyol Yapi Sanayi Ve Ticaret" Branch in Georgia and, "National Environmental Agency" of Ministry of Environmental protection and Agriculture of Georgia, Chief specialist Sergo Khatsava and Invited Specialist Badri Tsatava from National Environmental Agency have conducted the measurements in two places shown by Engineer for purpose of Dust, CO (Carbon Oxide), NO2 (Nitrogen Dioxide) and Noise level determination in January 2024.

105. As can be seen from the measurement results, the levels of concentrations of particulate matter in the ambient air is lower than the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization and therefore no additional mitigation measures are required.

106. As for the noise level at some point (Bolnisi, Lot 5) is slightly higher than the permissible norm of "NIOSH" (85 dBA) and is 86.5 dBA. As mentioned, during the measurement, construction works were being carried out with high intensity. During the measurement period, self-loading and loading vehicles moved on the construction site. All Mitigation measures to reduce air pollution are presented in the table 46 below.

Table 37: Results of noise and vibration measurements on 27.01.2024 11:00-11:55

#	Measurement point		Measurement results				
	Location	Coordinates	Noise A_{max} dB	Vibro Speed		Vibro Acceleration	
				mm/s	dB	m/s^2	dB
1	Bolnisi, Lot 4	0461393, 4589198	76.6	<0.1	<66	<0.1	<100
2	Bolnisi, Lot 5	0472957, 4588451	86.5	<0.1	<66	0.1	100

Table 38: Results of measurements of air pollution with nitrogen dioxide, carbon monoxide and dust on 27.01.2024 11:00-11:55

#	Measurement point		Measurement results (mg/m^3)		
	Location	Coordinates	Nitrogen Dioxide	Carbon Monoxide	Dust
1	Bolnisi, Lot 4	0461393, 4589198	0.014	0.38	0.077
2	Bolnisi, Lot 5	0472957, 4588451	0.019	0.96	0.085

107. During measurement tools used:

- Dust – Casella Gel 712 – Self-calibration zero and optical filter.
- Noise – Mini Sound Level Meter N05CC.
- Vibration – Smart Sensor ® AR63B Vibration Meter.
- Nitrogen Dioxide and Carbon Monoxide – AeroQual 500.

Used Measuring Device Noise, vibration, Air Pollution under MAR-02 sub-project

Noise

108. The Ltd “Eco-Spectri” used the equipment of the Polish company "SVANTEK", "SVAN 971" series for measuring noise (Figure 1, Figure 2).

109. SVAN 971 series Sound Level Meters by Polish Svantek are appliances with Class 1 IEC 61672-1:2013 accuracy, capable of storing up to 100000 records. SVAN 971 offers a wide range of results in all needed weighting filters (A, C, Z), as well as 1/1 and 1/3 Octave spectra. SVAN 971 Sound Level Meter allows gaining most resultant noise units: Lpeak, Lmax, Lmin, L, Leq, LE, Lden, LEPd, Ltm3, Ltm5, Leq statistics (Ln), expected Leq value (EX), standard Leq deviation (SD), measurement time and overload time % (OVL), etc. SVAN 971 software allows developing graphical, table or text results of the accomplished measurements. The noise meter can store the received signals in internal memory and describe each signal according to level and date stamp. The device has a wind protective cap reducing the impact of environmental conditions (wind, temperature) duringrecording). As per the International Finance Corporation, the noise level must be measured by using the 1st or 2nd class noise meter meeting the requirements of the guideline of the “International Electrotechnical Committee”. Asper the same guideline, the noise monitoring is possible to provide with the aim to identify the existing background noise level of the environment adjacent to the design or existing facility or toexamine the noise level in the operation phase.

Figure 1: “REED” R8080 Sound Level Meter

Figure 2: Organization-owned noise meter

110. Noise meter configurations during the study were:

- Noise measurement range: 30-130 dB;
- Noise meter response speed: Slow (1 second);
- Frequency weight: A.
- Type of mycrophone: 0.5" (12.7 mm.) el. Condensator.

Vibration

111. The VM40 is designed for measuring vibration in buildings, bridges, towers, pipelines and various other large structures. The measurements serve to prevent possible structural damage or disturbance to people. The VM40 contains a sensor, recording and evaluation electronics and an accumulator in its robust casing. It is especially suitable for autonomous operation over longer periods of time e.g. on construction sites.

Figure 3: Triaxial Vibration Monitor VM40A/B

112. The instrument contains three highly sensitive piezoelectric systems for vibration measurement of all three special dimensions. The signal processing is controlled by a microprocessor. The VM40 is operated via its seven keypad buttons and illuminated LCD display. The measurement data can be transferred to a PC via the USB interface. The instrument also has a port for connecting a charger and a relay output for the external signaling of vibration occurrences.

Air Measuring Device

113. The New Zealand based “Aeroqual Series 500 Portable Air Quality Monitor” is used to measure air. The air quality meter allows real-time monitoring of air pollutants. The device measures the concentrations of the following major pollutants in the air:

- Particulate Matters 10µm and 2.5µm (PM10, PM2.5);
- Nitrogen Dioxide (NO2);
- Carbon Monoxide (CO);
- Ozone (O3);
- Volatile Organic Compounds (VOC).

114. The Figure 4 and Figure 5 - below shows the “Aeroqual Series 500 Portable Air Quality Monitor”.

Figure 4: "Aeroqual Series 500 Portable Air Quality Monitor"

Figure 5.: "Aeroqual Series 500 Portable Air Quality Monitor"

115. The device has different sensors for each type of harmful substance. The device has the following types of sensors:

- Gas sensitive semi-conductor sensor (GSS);
- Gas sensitive electrochemical sensor (GSE);
- Laser Particle Counter (LPC);
- Photo Ionization Detector (PID).

116. During performing the measurement, the device records the average minute data of the obtained samples. Measurements was made within 20 minutes.

117. Figure 6 and Figure 7 below show the measurement points, project zone and measurement location.

Figure N6: Project Zone

Figure N7: Measurement Locations

Used Measuring Device Noise, vibration, Air Pollution under MAR-01 sub-project

Noise Level Measurements

118. The noise level measurements were implemented in accordance with the British Standard BS 7445-2:2003 'Description and measurement of environmental noise'. The dust concentration measurements in the ambient air were conducted in accordance to the EU standards.

119. The monitoring points were selected, to represent the impact of the construction on local population as realistically as possible.

Noise Measurement Equipment

120. According to the above-mentioned standard, the following equipment was used during the noise level measurement activities:

- Rion NL-52, First class noise measurement device;
- Windscreen, WS-16;
- Tripod;
- SD Card;

Noise measuring device

Windscreen WS-16

3.2 Trends

121. During the reporting period Contractor always implemented Corrective Action Plans based on the Non-compliance Notices issued by UWSCG/USIIP and SC in accordance with the IEE/EMP, SEMPs requirements under MAR-01 and MAR-02 sub-projects, but still within these subprojects some additional mitigation measures are required which are presented in Table 46 below.

3.3 Summary of Monitoring outcomes

122. Dust level during the construction period under MAR-02 sub-project in some points exceeded the existing standards of IFC/WHO, appropriate measures were immediately taken, by contractor resulting in dust returning to normal levels. All Mitigation measures to reduce air pollution are presented in the table 46 below. IFC/WHO and national standards for Noise are presented in the Tables 20-24 above. It should also be noted that measurements carried out at construction sites, were temporary and conducted during the daytime and no complaints were received from the local community during the reporting period.

3.4 Material resources Utilization

4.4.1 Current Period

MAR-01/LOT-04/LOT-05

123. There were only minor construction works within the MATR-01 (LOT-04 and LOT-05) and therefore only material resources utilized during the previous construction period are presented in this report.

124. As for June 2024, following materials were mobilized on site by the Contractor under MAR-01(LOT-04 and LOT-05) sub-project, please see Table 39 below:

Table 39: Materials mobilize under MAR-01 (LOT-04 and LOT-05) during the Reporting Period, January-June 2024

Item	Quantity
Water	877 m^3
Electricity	kW
Gas	12090

125. As for June 2024, following construction materials were mobilized on site by the Contractor under MAR-01(LOT-04 and LOT-05) sub-project, please see Table 40 below:

Table 40: Construction Materials mobilize under MAR-01 (LOT-04 and LOT-05) during the Reporting Period

No.	Material	Quantity	Unit
1	Cement	6.0	t
2	Sand	548	m^3
3	Gravel (Quarry Kariani)	750	m^3

MAR-02

126. During the reporting period, January-June 2024, following materials were mobilized on site by the Contractor under MAR-02 sub-project, please see Table 41 below:

Table 41: Quantity of Materials Received on MAR 02

No.	Material	Quantity	Unit
1	Cement	1.5	t
2	Sand	200	m^3
3	Gravel (Quarry Kariani)	500	m^3

4.4.1 Cumulative Resources Utilization

127. Cumulative resources utilization of electricity, water and fuel for whole project life under MAR-01/LOT-04/LOT-05 is presented in the Table below.

Table 42: Cumulative Resources Utilization under MAR-01/LOT-04/LOT-05 Sub-project

N	Utilized Resources	Monthly	Measurement
January-June 2023			

N	Utilized Resources	Monthly	Measurement
1	Consumption of Water	4020	M3
2	Electricity	9600	kwt
3	Gus	1467	L
July-December 2023			
1	Consumption of Water	1030	M3
2	Electricity	2300	kwt
3	Gus	950	L
Total Whole Project Life			
1	Consumption of Water	5050	M3
2	Electricity	11900	kwt
3	Gus	2417	L

3.5 Waste Management

3.5.1 Current Period

MAR-01 (LOT-04 and LOT-05)

128. CC for MAR-01 and MAR-02 sub-projects developed a Waste Management Plans and agreed with the MoEPA. The Contractor has signed an agreement with the Marneuli Municipality regarding provision of the waste containers, collection and transportation of household waste. In addition to that the contractor has signed an agreement with the licensed company ,,Sanitary" Ltd for collection, transportation and treatment of the hazardous waste. Temporary hazardous waste storage area has been arranged at the WWTP construction site. Different types of hazardous waste are kept in the restricted area (fenced and roofed) before transporting by the licensed waste transportation/treatment company. Information regarding the generation of waste during reporting period under the MAR-01 sub-project is given in the Table 43 below, relevant agreements are provided in Annex D to this report.

Table 43: Waste generated under the MAR-01 sub-project during the reporting period, January-June 2024

#	Domestic, hazardous Waste & Sewage	Estimated Volume	Storage Area	Licensed Company
1.	Household waste	$4M^3$	Bolnisi Municipality household	Bolnisi Municipality Cleaning

#	Domestic, hazardous Waste & Sewage	Estimated Volume	Storage Area	Licensed Company
2	Printer toner	0.6 Kg	Final storage will be at private Company ,,Sanitary" Ltd but temporary they will be stored in temporary hazardous	Private Company ,,Sanitary" Ltd
3	Medical Wastes	0,8 kg/Liter	Final storage will be at private Company ,,Sanitary" Ltd but temporary they will be stored in temporary hazardous	Private Company ,,Sanitary" Ltd

MAR-02

129. Information regarding the generation of waste during reporting period under the MAR-02 sub-project is given in the Table 44 below:

Table 44: Waste generated under the MAR-02 sub-project during the reporting period, January-June 2024

Information about waste generated & disposed under MAR 02 Contract for the period January-June 2023				
#	**Domestic/Hazardous Waste & Sewage**	**Estimated Volume**	**Storage Area**	**Name of Licensed Company**
1	Household waste	13m^3	WWTP construction sites	Marneuli Municipality
	Hazardous Waste	31m3	WWTP construction sites	Private Company ,,Sanitary" Ltd
3	Used tires	A negligible amount	Temporary waste storage area at the Workshop	

Information about waste generated & disposed under MAR 02 Contract for the period January-June 2023				
4	Hydraulic and used oil	A negligible amount	Temporary waste storage area at the Workshop	
5	Oil drums	A negligible amount	Temporary waste storage area at the Workshop	
6	Printer tonner	A negligible amount	Temporary waste storage area at the Workshop	
7	Medical Waste	A negligible amount	Temporary waste storage area at the Workshop	

4.5.2 Cumulative Waste Generation

130. Cumulative waste generation under the MAR-02 project for whole project life is provided in the Table below.

Table 45: Cumulative Waste generated under the MAR-02 sub-project

#	Domestic/Hazardous Waste	Estimated Volume	Unit
January-June 2023			
1	Household waste	35	m^3
2	Hazardous Waste	70	m^3
July-December 2022			
1	Household waste	30	m^3
2	Hazardous Waste	15	m^3
January-June 2022			
1	Household waste	15	m^3
2	Hazardous Waste	8	m^3
July-December 2021			
1	Household waste	10	m^3
2	Hazardous Waste	3	m^3
July-December 2023			
1	Household waste	15	m^3
2	Hazardous Waste	37	m^3
January-June 2024			
1	Household waste	13	m^3
2	Hazardous Waste	37	m^3
Total			
1	Household waste	118	m^3

January-June 2023			
2	Hazardous Waste	170	m^3

3.6 Health and Safety

3.6.1 Community Health and Safety

131. No community incidents have been reported by SC during reporting period under MAR-01 and MAR-02 sub-projects.

3.6.2 Worker Health and Safety

MAR-01 - LOT-04 and LOT-05

132. Environmental H&S specialist of contractor under MAR-01 (LOT-04 and LOT-05) sub-project Mr. Sandro Abzianidze was performing day-to-day monitoring of Health & Safety on the Sites and press the Contractor to improve the provision of trench barriers in roads and to provide suitable work boots for the labour force.

133. Health & safety and environment issues which were covered during the reporting period are as follows:

- PPE;
- Reinstatement works

134. There were no Workers Health and Safety problems identified during the site visits under MAR-01 (LOT-04 and LOT-05) sub-project by UWSCG/IPMO/USIIP and SC during the reporting period:

MAR-01/LOT-01, LOT-02, LOT-03 and LOT-06

135. Environmental Specialist of contractor under MAR-01 sub-project Mr. Levan Inashvili and H&S specialist Mr. Aleksandre Chitadze were performing day-to-day monitoring of ESHS on the Sites and press the Contractor to improve the provision of trench barriers in roads and to provide suitable work boots for the labour force.

136. Health & safety and environment issues which were covered during the reporting period are as follows:

- Excavation of trenches;
- PPE;

137. The Following Workers Health and Safety problems were identified during the site visits under MAR-01 (LOT-01, LOT-02, LOT-03 and LOT-06) sub-project by UWSCG/IPMO/USIIP and SC during the reporting period:

- The walls of the deep trenches (>1.5m) by boards should be strengthened
- workers always should use complete set of PPEs

- Workers at high altitudes on the reservoir do not wear safety helmets or safety belts

3.6.3 Community Health and Safety

MAR-01 and MAR-02 sub-projects

138. The Following Community Health and Safety problems were identified during the site visits under MAR-01 and MAR-02 sub-projects by UWSCG/IPMO/USIIP and SC:

- Construction sites should be adequately fenced after the completion of the construction activities (MAR-01/LOT-06, Jandari Reservoir)
- Construction sites should be adequately protected after the completion of the construction activities (MAR-01/LOT-04, sewerage pipeline over the water channel)

3.7 Training

139. On site environmental and H&S safeguard trainings were conducted for contractor's environmental team of MAR-01 and MAR-02 sub-project by Environmental Specialists of UWSCG/USIIP and SC/HILL on a regular basis. Environmental specialists of contractors were introduced with all necessary safeguard requirements of ADB/SPS 2009.

140. On-job training were conducted on 15 March 2024 by Environmental Specialist Ms. Kate Chomakhidze and ES of SC/HILL Mr. Nikoloz Neparidze after the inspection of the construction works under MAR-01 and MAR-02 sub-projects. Main issues raised during the site visit and training topics were: the walls of the deep trenches (>1.5m) by boards should be strengthened; Workers at high altitudes to use safety helmets and safety belts. The aforementioned training was attended by representatives of the CC and CS teams for environmental protection and H&S.

141. Contractors developed Corrective Action Plans to address nonconformities identified during the site visit and sent them to SC and UWSCG.

4. FUNCTIONING OF THE SEMP

4.1 SEMP Review (prepared and updated under USIIP/T6, including CHI-01, MAR-01 and Mar-02 sub-projects)

142. The SEMP for Chiatura's water supply network was prepared and approved in January 2020 and further updated and approved during the reporting period, in August 2020 due to changes in the project design.

143. The following SEMPs have been prepared and approved under CHI-01 and MAR-01 sub-project during the previous reporting periods:

CHI-01 Sub-project:

- SEMP for CAMP site (approved in August 2018)
- SEMP for Sachkhere Reservoir (approved in August 2018);
- SEMP for Bisi Reservoir (approved in September 2018);
- SEMP for Lezhubani Reservoir (approved in September 2018);
- SEMP for Navardzeti Reservoir (approved in September 2018);
- SEMP for Perevisy Reservoir (approved in September 2018);
- SEMP for Rustaveli reservoir (approved in September 2018);
- SEMP for Tekhisa Reservoir (approved in September 2018);
- SEMP for Chiatura Well fields (approved in November 2018);
- SEMP for Chiatura Water Supply components (Avarioni&Sapari) (Approved in 10 August 2020)

144. The following SEMPs have been updated due to the changes in project design under CHI-01 sub-project.

- SEMP for Sachkhere reservoir (December 2019);
- SEMP for Bisi Reservoir (December 2019)

MAR-01 sub-project:

- SEMP for Jandary Reservoir (approved in March 2019);
- SEMP for Kolagiri Pumping Station (approved in March 2019);
- SEMP for CAMP (approved in May 2019)
- SEMP for City Reservoir (approved May 2019)

MAR-02 sub-project:

- SSEMP for MAR-02 (approved in March 2020)

Updated SEMPs under MAR-01 sub-project

- SEMP for MAR-01 (LOT-01/LOT-02/LOT-03 and LOT-06) (September 2022)
- SEMP for MAR-01 (LOT-04/LOT-05) (September 2022)

145. All SEMPs were prepared by Contractor, endorsed by SC and approved by UWSCG. SEMPs were reviewed/commented by the ADB.

5. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

5.1 Good Practice

146. During the reporting period, relations between UWSCG/IPMO/USIIP, supervisory consultants, contractors and local communities were improved to avoid further inconsistencies within the USIIP/T6 subprojects. The Contractor always provides the visitors to the Marneuli WWTP construction site with personal protective equipment, safety vests and helmets.

5.2 Opportunities for Improvement

147. During the reporting period, IPMO improved tracking of corrective actions. Close monitoring, guidance and communication between PIU, SC and CC has been improved to avoid inconsistencies and improve the current situation. Issues identified during the previous SAEMR, July-December 2023 were taken into account by UWSCG/USIIP and SC/HILL.

6. SUMMARY AND RECOMMENDATIONS

6.1 Summary

148. Individual and joint on-site monitoring activities were conducted by Environmental Specialists of UWSCG/USIIP Ms. Ketevan Chomakhidze and Mr. Nikoloz Neparidze Environmental Specialist of SC/HILL.

149. During the reporting period (January-June 2024), a total of ten site visits were conducted under the USIIP/T6 program. These visits identified a total of 35 non-compliances, resulting in 7 non-compliance notices issued to the contractor by the ESs of SC and UWSCG/USIIP. Specifically, within the MAR-02 subproject, 15 non-compliances were identified and 3 non-compliance notices were issued to the contractor. During this period, under the USIIP/T6 MAR-01 subproject 20 non-compliances were identified, resulting in 6 non-compliance notices issued to the contractor.

150. No Environmental Quality Measurement was conducted under CHI-01 sub-project as there were no construction activities under the project during the reporting period.

151. During the reporting period environmental quality measurements of ambient air pollution and noise level were conducted under MAR-01 and MAR-02 sub-projects on the monthly (Mar-02) and semi-annual basis (Mar-01).

152. Table 46 below provides more detailed information about the Recommendations to Address Environmental, Social and H&S Non-Compliances identified during the reporting period, January-June 2024 under USIIP/T6 sub-projects.

6.2 Recommendations

153. During the reporting period, January-June 2024, the USIIP/T6 was implemented in accordance with the requirements of ADB - SPS 2009 and the National Legislation.

154. Recommendations for the implementation of USIIP/T6 during the next reporting period July-December 2024 are provided in the Table 46 below:

Table 46: Recommendations to Address Environmental Issues under USIIP/T6 sub-projects

Recommendations under MAR-01 and MAR-02 sub-projects	
Recommendations MAR-01 (LOT-01/LOT-02/LOT-03/LOT-04/LOT-05/LOT-06)	**Implementation Status and Date**
MAR-01 LOT-04/LOT-05 Noise from the construction activities should not cause disruption and nuisance to nearby community and other sensitive receptors (i.e. school, hospitals).	Instruction are given to contractor to improve the situation and to conduct following mitigation measures by the end of July 2024. Plan activities in consultation with SC and IPMO/UWSCG so that activities with the greatest potential to generate noise are planned during periods of the day that will result in least disturbance; Noisy construction activities will be avoided during night time; All construction equipment and vehicles shall be well maintained, regularly inspected for noise emissions; Impose speed limits on construction vehicles to minimize emissions along areas where sensitive receptors are located (i.e. temples, hospitals, schools, houses) Install noise barriers (e.g., panels, curtains, or

Recommendations under MAR-01 and MAR-02 sub-projects	
	partitions) to reduce the emission of engine noise. Conduct meetings with population and provide information related to schedule of construction activities and noise caused by the project activities, Should be improved immediately during the implementation of the construction activities.
MAR-01/LOT-06 Fencing of Jandari Reservoir, installation of the information signs	Instruction are given to contractor to conduct relevant mitigation measures by the end of September 2024
Recommendations MOR-02	**Implementation Status and Date**
Dust from the construction activities should not cause nuisance to nearby community	Instruction are given to contractor to improve the situation and to conduct relevant mitigation measures by the end of July 2024 Cover or damp down by water spray on the excavated mounds of soil to control dust generation; Apply water prior to levelling or any other earth moving activity to keep the soil moist throughout the process; Bring the material (aggregate and sand) as and when required; Ensure speedy completion of work and proper site clearance after completion; Damp down unsatisfied /bad

Recommendations under MAR-01 and MAR-02 sub-projects	
	condition roads to avoid dust generation while using for transport of waste/material Use tarpaulins to cover loose material that is transported to and from the site by truck Control dust generation while unloading the loose material (particularly aggregate and sand) at the site by sprinkling water/unloading inside barricaded area Clean wheels and undercarriage of haul trucks prior to leaving construction site Don't allow access in the work area except workers to limit soil disturbance and prevent access by fencing
Elimination of the flooding impact on WWTP of Marneuli removing all waste and mud from the territory	Instruction are given to contractor to improve the situation and to conduct relevant mitigation measures by the end of July 2024

155. Conduct quarterly monitoring measurements of Noise and Air quality under MAR-02 project at the WWTP construction site and nearest sensitive receptors. The schedule of environmental quality measurements to be carried out during the next reporting period, until the end of September 2024 is presented in the Table 47 below.

Table 47: Conduct Monitoring of Environmental Quality under MAR-02 sub-project

Parameters	Quarterly measurement
Dust	September 2024
$PM_{2.5}$ and PM_{10}	September 2024
Vibration	September 2024

Carbon monoxide	September 2024
Nitrogen dioxide	September 2024
Noise	September 2024

156. Post-construction Environmental Audit to be prepared for MAR-02 sub-project in November 2024

157. Post-construction Environmental Audit to be conducted in September 2024 under Mar-01 sub-project.

ANNEXES

ANNEX A: ENVIRONMENTAL QUALITY MEASUREMENT DATA (MAR-02 SUB-PROJECT)

Construction of a Waste Water Treatment Plant in Marneuli

Report of Environmental Qualitative Parameters Measurements
N25 - 25.01.2024

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The Examination Laboratory is Certified With ISO 9001:2015

Table of Contents

1. **Principal terms. Definitions**

Term		Definition
Acoustic noise	-	All kinds of continuous, uncomfortable and disturbing sounds, elastic oscillations and waves in the air, which occur as a result of the actions of natural or legal persons and create discomfort; they may have a negative impact on a person's health or social status.
Atmospheric air pollutants	-	Any substance emitted into the atmospheric air due to the human activity that has or may have a negative impact on human health and/or natural environment.
Vibration	-	Flexible oscillations and waves in a solid body
Sound	-	Mechanical (acoustic) oscillations perceived by a human hearing analyzer in 16 Hz - 20 kHz range.
Noise	-	Unfavorable sound, which creates discomfort, affects our auditory system and hampers the perception of desirable sounds.
Admissible noise level	-	The magnitude of the sound, which does not cause direct or indirect negative effects on a person, does not reduce his ability to work, does not negatively affect his feelings or mood, does not cause a substantial change in a functional system, which is sensitive to him.
Continuous noise	-	The sound measured by "Slow" time characteristic of the noise meter, which changes by no more than 5 dBA in time.
Intermittent noise	-	The sound measured by "Slow" time characteristic of the noise meter, which changes in time of no more than >5 dBA.
Background noise	-	Summary level of all signals, except the signals generated by the study source.
A weighting	-	The spectrum of noise sound frequency per ceptible for human auditory system.
„IFC"	-	International Finance Corporation.
"NIOSH"	-	"National Institute for Occupational Safety & Health" USA.

2. Introduction

"United Water Supply Company of Georgia" LLC is a society based on 100% equity participation of the state, which was established on the basis of the order #1-1/13 of the Minister of Economic Development of Georgia dated January 11, 2010. The company provides water supply and drainage network services throughout Georgia for urban settlements.

As of today, about 20% of the population of Marneuli is connected to the existing sewage network. The sewage network is equipped with DN200 and DN800 diameter pipes. The said sewage network is outdated and can no longer provide for the reception of wastewater. There is no waste water discharge system and treatment facility in the settlement located in the project area. There is no organized collection of polluted waters at all. Therefore, there are high risks of contamination of groudwater and surface waters, as well as soil.

The current project envisages the rehabilitation of the Marneuli sewage networks, as well as the construction and operation of the sewage collector and the wastewater treatment facility, the design capacity of which will be: 9931 m3/day. and will serve 100% of the population of Marneuli. The new treatment plant will be located on a plot of agricultural land, with a specified area of 53434.00 sq.m (I/N 83.03.25.406). The mentioned plot of land is the property of "United Water Supply Company of Georgia" LLC. The nearest settlement is 50 meters away from the territory.

The rehabilitation project of the Marneuli water drainage system includes the complete rehabilitation/construction of the existing wastewater network and its connection to the main collector. The Marneuli water supply network provides 100% water supply to the city's population.

"United Water Supply Company of Georgia" is the project implementing company.

3. Existing Situation

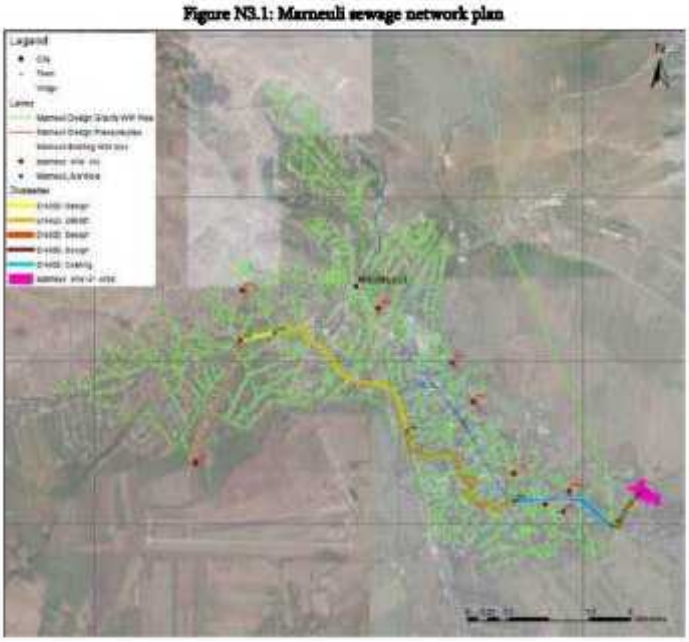
As mentioned, the present project envisages the arrangement of water drainage networks in Marneuli, the construction of a system of drain collectors for the collection of wastewater and its further transportation, and the construction and operation of a wastewater treatment plant in the city of Marneuli.

The construction of Marneuli waste water treatment plant with full biological cycle is planned in two stages. The first stage will carry out water purification, and the number of people who will receive water services will be approximately 41,000. In the second stage, the performance of the treatment plant will increase in accordance with the requirements of 2040.

Within the scope of the project, it is envisaged to use the active sludge method together with separate anaerobic decomposition (fermentation) of sediment.

As of today, construction works of the facility are underway. The construction works of the treatment plant are performed by "Insi" company.

Figure N3.1: Marneuli sewage network plan



Based on the agreement signed between „Insi" and L.T.D. "Eco-Spectri", Representatives of the "Eco-Spectri"-'s Examination Laboratory performed instrumental measurements of noise levels, vibration levels and particulate matter in ambient air (PM 2.5, PM 10) at the locations specified by the customer.

4. Environmental Qualitative Parameters

4.1 Noise - Introduction

Noise is any unwanted sounds or a combination of sounds of different frequencies and intensities that have an undesirable influence on a human body.

With its physics, noise is the mechanical oscillations of particles of an elastic environment (gas, liquid, organic matter) within the scope of a human auditory analyzer (16 Hz-20 kHz) arising under the influence of a certain force. At the same time, the sound is called regular periodic (sinusoidal) oscillations, and the noise is called an irregular set of sounds, non-periodic, random oscillation processes. Thus, from a hygienic point of view, noise is a combination of sounds of different frequencies and levels of sounds, which hampers the perception of useful audible signals (music,

conversation, etc.) and triggers an unwanted, irritating effect on the human body. Noise is classified depending on the nature of spectrum and time characteristics.

4.2 Noise Sources

Depending on the place of origin, the noise sources are classified as follows:

- The main source of noise in the houses in the urban areas is mainly the traffic with the highest share in noise pollution. The number of cars, their speed, urban development and motor system are the main parameters that impact the noise distribution. Besides, a great share of heavy vehicles in the common car park is noteworthy;
- Engineering, technological and household equipment, as well as human activities are the internal noise sources in the houses;
- Sources related to human life activities, such as playing sports, cleaning the area, etc., within the framework of the micro-district (quarter);
- The external sources are industrial and energy infrastructure.

4.3 Time Characteristics of Noise

Depending on time characteristics, the following types of noise can be identified:

- Permanent noise: with its sound level changing by no more than 5 dB during an 8-gour working day in the working zone or in the rooms of residential and public buildings, as measured by a "slow" time property of the noise meter;
- Non-permanent noise: with its level during an 8-gour working day in the working zone, or during the working shift or on the territory of the settled areas changes by more than 5 dB, as measured by a "slow" time property of the noise meter.

Non-permanent noise is classified as:

- Noise varying in time, with its sound level continuously changing in time;
- Intermittent noise, with its sound level changing gradually (by 5 dB or more). Besides, the duration of intervals, during which the noise level is permanent, is 1 second and more;
- Pulse noise, which is made up of several sound signals with the duration of less than 1 sec. besides, the sound levels as measured by relevant time characteristic "impulse" and "slow" differ by no less than 7 dB.

4.4 Vibration - Introduction

Vibration induced in buildings are a frequent concern in cities around the world. Commonly, complaints are made by homeowners, as heavy construction vehicles travel at various speeds on adjacent roads, resulting in annoying vibrations and possible structural damage. Passenger vehicles rarely produce perceptible vibrations to cause significant structural damage. Generally, traffic induced vibrations are caused by heavy vehicles. These vibrations are generated by road surface

irregularities, namely: potholes, cracks, and uneven pavement joints. Dynamic interaction forces between the vehicle and pavement are created by these irregularities resulting in a generation of stress waves that travel through the adjacent soils.

Vibrations produce damaging stress waves that quickly reach building foundations, causing them to vibrate. Several factors may contribute to vibration levels, including: road condition, vehicle speed, vehicle weight, soil conditions, building characteristics, vehicle suspension system, season of the year, and distance between the structure and the road. When a large vehicle strikes an irregularity, an impact load, as well as an oscillating load due to the "axle hop" of the vehicle are generated. The impact load generates ground vibrations that are predominant at the natural vibration frequencies of the soil, whereas the axle hop generates vibrations at the hop frequency, which is a characteristic of the vehicle's suspension system. Vibrations can be amplified if the natural frequency of the building coincides with the natural frequency of the soil.

Vibration sources such as construction activities and road traffic, are among the sources considered potentially dangerous to buildings and structures. In general, structural damages to buildings are extremely rare and are in general caused by other sources. Structural damages occur when the permissive levels of vibration are exceeded. Degrees of damage are methodologically defined and vary from those that do not affect the structural safety of the buildings but affect the value of assets – e.g. formation of cracks in the plaster, increase in existing cracks, damage of architectural elements etc.

4.5 Harmful Substances in the Atmospheric Air - General

Atmospheric air pollution is currently a high environmental risk all over the world. Atmospheric air pollution is a major cause of death and morbidity on the global scale. In any country or region, the atmospheric air quality is not determined by one or two factors only. Rather, it is the result of a combination of several factors and depends on the scale and source of emission, weather conditions, landscape and human factor.

The atmospheric air in Georgia is polluted by emissions from vehicles, energy sector, agriculture and industrial facilities.

The main pollutant of the atmospheric air in urban areas is vehicles. 62-78% of nitrogen oxides (NOx) and carbon monoxide (CO) in the country is emitted in the road transport sector. The dynamics of emissions from this sector is increasing rapidly following the number of vehicles and amount of fuel consumed by them.

4.6 Main Atmospheric Pollutants

The major pollutants of the atmospheric air and the most frequently mentioned substances are: solid particles with the diameter of 10μm or less, solid particles with the diameter of 2.5μm or less (hereinafter, PM10 and PM2.5), nitrogen dioxide (NO2), ozone (O3) and carbon monoxide (CO).

With their origin, the main pollutants have the following properties:

– **PM10 and PM2,5:** The particles are mainly generated from natural and anthropogenic sources. They are classified as basic PM10 or basic PM2.5. The natural sources include sea salt, naturally emitted dust, flower dust, and volcanic ash; as for the anthropogenic sources, they include fuel combustion for energy generation, home heating and transport, industrial process and waste incineration, agriculture, as well as brake, tire and road wear, together with other types of anthropogenic dust. Black carbon is PM2.5. It is generated from an incomplete combustion of fuel. The main sources of black carbon emission are transport and home heating systems.

– **NO2:** The process of combustion is a major source of nitrogen oxides (NOx) that may be stationary or mobile. Nitrogen monoxide (NO) is the source of emission of the major portion of **NOx:** consequently, NO is oxidized to produce NO2; although some NO2 emissions occur directly. The proportion of NO2 in the vehicle exhaust (i.e. NO2 / NOx ratio) is significantly higher in diesel than in petrol vehicles because the post-exhaust systems increase NO oxidation what increases the direct emission of greater amounts of NO2.

– **CO:** Carbon dioxide (CO) is a toxic, odorless gas. Low concentrations of carbon dioxide are naturally found in the atmosphere from volcanic action and forest fires. CO is formed from partial oxidation of carbon-containing compounds when there is no sufficient oxygen to produce carbon dioxide. The principal source of external CO is combustion processes from transport and industrial activities.

– **O3:** Ground-level ozone is a pollutant that is quite harmful for human health, particularly for people with asthma. It damages crops, trees and other vegetation and is the main element of smog. Ground-level ozone is not found in its natural form, but is formed by chemical reactions occurring as a result of interaction between the oxides of nitrogen (NOx) and volatile organic compounds (VOCs) and the sunlight. The main source of NOx and VOC are industrial plants, vehicle exhaust, gasoline vapors and chemical solvents. Following the dynamics of O3 reaction, the concentrations are highest in urban settlements.

– **VOC:** Volatile organic compounds (VOCs) are carbonic acid-containing gases and vapors. They evaporate easily at a room temperature. That is why they are called volatile. Many VOCs, such as benzene and formaldehyde, are highly toxic and can cause cancer and serious health problems. A VOC, such as butadiene participates in the generation of ground-level ozone. The severity of health problems much depends on the type of the volatile compound. The anthropogenic sources are: fuel production, distribution, and combustion processes. Vehicles are the major source of emissions due to evaporation, incomplete fuel combustion or biomass combustion.

5. Legislative Requirements

5.1 Noise

As per the state standards, the admissible noise levels are specified by Decree # 297/N of the Ministry of Health, Labor and Social Affairs of Georgia. This Decree sets both admissible noise

levels and maximum admissible levels for different territories (State Registration Code 470.230.000.11.119.004.920).

The noise levels in the buildings and premises and adjoining areas are also regulated by Technical Regulation no. 398 of the Government of Georgia on August 15, 2017 "On the levels of acoustic noise in the rooms of the residential houses and public establishments and their accommodation areas". The given technical regulation, which is based on the requirements of the international standards (e.g. ISO 1996-1: 2003. "Acoustics, Description, measurement and assessment of environmental noise", Part 1: "Main assessment values and procedures"; ISO 1996-2: 2007"Acoustics, description and measurement of environmental noise", Part 2) sets the admissible levels of acoustic noise in the rooms of residential, buildings and buildings of public and in the settled areas to protect people against the unfavorable impact of noise.

The requirements of the Georgian and international legislations are identical except some minor changes.

Table 5.1.1: Georgian Standards For Noise Levels

Receptor	Time interval	Average admissible noise level (dB)	Maximum admissible noise level (dB)
Residential	7:00-23:00	55	70
Residential	23:00- 7:00	45	60
Commercial	24 hours	60	75

Table 5.1.2: IFC Noise Level Guidelines

Receptor	One hour Laeq (dB)	
	During the day 07.00-22.00	At night 22.00 – 07.00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

For the technical regulation purposes (expert assessment of noise level), the rated parameter of continuous noise is the sound level measured by noise meter LAdBA with scale A, and the equivalent sound level LAeqvdBA for non-continuous (variable) noise.

As per the given technical regulation, the admissible noise levels are given in table N5.1.3.

Table N5.1.3: Admissible levels of acoustic noise in the rooms of residential and public buildings and their settled areas

№	Purpose/use of area and premises	Allowable limits		
		LDay (dBA)		LNight (dBA)
		Day	Night	
1	Educational facilities and library halls	35	35	35
2	Medical facilities/chambers of medical institutions	40	40	40
3	Living quarters and dormitories	35	30	30
4	Hospital chambers	35	30	30
5	Hotel/motel rooms	40	35	35
6	Trading halls and reception facilities	55	55	55
7	Restaurant, bar, cafe halls	50	50	50
8	Theatre/concert halls and sacred premises	30	30	30
9	Sport halls and pools	55	55	55
10	Small offices (<100m3) – working rooms and premises without office equipment	40	40	40
11	Big offices (≥100 m3) working rooms and premises without office equipment	45	45	45
12	Conference halls /meeting rooms	35	35	35
13	areas bordering with houses residential, medical establishments, social service and children facilities(<6 storey buildings)	50	45	40
14	Areas bordering with houses residential, medical establishments, social service and children facilities(>6 storey buildings)	55	50	45
15	The areas bordering with hotels, trade, service, sport and public organizations	60	55	50

Note:

1. in case noise generated by indoor or outdoor sources is impulse or tonal, the limit must be 5dBA less than indicated in the table.

2. Acoustic noise limits given above are set for routine operation conditions of the 'space', i.e. windows and door are closed (exception – built-in ventilation canals), ventilation, air conditioning, lighting (in case available) are on; functional (baseline) noise (such as music, speech) not considered.

The results of noise measurements are documented in accordance with the rules established by the effective law. The noise level value of is calculated with 1 dBA accuracy, by considering generally accepted rounding of the value.

5.2 Vibration

DIN 4150-3 is the most widely applied standard internationally for measuring structural vibrations. The measurement procedure can be found in a similar form in other national standards, for example the Italian UNI 9916. The assessment parameter is the maximum value (Vi) of the three individual components (peak values) of vibration velocity at frequencies of 1 to 80 Hz.

The standard provides guide values for permissible vibration velocities for short time and sustained vibrations in three types of buildings.

Table 5.2.1: Guide values for transient vibration

Guide values for vibration velocity for analyzing the effects of transient vibration					
Building Type	**Foundation Frequency of the Significant Vibration**			**Upper ceiling**	
Frequency range	1 – 10 Hz	10 – 50 Hz	50 – 100 Hz	All frequencies	
Direction	X / Y / Z	X / Y / Z	X / Y / Z	X / Y	Z
Reinforced or framed structures. Industrial and heavy commercial buildings	20 mm/s	20 – 40 mm/s	40 – 50 mm/s	40 mm/s	20 mm/s
Unreinforced or light framed structures/ Residential or light commercial type buildings	5 mm/s	5 – 15 mm/s	15 – 20 mm/s	15 mm/s	20 mm/s
Delicate, listed buildings e.g. historical monuments	3 mm/s	3 – 8 mm/s	8 – 10 mm/s	8 mm/s	20 mm/s

Table 5.2.2: Guide values for continuous vibration

Guide values for vibration velocity (vi) for analyzing the effects of continuous vibration		
Building Type	**Upper ceiling level, all Frequencies**	
Direction	X / Y (horizontal)	Z (vertical)
Reinforced or framed structures industrial and heavy commercial buildings	10 mm/s	10 mm/s

Guide values for vibration velocity (vi) for analyzing the effects of continuous vibration		
Building Type	**Upper ceiling level, all Frequencies**	
Unreinforced or light framed structures, residential or light commercial type buildings	5 mm/s	10 mm/s
Delicate buildings, listed buildings e.g. historical monuments	2.5 mm/s	-

5.3 Atmospheric Air

The air quality standards in Georgia are regulated by the Law of Georgia "On Approving the Qualitative State of Environment". Table N5.3.1 below gives the atmospheric air quality standards of Georgia and World Health Organization (WHO).

Table N5.3.1: Atmospheric air quality standards of Georgia and World Health Organization

Pollutant	Period	Georgian Legislation norm (μg/m3)	WHO norm (μg/m3)
NO2	1 Year	-	40
	1 Hour	200	200
O3	8 Hour	120	100
CO	8 Hour	10	-
PM2.5	1 Year	-	10
	24 Hour	-	25
PM10	1 Year	-	20
	24 Hour	50	50
VOC	-	-	1000[1]

6. Used Measuring Devices

6.1 Noise

The consulting organization used the equipment of the Polish company "SVANTEK", "SVAN 971" series for measuring noise (Figure N6.1.1, N6.1.2).

SVAN 971 series Sound Level Meters by Polish Svantek are appliances with Class 1 IEC 61672-1:2013 accuracy, capable of storing up to 100000 records. SVAN 971 offers a wide range of results in all needed weighting filters (A, C, Z), as well as 1/1 and 1/3 Octave spectra. SVAN 971 Sound Level Meter allows gaining most resultant noise units: Lpeak, Lmax, Lmin, L, Leq, LE, Lden, LEPd, Ltm3, Ltm5, Leq statistics (Ln), expected Leq value (EX), standard Leq deviation (SD), measurement time and overload time % (OVL), etc. SVAN 971 software allows developing graphical, table or text

[1] The value is the WHO recommendation, not a norm of the WHO.

results of the accomplished measurements. The noise meter can store the received signals in internal memory and describe each signal according to level and date stamp. The device has a wind protective cap reducing the impact of environmental conditions (wind, temperature) duringrecording). As per the International Finance Corporation, the noise level must be measured by using the 1st or 2nd class noise meter meeting the requirements of the guideline of the "International Electrotechnical Committee". As per the same guideline, the noise monitoring is possible to provide with the aim to identify the existing background noise level of the environment adjacent to the design or existing facility or to examine the noise level in the operation phase.

Figure N6.1.1: "SVAN 971" Sound Level Meter

Figure N6.1.2: Organization-owned noise meter

Noise meter configurations during the study were:

- Noise measurement range: 30-130 dB;
- Noise meter response speed: Slow (1 second);
- Frequency weight: A.
- Type of mycrophone: 0.5" (12.7 mm.) el. Condensator.

6.2 Vibration

The VM40 is designed for measuring vibration in buildings, bridges, towers, pipelines and various other large structures. The measurements serve to prevent possible structural damage or disturbance to people. The VM40 contains a sensor, recording and evaluation electronics and an accumulator in its robust casing. It is especially suitable for autonomous operation over longer periods of time e.g. on construction sites.

Figure 6.2.1: Triaxial Vibration Monitor VM40A/B

The instrument contains three highly sensitive piezoelectric systems for vibration measurement of all three special dimensions. The signal processing is controlled by a microprocessor. The VM40 is operated via its seven keypad buttons and illuminated LCD display. The measurement data can be transferred to a PC via the USB interface. The instrument also has a port for connecting a charger and a relay output for the external signaling of vibration occurrences.

6.3 Air Measuring Device

The New Zealand based "Aeroqual Series 500 Portable Air Quality Monitor" is used to measure air. The air quality meter allows real-time monitoring of air pollutants. The device measures the concentrations of the following major pollutants in the air:

- Particulate Matters 10µm and 2.5µm (PM10, PM2.5).

The figures 6.3.1 - 6.3.2 - below shows the "Aeroqual Series 500 Portable Air Quality Monitor".

Figure 6.3.1: "Aeroqual Series 500 Portable Air Quality Monitor"

Figure 6.3.2.: "Aeroqual Series 500 Portable Air Quality Monitor"

The device has different sensors for each type of harmful substance. The device has the following types of sensors:

- Gas sensitive semi-conductor sensor (GSS);

- Gas sensitive electrochemical sensor (GSE);
- Laser Particle Counter (LPC);
- Photo Ionization Detector (PID).

During performing the measurement, the device records the average minute data of the obtained samples. Measurements was made within 2 hours.

7. Conducted Measurement

The measurement was carried out in Marneuli, on the construction site of the sewage treatment plant and on the territory of the nearest residential house. The measurement was made on 25/01/2024, for two hours. The measurement of noise, vibration and particulate matter was carried out continuously for two hours.

The measurement was carried out in the area of the construction site and in the nearest residential building, which is located approximately 50 meters away from the construction site. At the time of measurement, construction works were being carried out with high intensity. During the measurement period, self-loading and loading vehicles moved on the construction site.

The measurement process was not affected by any weather conditions (rain, wind). The air temperature during the measurements was as follows:

- 2024/01/25 - 3 ◦C - Relative Humidity 52%.[2]

The concentration levels of noise, vibration and particulate matter were measured in line with the requirements of Georgian Legislation and the methodology and procedures developed by the Company.

As a result of studying the existing situation, two points were determined as measurement locations. Below are the measurement points of environmental quality indicators:

Noise Measurement	Construction Site (Measurement Location N1)
	Yard of the residential building adjacent to the project area (measurement point N2)
Air Measurement	Construction Site (Measurement Location N1)
Vibration Measurent	The balcony of the residential building adjacent to the project area

Figure N7.1 below show the measurement points.

[2] Source - http://meteo.gov.ge/.

Figure N7.1: Measurement Locations

The baseline measurements were performed to identify the levels of noise, vibration and major air pollutants. The detailed data of the gained results are given in annexes:

- Annex N1: Photos of the conducted measurements;
- Annex N2: Noise measurement results;
- Annex N3: Graphical data for noise measurement;
- Annex N4: Vibration Measurement Results (Protocol);
- Annex N5: Air measurement results;
- Annex N6: Certificates of expert participating in the measurement;
- Annex N7: Device Calibration forms;
- Annex N8: ISO standard certificate issued to the company participating in the measurement.

For the average values of the conducted measurements see in Table N7.1.

Table 7.1: Result of Measurements

Measurement Parameter			Value	Source of Pollution
Noise dBA	Norm of Georgian legislation (Adjacent to Residential house)	Day	55	Construction Works
		Night	45	
	Norm of Georgian legislation (Commercial / Industrial Territory)	Day - Night	60	
	Recommendation of the "US National Institute for Occupational Safety and Health" (NIOSH)	8 Hour	85	
	Result - N1 Point (At the Construction site)	2 Hour	63.6	
	Result - N2 Point (At the Res. Buildint)	2 Hour	49.8	
Vibration mm/s	DIN 4150-3 Standard	5		
	Result (Maximum value recorded)	0.3[4]		

[4] The initial and final vibration data are relatively high, which is due to the touch of the device on and off button, as well as moving around the device. Therefore, the initial and the final data are not used in the assessment.

Measurement Parameter			Value	Source of Pollution
PM2.5 (μg/m3)	Allowable Concentration	24 Hour	25	
	Result	20 Minute	50	
PM10 (μg/m3)	Allowable Concentration	24 Hour	50	
	Result	20 Minute	58	

As can be seen from the obtained data, the noise level at point N1 is lower than the permissible norm of "NIOSH" (85 dBA) and is 63.6 dBA. The noise level recorded at point N2 (the area surrounding the house) is also lower than the permissible noise norm established by the legislation of Georgia and amounts to 49.8 dBA. As mentioned, during the measurement, construction works were being carried out with high intensity. During the measurement period, self-loading and loading vehicles moved on the construction site.

According to the results of 5-minute intervals of noise measurement at measurement location N2 (near the residential house), noise exceeding the permissible norm was recorded once (once in a five-minute interval).

At point N2 (near the residential building), the peak noise level was recorded in the five-minute interval from 12:20 to 12:25, which was 58.5 dBA.

The vibration level is much lower (about 20 times lower) than the value of the DIN 4150-3 standard. During the measurement, the highest vibration result was recorded at 0.3 mm/s.

As can be seen from the measurement results, the levels of concentrations of particulate matter in the ambient air exceed the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization.

In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 50 (μg/m3), and PM10 - 58 (μg/m3).

The highest concentration of particulate matter was observed in the sample taken at 12:18, which amounted to PM2.5 - 71 (μg/m3), and PM10 - 109 (μg/m3). The mentioned sharp increase was due to the dust caused by the passage of the construction vehicle.

It should be noted here that the concentrations of particulate matter for the two-hour measurement period (and not for the 20-minute section) are PM2.5 - 35 (μg/m3), and PM10 - 40 (μg/m3).

Construction of a waste water treatment plant in Marneuli

Persons responsible for the measurements:

Archil Revazishvili

LTD "Eco-Spectri"

Head of Examination Laboratory

Signature

David Kaviladze

LTD "Eco-Spectri"

Senior specialist of Environmental and Social issues

Signature

8. Conclusion

- Based on the agreement signed between „Insi" and L.T.D. "Eco-Spectri", Representatives of the "Eco-Spectri"-'s Examination Laboratory performed instrumental measurements of noise levels, vibration levels and concentrations of particulate matter in ambient air (PM 2.5, PM 10) at the locations specified by the customer;
- The measurement was carried out in Marneuli, on the construction site of the sewage treatment plant and on the territory of the nearest residential house. The measurement was made on 25/01/2024, for two hours;
- The measurement was carried out in the area of the construction site and in the nearest residential building, which is located approximately 50 meters away from the construction site;
- The concentration levels of noise, vibration and particulate matter were measured in line with the requirements of Georgian Legislation and the methodology and procedures developed by the Company;
- During the measurement, construction works were being carried out with high intensity;
- As can be seen from the obtained data, the noise level at point N1 is lower than the permissible norm of "NIOSH" (85 dBA) and is 63.6 dBA. The noise level recorded at point N2 (the area surrounding the house) is also lower than the permissible noise norm established by the legislation of Georgia and amounts to 49.8 dBA. As mentioned, during the measurement, construction works were being carried out with high intensity. During the measurement period, self-loading and loading vehicles moved on the construction site;
- According to the results of 5-minute intervals of noise measurement at measurement location N2 (near the residential house), noise exceeding the permissible norm was recorded once (once in a five-minute interval);
- At point N2 (near the residential building), the peak noise level was recorded in the five-minute interval from 12:20 to 12:25, which was 58.5 dBA;
- The vibration level is much lower (about 20 times lower) than the value of the DIN 4150-3 standard. During the measurement, the highest vibration result was recorded at 0.3 mm/s;
- As can be seen from the measurement results, the levels of concentrations of particulate matter in the ambient air exceed the norm established by the legislation of Georgia and the norm/recommendation of the World Health Organization;
- In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 50 (μg/m3), and PM10 - 58 (μg/m3);
- The highest concentration of particulate matter was observed in the sample taken at 12:18, which amounted to PM2.5 - 71 (μg/m3), and PM10 - 109 (μg/m3). The mentioned sharp increase was due to the dust caused by the passage of the construction vehicle;

Construction of a waste water treatment plant in Marneuli

- It should be noted here that the concentrations of particulate matter for the two-hour measurement period (and not for the 20-minute section) are PM2.5 - 35 (μg/m3), and PM10 - 40 (μg/m3).

Annex N1: Photos

Figure: Noise measurement - Point N1	**Figure: Noise measurement - Point N1**
	
Figure: Noise measurement - Point N2	**Figure: Noise measurement - Point N2**
	
Figure: Vibration measurement	**Figure: Vibration measurement**
	
Figure: Air measurement	**Figure: Air measurement**
	

Annex N2: Noise Measurement Results

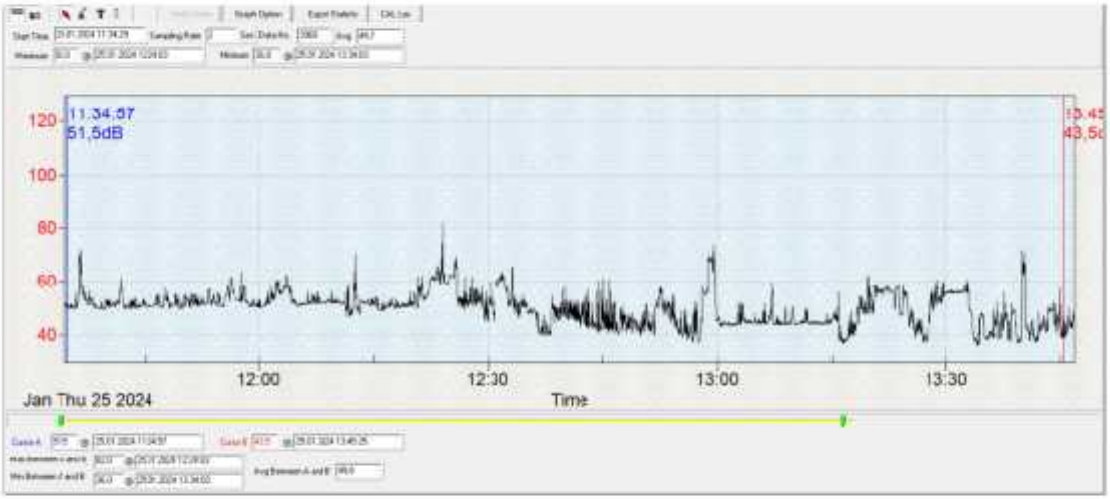
N1 Measurement		
Date	Location	Distance from Project Area
25.01.2024	Construction Site	10 m.
N1 Measurement Result		
Average	11:40 - 13:40	
	63,6	
5 Minute Average		
1	25.01.2024 11:45	75,8
2	25.01.2024 11:50	74,1
3	25.01.2024 11:55	77,7
4	25.01.2024 12:00	72,2
5	25.01.2024 12:05	70,4
6	25.01.2024 12:10	64,5
7	25.01.2024 12:15	62,0
8	25.01.2024 12:20	70,3
9	25.01.2024 12:25	74,8
10	25.01.2024 12:30	68,4
11	25.01.2024 12:35	76,4
12	25.01.2024 12:40	66,8
13	25.01.2024 12:45	68,8
14	25.01.2024 12:50	58,5
15	25.01.2024 12:55	50,9
16	25.01.2024 13:00	56,5
17	25.01.2024 13:05	50,0
18	25.01.2024 13:10	56,3
19	25.01.2024 13:15	54,1
20	25.01.2024 13:20	57,7
21	25.01.2024 13:25	58,7
22	25.01.2024 13:30	50,2
23	25.01.2024 13:35	54,1
24	25.01.2024 13:40	56,6

N2 Measurement		
Date	Location	Distance from Project Area
25.01.2024	Residential Building Yard	50 m.
N2 Measurement Result		
Average	11:40 - 13:40	
	49,8	
5 Minute Average		
1	25.01.2024 11:45	51,7
2	25.01.2024 11:50	51,5
3	25.01.2024 11:55	52,5
4	25.01.2024 12:00	53,5
5	25.01.2024 12:05	54,3
6	25.01.2024 12:10	52,1
7	25.01.2024 12:15	51,8
8	25.01.2024 12:20	50,9
9	25.01.2024 12:25	58,5
10	25.01.2024 12:30	54,3
11	25.01.2024 12:35	54,5
12	25.01.2024 12:40	46,5
13	25.01.2024 12:45	47,1
14	25.01.2024 12:50	44,7
15	25.01.2024 12:55	47,9
16	25.01.2024 13:00	49,1
17	25.01.2024 13:05	44,8
18	25.01.2024 13:10	45,5
19	25.01.2024 13:15	44,8
20	25.01.2024 13:20	44,6
21	25.01.2024 13:25	54,5
22	25.01.2024 13:30	47,2
23	25.01.2024 13:35	50,8
24	25.01.2024 13:40	42,9

Annex N3: Graphical Data for Noise Measurement

Graphical data for noise measurement- N1 point (Construction Site)

Graphical data for noise measurement- N2 point (At the residential House)

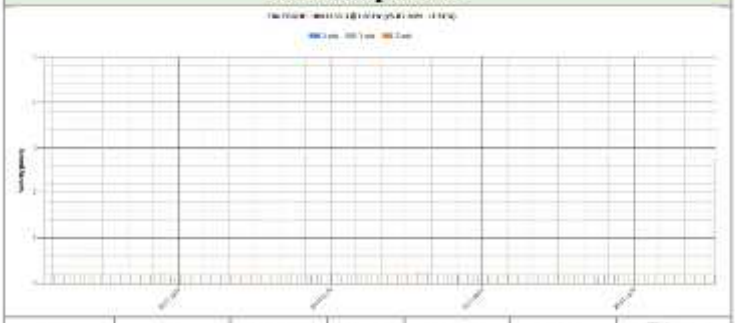


Annex N4: Vibration Measurement Results (Protocol)

Measurement protocol N1	
1. General	
1.1 Person in charge	Archil Revazishvili - Head of the Examination Lab
1.2 Measurement period	25.01.2024 11:33:37 - 25.01.2024 13:46:11
2. Kind of vibration	
2.1 Excitation	Construction Works
2.2 Operating conditions	High intensity work
3. Structure	
3.1 Name and address	City Marneuli
3.2 Classification	Balcony of a residential house. Open space from three sides
3.3 Description	Residential building. According to DIN 4150-3, N2 categories of buildings (residential and similar buildings)
4. Location and position	
4.1 Source of vibration	

Measurement protocol N1	
	
5. Environmental conditions	open space from three sides; Smooth floor surface
6. Subjective observations	The vibration of the working specifics doesn't affect on the general condition
7. Measuring chain	Triaxial Vibration Meter VM40B Serial number: 180665 Calibration Date: May 2023 Measurement method: DIN 4150-3 Settings: short res. found.: Frequency range: 1-80 Hz Trigger mode: 060s + events Measurement processing and report generation done with VM40MDB software.
8. Measurement result	
8.1 Event chart	

Measurement protocol N1



Date	Time	X-axis	Y-axis	Z-Axis	Unit	Trigger event
25.01.2024	11:33:37	1,39	1,3	1,18	mm/s	(T)
25.01.2024	11:34:31	0,14	0,17	0,17	mm/s	(T)
25.01.2024	11:35:30	0,2	0,19	0,18	mm/s	(T)
25.01.2024	11:36:30	0,17	0,21	0,18	mm/s	(T)
25.01.2024	11:37:29	0,14	0,2	0,16	mm/s	(T)
25.01.2024	11:38:30	0,17	0,16	0,19	mm/s	(T)
25.01.2024	11:39:29	0,13	0,17	0,14	mm/s	(T)
25.01.2024	11:40:29	0,14	0,15	0,18	mm/s	(T)
25.01.2024	11:41:29	0,19	0,15	0,19	mm/s	(T)
25.01.2024	11:42:29	0,16	0,18	0,18	mm/s	(T)
25.01.2024	11:43:29	0,13	0,16	0,18	mm/s	(T)
25.01.2024	11:44:28	0,17	0,18	0,15	mm/s	(T)
25.01.2024	11:45:28	0,14	0,22	0,18	mm/s	(T)
25.01.2024	11:46:28	0,2	0,2	0,19	mm/s	(T)
25.01.2024	11:47:28	0,12	0,14	0,2	mm/s	(T)
25.01.2024	11:48:27	0,16	0,16	0,21	mm/s	(T)
25.01.2024	11:49:27	0,17	0,15	0,12	mm/s	(T)
25.01.2024	11:50:26	0,17	0,14	0,15	mm/s	(T)
25.01.2024	11:51:27	0,16	0,2	0,19	mm/s	(T)
25.01.2024	11:52:26	0,15	0,17	0,18	mm/s	(T)
25.01.2024	11:53:26	0,17	0,15	0,2	mm/s	(T)
25.01.2024	11:54:26	0,17	0,18	0,15	mm/s	(T)
25.01.2024	11:55:25	0,17	0,17	0,16	mm/s	(T)
25.01.2024	11:56:26	0,21	0,19	0,18	mm/s	(T)
25.01.2024	11:57:25	0,17	0,21	0,18	mm/s	(T)
25.01.2024	11:58:25	0,15	0,17	0,15	mm/s	(T)
25.01.2024	11:59:24	0,2	0,17	0,13	mm/s	(T)
25.01.2024	12:00:24	0,16	0,15	0,18	mm/s	(T)
25.01.2024	12:01:24	0,15	0,16	0,19	mm/s	(T)
25.01.2024	12:02:24	0,17	0,17	0,16	mm/s	(T)

Measurement protocol N1						
25.01.2024	12:03:24	0,17	0,19	0,17	mm/s	(T)
25.01.2024	12:04:23	0,18	0,17	0,15	mm/s	(T)
25.01.2024	12:05:23	0,16	0,15	0,17	mm/s	(T)
25.01.2024	12:06:23	0,18	0,15	0,15	mm/s	(T)
25.01.2024	12:07:23	0,15	0,16	0,19	mm/s	(T)
25.01.2024	12:08:22	0,21	0,15	0,2	mm/s	(T)
25.01.2024	12:09:22	0,18	0,17	0,17	mm/s	(T)
25.01.2024	12:10:22	0,16	0,17	0,13	mm/s	(T)
25.01.2024	12:11:21	0,16	0,19	0,19	mm/s	(T)
25.01.2024	12:12:22	0,18	0,19	0,18	mm/s	(T)
25.01.2024	12:13:21	0,22	0,2	0,18	mm/s	(T)
25.01.2024	12:14:21	0,15	0,15	0,16	mm/s	(T)
25.01.2024	12:15:21	0,16	0,18	0,22	mm/s	(T)
25.01.2024	12:16:20	0,17	0,18	0,17	mm/s	(T)
25.01.2024	12:17:20	0,16	0,21	0,18	mm/s	(T)
25.01.2024	12:18:20	0,15	0,18	0,16	mm/s	(T)
25.01.2024	12:19:20	0,2	0,19	0,14	mm/s	(T)
25.01.2024	12:20:20	0,2	0,16	0,21	mm/s	(T)
25.01.2024	12:21:19	0,19	0,21	0,22	mm/s	(T)
25.01.2024	12:22:19	0,2	0,18	0,3	mm/s	(T)
25.01.2024	12:23:18	0,17	0,17	0,17	mm/s	(T)
25.01.2024	12:24:19	0,2	0,21	0,18	mm/s	(T)
25.01.2024	12:25:19	0,16	0,2	0,15	mm/s	(T)
25.01.2024	12:26:18	0,18	0,16	0,16	mm/s	(T)
25.01.2024	12:27:18	0,15	0,22	0,16	mm/s	(T)
25.01.2024	12:28:17	0,17	0,2	0,15	mm/s	(T)
25.01.2024	12:29:17	0,14	0,19	0,17	mm/s	(T)
25.01.2024	12:30:18	0,22	0,26	0,3	mm/s	(T)
25.01.2024	12:31:17	0,22	0,29	0,23	mm/s	(T)
25.01.2024	12:32:17	0,16	0,19	0,16	mm/s	(T)
25.01.2024	12:33:16	0,18	0,15	0,17	mm/s	(T)
25.01.2024	12:34:16	0,21	0,16	0,15	mm/s	(T)
25.01.2024	12:35:16	0,14	0,19	0,17	mm/s	(T)
25.01.2024	12:36:15	0,14	0,19	0,19	mm/s	(T)
25.01.2024	12:37:16	0,2	0,17	0,16	mm/s	(T)
25.01.2024	12:38:15	0,16	0,15	0,18	mm/s	(T)
25.01.2024	12:39:15	0,19	0,15	0,18	mm/s	(T)
25.01.2024	12:40:15	0,18	0,21	0,18	mm/s	(T)
25.01.2024	12:41:14	0,17	0,2	0,18	mm/s	(T)
25.01.2024	12:42:14	0,16	0,18	0,16	mm/s	(T)
25.01.2024	12:43:13	0,15	0,21	0,19	mm/s	(T)
25.01.2024	12:44:14	0,16	0,19	0,16	mm/s	(T)
25.01.2024	12:45:14	0,18	0,19	0,17	mm/s	(T)
25.01.2024	12:46:13	0,14	0,21	0,15	mm/s	(T)
25.01.2024	12:47:13	0,22	0,15	0,25	mm/s	(T)

Measurement protocol N1						
25.01.2024	12:48:13	0,19	0,2	0,22	mm/s	(T)
25.01.2024	12:49:12	0,22	0,2	0,16	mm/s	(T)
25.01.2024	12:50:12	0,17	0,23	0,17	mm/s	(T)
25.01.2024	12:51:12	0,15	0,16	0,17	mm/s	(T)
25.01.2024	12:52:12	0,14	0,17	0,21	mm/s	(T)
25.01.2024	12:53:12	0,2	0,16	0,15	mm/s	(T)
25.01.2024	12:54:11	0,18	0,15	0,19	mm/s	(T)
25.01.2024	12:55:11	0,17	0,16	0,22	mm/s	(T)
25.01.2024	12:56:10	0,17	0,17	0,17	mm/s	(T)
25.01.2024	12:57:10	0,16	0,21	0,2	mm/s	(T)
25.01.2024	12:58:11	0,16	0,2	0,18	mm/s	(T)
25.01.2024	12:59:10	0,17	0,2	0,16	mm/s	(T)
25.01.2024	13:00:10	0,15	0,18	0,24	mm/s	(T)
25.01.2024	13:01:10	0,15	0,16	0,17	mm/s	(T)
25.01.2024	13:02:09	0,17	0,2	0,14	mm/s	(T)
25.01.2024	13:03:09	0,16	0,21	0,2	mm/s	(T)
25.01.2024	13:04:08	0,19	0,19	0,18	mm/s	(T)
25.01.2024	13:05:08	0,16	0,2	0,17	mm/s	(T)
25.01.2024	13:06:09	0,18	0,17	0,15	mm/s	(T)
25.01.2024	13:07:08	0,16	0,21	0,18	mm/s	(T)
25.01.2024	13:08:08	0,17	0,19	0,17	mm/s	(T)
25.01.2024	13:09:08	0,15	0,15	0,15	mm/s	(T)
25.01.2024	13:10:07	0,15	0,18	0,14	mm/s	(T)
25.01.2024	13:11:07	0,21	0,18	0,21	mm/s	(T)
25.01.2024	13:12:06	0,17	0,17	0,19	mm/s	(T)
25.01.2024	13:13:07	0,19	0,22	0,15	mm/s	(T)
25.01.2024	13:14:07	0,13	0,26	0,16	mm/s	(T)
25.01.2024	13:15:06	0,17	0,18	0,18	mm/s	(T)
25.01.2024	13:16:06	0,18	0,18	0,17	mm/s	(T)
25.01.2024	13:17:06	0,15	0,16	0,18	mm/s	(T)
25.01.2024	13:18:05	0,18	0,18	0,21	mm/s	(T)
25.01.2024	13:19:05	0,16	0,22	0,2	mm/s	(T)
25.01.2024	13:20:04	0,16	0,16	0,17	mm/s	(T)
25.01.2024	13:21:05	0,17	0,17	0,2	mm/s	(T)
25.01.2024	13:22:05	0,18	0,15	0,16	mm/s	(T)
25.01.2024	13:23:04	0,15	0,14	0,17	mm/s	(T)
25.01.2024	13:24:04	0,18	0,16	0,16	mm/s	(T)
25.01.2024	13:25:04	0,16	0,19	0,14	mm/s	(T)
25.01.2024	13:26:03	0,14	0,2	0,16	mm/s	(T)
25.01.2024	13:27:03	0,15	0,18	0,16	mm/s	(T)
25.01.2024	13:28:02	0,19	0,19	0,16	mm/s	(T)
25.01.2024	13:29:03	0,17	0,22	0,16	mm/s	(T)
25.01.2024	13:30:03	0,14	0,17	0,15	mm/s	(T)
25.01.2024	13:31:02	0,16	0,17	0,16	mm/s	(T)
25.01.2024	13:32:02	0,18	0,18	0,18	mm/s	(T)

Measurement protocol N1						
25.01.2024	13:33:02	0,15	0,19	0,16	mm/s	(T)
25.01.2024	13:34:01	0,16	0,18	0,16	mm/s	(T)
25.01.2024	13:35:01	0,17	0,17	0,16	mm/s	(T)
25.01.2024	13:36:02	0,15	0,2	0,18	mm/s	(T)
25.01.2024	13:37:01	0,17	0,21	0,16	mm/s	(T)
25.01.2024	13:38:01	0,16	0,19	0,17	mm/s	(T)
25.01.2024	13:39:00	0,13	0,2	0,16	mm/s	(T)
25.01.2024	13:40:00	0,15	0,17	0,14	mm/s	(T)
25.01.2024	13:41:00	0,15	0,14	0,18	mm/s	(T)
25.01.2024	13:41:59	0,16	0,2	0,16	mm/s	(T)
25.01.2024	13:42:59	0,15	0,21	0,18	mm/s	(T)
25.01.2024	13:44:00	0,16	0,19	0,17	mm/s	(T)
25.01.2024	13:44:59	0,16	0,17	0,17	mm/s	(T)
25.01.2024	13:45:59	0,15	0,18	0,17	mm/s	(T)
25.01.2024	13:46:09	2,75	4	1,17	mm/s	0-W
25.01.2024	13:46:11	2,75	4	1,17	mm/s	END
9. Evaluation			Generated vibration from construction works does not affect the overall condition			
10. Signs						
Signature			Archil Revazishvili 			

Annex N5: Results of Measurements of Particulate Matter

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
1	25 Jan 2024 11:43	1	1	55	50
2	25 Jan 2024 11:44	1	1	52	45
3	25 Jan 2024 11:45	1	1	83	97
4	25 Jan 2024 11:46	1	1	59	58
5	25 Jan 2024 11:47	1	1	48	46
6	25 Jan 2024 11:48	1	1	52	47
7	25 Jan 2024 11:49	1	1	52	46
8	25 Jan 2024 11:50	1	1	71	57
9	25 Jan 2024 11:51	1	1	80	64
10	25 Jan 2024 11:52	1	1	70	55
11	25 Jan 2024 11:53	1	1	66	51
12	25 Jan 2024 11:54	1	1	63	47
13	25 Jan 2024 11:55	1	1	73	54
14	25 Jan 2024 11:56	1	1	70	53
15	25 Jan 2024 11:57	1	1	52	43
16	25 Jan 2024 11:58	1	1	44	37
17	25 Jan 2024 11:59	1	1	39	35
18	25 Jan 2024 12:00	1	1	45	37
19	25 Jan 2024 12:01	1	1	42	36
20	25 Jan 2024 12:02	1	1	45	36
20 min. Average				**58**	**50**
21	25 Jan 2024 12:03	1	1	41	35
22	25 Jan 2024 12:04	1	1	36	31
23	25 Jan 2024 12:05	1	1	35	32
24	25 Jan 2024 12:06	1	1	30	28
25	25 Jan 2024 12:07	1	1	33	29
26	25 Jan 2024 12:08	1	1	33	29
27	25 Jan 2024 12:09	1	1	56	41
28	25 Jan 2024 12:10	1	1	81	55
29	25 Jan 2024 12:11	1	1	40	35
30	25 Jan 2024 12:12	1	1	36	34
31	25 Jan 2024 12:13	1	1	33	32
32	25 Jan 2024 12:14	1	1	41	34
33	25 Jan 2024 12:15	1	1	39	33
34	25 Jan 2024 12:16	1	1	41	35
35	25 Jan 2024 12:17	1	1	106	62
36	25 Jan 2024 12:18	1	1	109	71
37	25 Jan 2024 12:19	1	1	87	66
38	25 Jan 2024 12:20	1	1	100	76
39	25 Jan 2024 12:21	1	1	102	72
40	25 Jan 2024 12:22	1	1	58	46
20 min. Average				**57**	**44**
41	25 Jan 2024 12:23	1	1	52	40

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
42	25 Jan 2024 12:24	1	1	55	45
43	25 Jan 2024 12:25	1	1	46	41
44	25 Jan 2024 12:26	1	1	39	34
45	25 Jan 2024 12:27	1	1	34	31
46	25 Jan 2024 12:28	1	1	36	31
47	25 Jan 2024 12:29	1	1	42	35
48	25 Jan 2024 12:30	1	1	40	35
49	25 Jan 2024 12:31	1	1	43	37
50	25 Jan 2024 12:32	1	1	33	30
51	25 Jan 2024 12:33	1	1	28	26
52	25 Jan 2024 12:34	1	1	30	29
53	25 Jan 2024 12:35	1	1	34	30
54	25 Jan 2024 12:36	1	1	29	29
55	25 Jan 2024 12:37	1	1	34	28
56	25 Jan 2024 12:38	1	1	27	25
57	25 Jan 2024 12:39	1	1	34	29
58	25 Jan 2024 12:40	1	1	29	27
59	25 Jan 2024 12:41	1	1	28	26
60	25 Jan 2024 12:42	1	1	24	24
20 min. Average				**36**	**32**
61	25 Jan 2024 12:43	1	1	25	23
62	25 Jan 2024 12:44	1	1	27	25
63	25 Jan 2024 12:45	1	1	27	26
64	25 Jan 2024 12:46	1	1	42	40
65	25 Jan 2024 12:47	1	1	32	30
66	25 Jan 2024 12:48	1	1	29	28
67	25 Jan 2024 12:49	1	1	32	32
68	25 Jan 2024 12:50	1	1	36	35
69	25 Jan 2024 12:51	1	1	39	37
70	25 Jan 2024 12:52	1	1	53	51
71	25 Jan 2024 12:53	1	1	71	70
72	25 Jan 2024 12:54	1	1	35	33
73	25 Jan 2024 12:55	1	1	37	34
74	25 Jan 2024 12:56	1	1	38	36
75	25 Jan 2024 12:57	1	1	27	27
76	25 Jan 2024 12:58	1	1	30	28
77	25 Jan 2024 12:59	1	1	39	31
78	25 Jan 2024 13:00	1	1	24	24
79	25 Jan 2024 13:01	1	1	29	27
80	25 Jan 2024 13:02	1	1	29	27
20 min. Average				**35**	**33**
81	25 Jan 2024 13:03	1	1	29	26
82	25 Jan 2024 13:04	1	1	29	27
83	25 Jan 2024 13:05	1	1	26	23
84	25 Jan 2024 13:06	1	1	24	24

Index	Date Time	Monitor ID	Location ID	PM10 (µg/m3)	PM2.5 (µg/m3)
85	25 Jan 2024 13:07	1	1	25	25
86	25 Jan 2024 13:08	1	1	27	26
87	25 Jan 2024 13:09	1	1	28	25
88	25 Jan 2024 13:10	1	1	26	25
89	25 Jan 2024 13:11	1	1	26	24
90	25 Jan 2024 13:12	1	1	29	26
91	25 Jan 2024 13:13	1	1	26	25
92	25 Jan 2024 13:14	1	1	27	24
93	25 Jan 2024 13:15	1	1	26	24
94	25 Jan 2024 13:16	1	1	28	25
95	25 Jan 2024 13:17	1	1	29	25
96	25 Jan 2024 13:18	1	1	26	25
97	25 Jan 2024 13:19	1	1	24	24
98	25 Jan 2024 13:20	1	1	26	25
99	25 Jan 2024 13:21	1	1	26	25
100	25 Jan 2024 13:22	1	1	25	24
20 min. Average				**27**	**25**
101	25 Jan 2024 13:23	1	1	27	25
102	25 Jan 2024 13:24	1	1	45	44
103	25 Jan 2024 13:25	1	1	28	27
104	25 Jan 2024 13:26	1	1	25	24
105	25 Jan 2024 13:27	1	1	28	28
106	25 Jan 2024 13:28	1	1	28	27
107	25 Jan 2024 13:29	1	1	28	28
108	25 Jan 2024 13:30	1	1	26	26
109	25 Jan 2024 13:31	1	1	30	29
110	25 Jan 2024 13:32	1	1	34	32
111	25 Jan 2024 13:33	1	1	31	28
112	25 Jan 2024 13:34	1	1	33	27
113	25 Jan 2024 13:35	1	1	29	25
114	25 Jan 2024 13:36	1	1	29	26
115	25 Jan 2024 13:37	1	1	27	26
116	25 Jan 2024 13:38	1	1	32	28
117	25 Jan 2024 13:39	1	1	28	27
118	25 Jan 2024 13:40	1	1	28	25
119	25 Jan 2024 13:41	1	1	29	27
120	25 Jan 2024 13:42	1	1	30	27
20 min. Average				**30**	**28**
2 Hour Average				**40**	**35**

[illegible]

[illegible]	[illegible]
	

[illegible]

ENVIRONEMNTAL QUALITY MEASUREMENT OF AIR, NOISE AND VIBRATION, MAR-01/LOT-04, LOT-05, 27 January 2024

According to contract #FM 3/50 signed on 27.01.2023 between JSC, Polatyol Yapi Sanayi Ve Ticaret" Branch in Georgia and, "National Environmental Agency" of Ministry of Environmental protection and Agriculture of Georgia, Chief specialist Sergo Khatsava and Invited Specialist Badri Tsatava from National Environmental Agency have conducted the measurements in two places shown by Engineer for purpose of Dust, CO (Carbon Oxide), NO2 (Nitrogen Dioxide) and Noise level determination in **January 2024**.

Results of noise and vibration measurements on 27.01.2024 11:00-11:55

#	Measurement point		Measurement results				
	Location	Coordinates	Noise A_{max} dB	Vibro Speed		Vibro Acceleration	
				mm/s	dB	m/s^2	dB
1	Bolnisi, Lot 4	0461393, 4589198	76.6	<0.1	<66	<0.1	<100
2	Bolnisi, Lot 5	0472957, 4588451	86.5	<0.1	<66	0.1	100

Results of measurements of air pollution with nitrogen dioxide, carbon monoxide and dust on 27.01.2024 11:00-11:55

#	Measurement point		Measurement results (mg/m^3)		
	Location	Coordinates	Nitrogen Dioxide	Carbon Monoxide	Dust
1	Bolnisi, Lot 4	0461393, 4589198	0.014	0.38	0.077
2	Bolnisi, Lot 5	0472957, 4588451	0.019	0.96	0.085

During measurement tools used:

- Dust - Casella Gel 712 - Self-calibration zero and optical filter.
- Noise - Mini Sound Level Meter N05CC.
- Vibration - Smart Sensor ® AR63B Vibration Meter.
- Nitrogen Dioxide and Carbon Monoxide - AeroQual 500.

August 16, 2001, The Ministry of Labor, Health and Social Affairs of Georgia #297/N, approval environmental quality of the norms:

- Dust norm is 0.5mg/m³
- Nitrogen dioxide norm is 0.2mg/m³
- Carbon monoxide norm is 5.0mg/m³
- Vibro speed norm is 112 dB
- Vibro Acceleration norm special protective outlets without using - 126 dB

ANNEX B: PHOTOS OF SITES

MAR-02, CONSTRCUTION OF WWTP IN MARNEULI

Photo N1 Marneuli WWTP

Photo N2 Marneuli WWTP

Photo N3 Separation of the inert waste in Construction Site

Photo N4

Photo

PHOTO N2 – MAR-01 – (LOT-01, LOT-02, LOT-03 and LOT-06), CAMP Site

Photo N1 – Jnadari Reservoir

Photo N3 – Construction of the Sewerage Network

ANNEX C: NON-COMPLIANCE NOTICE, MAR-01/LOT-06, 20 JANUARY 2024

Non-Compliance Notice

20 January 2024

Project: Urban Services Improvement Investment Program (USIIP), Georgia	**Compliance/Non-compliance Notice**
Contract: MAR-1 (Construction of Water Supply and Sewerage Systems in Marneuli and Construction of Sewerage System and Collector in Marneuli)	
Contractor: China Geo-engineering Corporation (CGC) (Peoples Republic of China)	
Reference: Jandari Reservoir (LOT-05)	

The main gate is not installed
The 70-80% fences and entrance gates are removed
Workers enter the building by stairs that do not meet any standards
Scaffolding is arranged without following any rules
The main part of the area is cleaned, but still requires attention
There are no trash cans

NON-COMPLIANCE, JANDARI RESERVOIR:

- The part of fence and main gate are temporary removed;
- The information signs are not installed;
- Trash cans are not installed ;
- Deep tranches are not protected ;
- There is no warehouse for building materials on the territory;
- The ladder to the roof does not have handles;
- When the work is not in progress, the gas cylinders should be placed in a special protected place.

The contractor must eliminate the specified discrepancies within a maximum of 7 working days.

See photos below

Stairs and Caffolding

The construction site - The main Gate is not installed

The part of fence are removed.

No trash cans

Environmental Expert **Nikoloz Nepharidze**

NON-COMPLIANCE NOTICE, MAR-01/LOT-06, 26 JANUARY 2024

Visit report

26 January 2024

Project: Urban Services Improvement Investment Program (USIIP), Georgia	**Compliance/Non-compliance Notice**
Contract: MAR-1 ((Construction of Water Supply and Sewerage Systems in Marneuli and Construction of Sewerage System and Collector in Marneuli))	
Contractor: China Geo-engineering Corporation (CGC) (Peoples Republic of China)	
Reference: Pumping Station and at Kalagiri (LOT-06)	
The deep trenches are not protected and Workers move inside the swarming area. Temporary stockpiled construction materials should be enclosed with tape or protective netting and appropriate labeling should be done.	
NON-COMPLIANCE: ➢ The trench, the depth of which is several meters, is bounded only by a protective tape, which cannot protect the personnel from falling into the trench and resulting from severe injuries. ➢ Waste containers are not located on site ➢ There is no hazardous waste container located on site *The contractor must eliminate the specified discrepancies within a maximum of 7 working days.* ***See photos below***	

The Site


Galaxy S23 Ultra
26 January 2024 12:04 pm


Galaxy S23 Ultra
26 January 2024 12:04 pm


Galaxy S23 Ultra
29 January 2024 12:04 pm


Galaxy S23 Ultra
29 January 2024 12:02 pm

Deept tranch

Environmental Expert of Contractor, Mr.levan Inashvili participated in the monitoring of site

Environmental Expert **Nikoloz Nepharidze**

NON-COMPLIANCE NOTICE, MAR-01/LOT-04, LOT-05

Non-Compliance Notice, UWSCG

Site Visit: 15 March 2024

Project: USIIP	**Non-Compliance Notice**
Contract No: MAR-01/LOT-04, LOT-05	CONSTRUCTION OF WATER SUPPLY AND SEWERAGE SYSTEMS IN MARNEULI AND SEWERAGE SYSTEM AND COLLECTOR IN BOLNISI; USIIP/T6/CW/2022/MAR-01
Contractor: POLAT Yol Yapi Sanayi ve Ticaret Anonim Sirkei (Turkey) **Supervisor Consultant: HILL**	
Reference: "CONSTRUCTION OF SEWERAGE SYSTEM IN BOLNISI"	

This notice is to advice you, the Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented **urgently.**

Construction of Sewerage Network and Pumping Stations in Bolnisi

- An appropriate fence must be installed along the entire perimeter of the Pumping Station to prevent unauthorized persons from entering the territory (Photo No. 1);
- Un-fenced/un secured pipeline cross river near resident areas, where children may use it as a playground make threats to local population and should be adequately fenced and protected (Photo No. 2);
- Clearly visible signs/safety tapes, trench side fences or proper cover should be installed around deep open pits to avoid accidents with local residents (Photo No. 3) (should be improved immediately).

Photos of Bolnisi WW Network and Pumping Stations

All these conditions have to be remedied by the end of this week, 22 March 2024

Date of site visit: 15 March **2024**	
Kate Chomakhidze, Environmental Consultant UWSCG/USIIP	NCN is prepared by Kate Chomakhidze, Environmental Consultant UWSCG/USIIP

NON-COMPLIANCE NOTICE, MAR-02 – WWTP, 17 JANUARY 2024

Hill International

JV of Hill International N.V. & Temelsu International Engineering Service Inc.
& Sub Consultant Policy and Management Consulting Group (PMCG)

temelsu international ENGINEERING SERVICES INC.

Urban Services Improvement Investment Program, Tranche 6

Ref.: CWTPM-Out-3440-1216-2024-01-17 Date: 17th of January 2024

Joint Venture of Toshiba Water Solutions Pvt. Ltd
(Leader of the JV) and IN-SI LLC (JV partner) (India/Georgia),
M.Kostava str.72-a, Tbilisi, GEORGIA

Attention: Mr. Zviad Toidze

United Water Supply Company of Georgia (UWSCG)
3441: Urban Services Improvement Investment Program, Tranche 6
Contract No. UWSCG-ICB-MAR-02-2019: Construction of Wastewater Treatment Plant in Marneuli

Sub: Construction site badly arranged & materials dumped unsystematically-waste are contacted directly with soil for Wastewater Treatment Plant in Marneuli (MAR 02)

Ref: Our letter Ref.: CWTPM Out 3440 1076 2023 05 17 dated 17.05.2023
Our letter Ref.: CWTPM-Out-3440-1150-2023-09-18 dated 18.09.2023

Dear Sir.

We regret to inform you that the condition of the construction site has worsened badly, refer, attached photographs.

- Construction waste materials dumped everywhere, unsystematically.
- Storage conditions are not good.
- Construction waste is not segregated.
- Various Waste stored on soil and contacted directly with soil

It is requested to remove all kinds of material except needed material from roads and from inside of units to the storage area and to store in the acceptable form.

You are also kindly requested to empty the waste containers and remove all waste that has contacted with soil immediately and appropriately.

Yours faithfully,

Yakup Sevgun
Resident Engineer
Hill International- Temelsu J.V.

Address: 26G A. Kazbegi Ave., Apt. 403, Tbilisi, Georgia, Zip Code 0177; Tel: (+995 32) 2 427 409

cc: Ms. Irine Chikhladze, Head of International Projects Management Unit, UWSCG

Encl: Photos of view of construction site

NON-COMPLIANCE NOTICE, MAR-02 WWTP, 15 MARCH 2024

Non-Compliance Notice, UWSCG

Site Visit: 15 March, 2024

Project: USIIP **Contract No:** No UWSCG-ICB-MAR-02-2019 **Contractor:** Toshiba Water Solutions Pvt. Ltd and IN-SI LLC (JV partner) (India/Georgia) **Supervisor Consultant: HILL** **Reference:** "CONSTRUCTION OF WASTE WATER TREATMENT PLANT IN MARENULI"	**Non-Compliance Notice** CONSTRUCTION OF WASTE WATER TREATMENT PLANT IN MARNEULI

This notice is to advice you, the Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented **urgently.**

Construction of WWTP in Marneuli

- An appropriate fence must be installed along the entire perimeter of the WWTP site to prevent unauthorized persons from entering the construction site (Photo No. 1);
- Clearly visible signs/safety tapes and trench side fences should be installed around deep open pits to avoid accidents with workers and visitors of the site (Photo No. 2);
- The internal area should be regularly cleaned and organized, construction materials should be placed separately and stored properly (Photo No. 3);
- Safety electric cables should be arraigned at construction site not to create danger for workers (Photo No. 4);
- Workers at height must be protected with appropriate personal protective equipment (Photo No. 5);
- Burning waste on the construction site is prohibited (Photo No. 6).

Photos of Marneuli WWTP (15 March, 2024)



All these conditions have to be remedied by the end of this week, 22 March 2024

Date of site visit: 15.03.2024	
Site Monitoring was carried out by: Kate Chomakhidze, Environmental Consultant of UWSCG/USIIP	NCN is prepared by Kate Chomakhidze, Environmental Consultant, UWSCG/USIIP

NON-COMPLIANCE NOTICE, MAR-02 WWTP, 29 MARCH 2024

Non-Compliance Notice

Project: Urban Services Improvement Investment Program, Georgia	**Non-compliance Notice Marneuli**
Contract No: UWSCG-ICB-MAR-02	
Contractor: Toshiba Water Solutions Pvt. Ltd	
Supervision Consultant: Hill International N.V. (Netherlands)	
Reference: Construction of Waste Water Treatment Plant in Marneuli (MAR-02)	

This notice is to advice you, the prime Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented **urgently.**

NON-COMPLIANCE IN MARNEULI (MAR-02)

- Site internally should be arranged properly and cleaned regularly, including construction materials segregation (Photo #1, Photo #2)

Photo #1

Photo #2

- Burning waste on a construction site is strictly prohibited (Photo #3)
- Workers on height are working without safety and health regulations, without life belts and safety equipment (Photo #4)

Photo #3

Photo #4

- There are open, unprotected trenches on the construction sites that impede the movement of personnel and pose a particular danger at night time

Photo #5

Photo #6

All these conditions have to be remedied within 5 calendar days by the prime Contractor (Toshiba Water Solutions Pvt. Ltd)

Date of site visits 29.03.2024	
Site was visited by: Ketevan Chomakhidze UWSCG/USIIP Environmental Consultant	Non-compliance Notice Prepared by Ketevan Chomakhihdze

NON-COMPLIANCE NOTICE, MAR-01/LOT-01/LOT-02/LOT-03/LOT-06, 15 MARCH 2024

Non-Compliance Notice, UWSCG

Site Visit: 15 March 2024

Project: USIIP **Contract No: LOT-01, LOT-02, LOT-03 and LOT-06** **Contractor:** China Geo-engineering Corporation (CGC) (Peoples Republic of China) **Supervisor Consultant: HILL** **Reference:** "CONSTRUCTION OF WATER SUPPLY AND SEWERAGE SYSTEM IN MARENULI"	**Non-Compliance Notice** CONSTRUCTION OF WATER SUPPLY AND SEWERAGE SYSTEMS IN MARNEULI AND SEWERAGE SYSTEM AND COLLECTOR IN BOLNISI; USIIP/T6/CW/2022/MAR-01

This notice is to advice you, the Contractor, on the referenced Contract, of the following notice on environmental measures to be implemented **urgently.**

Construction of City Reservoir in Marneuli

- Workers should be equipped with PPE on construction site (Photo No.1);
- When working at height workers must be equipped with specialised equipment and personal protective gear (Photo No.2);
- Proper access across the deep and open pits should be provided for workers to avoid accident (Photo No.3).

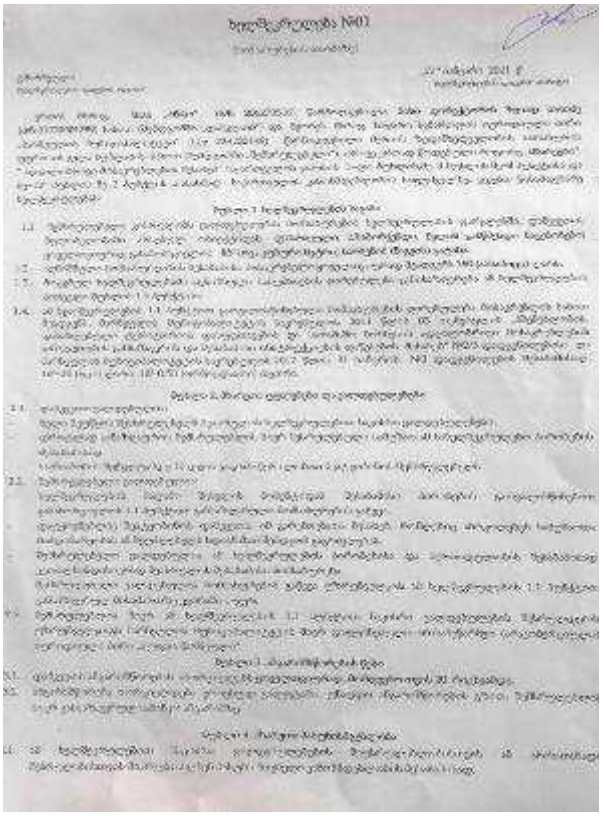
Photos of Marneuli City Resevoir

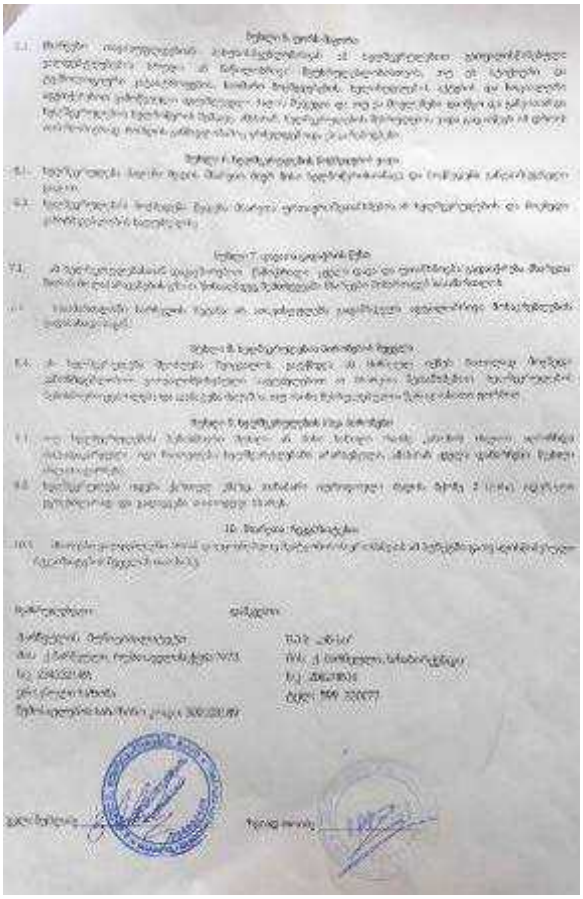
All these conditions have to be remedied immediately by contractor and Supervisor

Date of site visit: 15 March 2024

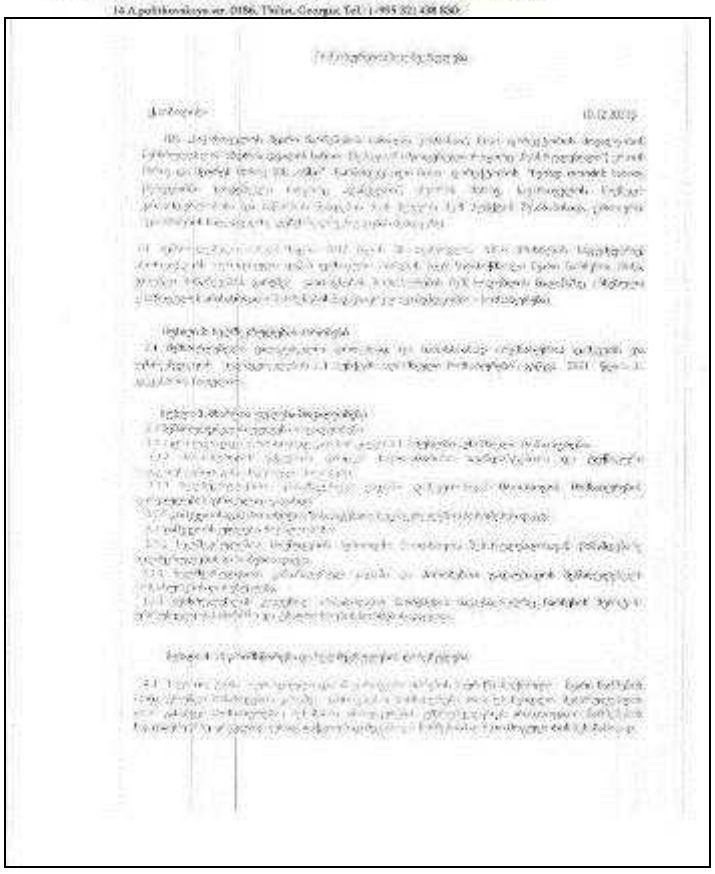
Site Monitoring was carried out by: Salome Mosidze, Head, Division of the Environmental protection and Social Affairs Kate Chomakhidze, Environmental Consultant UWSCG/USIIP	NCN is prepared by Kate Chomakhidze, Environmental Consultant UWSCG/USIIP

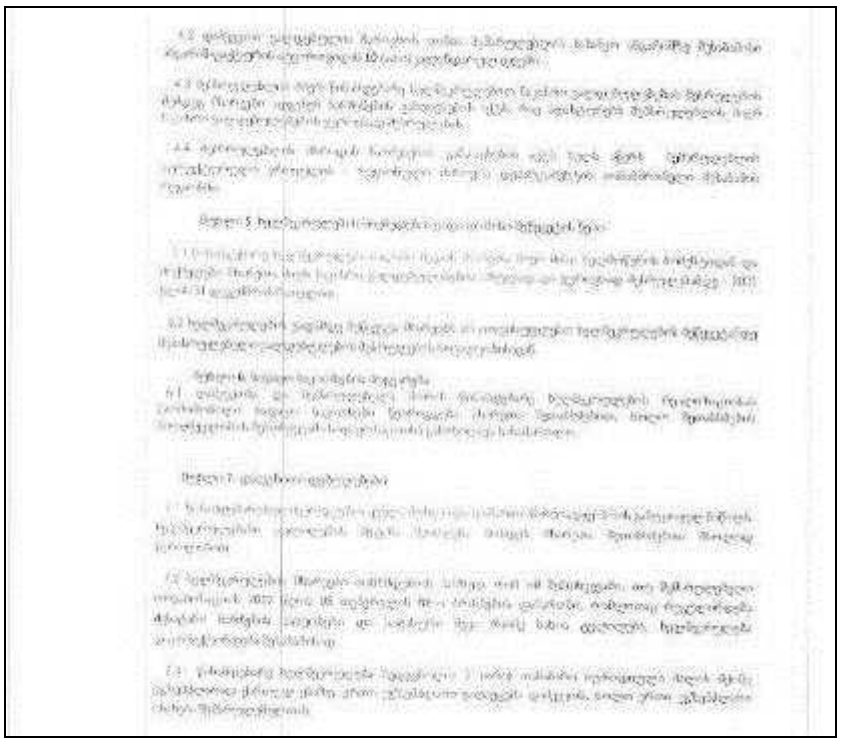
ANNEX D: DISPOSAL OF HOUSEHOLD WASTE UNDER UNDER MAR-01 and MAR-02 SUB-PROJECTS





DISPOSAL OF THE INERT WASTE/SOILS DISPOSAL





ANNEX E: POST-CONSTRUCTION ENVIRONEMNTAL AUDIT, CHI-01, APRIL 2024

Project Number: 43409-020
Prepared by: The Asian Development Bank

Urban Services Improvement Investment Program (USIIP), Tranche 6

CONSTRUCTION OF WATER SUPPLY SYSTEM IN CHIATURA (CHI-01)

Post - Construction Environmental Audit Report

First Draft Prepared in April 2024
Updated in June 2024
Tbilisi, Georgia

CONTENTS

ABBREVIATIONS

ADB	Asian Development Bank
CC	Construction Company
DHESEA	Department of Hermis, Environmental Protection and Social Affairs
DMPDDO	Department of Management of Projects Financed by Donor Organizations
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EHS	Environmental Health & Safety
EIA	Environmental Impact Assess
EMP	Environmental Management Plan/ Site Specific Environmental Management Plan
ESMP	Environmental Sensitivity/ Social Environmental Sensitivity
ESIA/SES	Government of Georgia
GoG	Grievance Redress Committee
GRC	Grievance Redress Mechanism
GRM	Implementing Agency
IA	Investment Program Management Office
IPMO	Joint Environment Commission
JEC	Multi tranche Financing Facility
MFF	Ministry of Environmental Protection and Agriculture
MEPA	Ministry of Regional Development & Infrastructure
MRDI	National Environmental Agency
NEA	Open Joint Stock Company
OJSC	Procurement Consultant
PC	Urban Sector Improvement Investment Program
USIIP	United Water Supply Company of Georgia
UWSCG	Water Supply & Sanitation
WSS	Water Management Plan
WMP	Water Supply
WS	

1. INTRODUCTION

This report presents the Post-Construction Environmental Audit Report for the ADB-funded Urban Services Improvement Investment Program (USIIP), (tranche 6, Contract Number P-43409-020-CW-01, covering the Construction of the Water Supply System in Chiatura (CHI-01). The initial draft was prepared on April 10, 2024, by the Environmental Consultant, Mr. Nikoloz Nepanidze of Supervision Consultant, Hill International N.V. (Netherlands) and subsequently updated in June 2024.

Tranche 6 of the Investment Program includes:

- Construction of Wastewater Treatment Plant in Marneuli (MAR-02);
- Construction of Water Supply and Wastewater Systems in Marneuli and Construction of Wastewater System and Collector in Bolnisi (MAR-01);
- Construction of Water Supply System in Chiatura (CHI-01).

This Post Construction Audit Report is being prepared to comply with the 2009 ADB's SPS and Georgian legislation, including safeguards requirement and aims to identify past and present concerns from the production and business activities of Project Company that related to impacts on environment. The specific objectives of the audit can be summarized as follows:

- Determine and verify whether all environmental requirements, criteria and constraints, prescribed in EIA and SSEMP have been adhered to during the construction phase.
- Determine and verify whether the mitigation actions and rehabilitation requirements contained in the SSEMP have been appropriate and successful in preventing or controlling environmental pollution and/or damage.
- Ensure that an appropriate environmental monitoring and control program exists to follow up on mitigation and rehabilitation works completed during the construction phase;
- To identify any shortcomings in the SSEMP and EMS system implemented during the construction phase and to recommend alterations to the EMS applicable to the operational phase.

2. PROJECT BACKGROUND

2.1 BRIEF DESCRIPTION OF THE PROJECT

The Urban Services Improvement Investment Program (USIIP) was developed as the Government's response to the lack of adequate and/or safe water supply, sewerage and sanitation in urban areas of Georgia. This is intended to optimize social and economic development in selected urban areas through improved urban water and sanitation services and is financed by the ADB through its Multi-tranche Financing Facility. The Ministry of Regional Development and Infrastructure is the Executing Agency and the United Water Supply Company of Georgia, LLC is the Implementing Agency of the Investment Program. UWSCG is a 100% state-owned company.

The Investment Program will improve infrastructure through the development, design and implementation of a series of subprojects, each providing improvements in a particular sector (water supply and/or sewerage) in one town. Subprojects will rehabilitate existing infrastructure and/or create new and expanded infrastructure to meet the present and future demand. Water supply improvements will include source augmentation and head works, pumping systems, treatment facilities, transmission and distribution network, and sewerage improvement works will include sewer network, pumping stations, main collectors and wastewater treatment plants.

2.2 THE SUB-PROJECT

The work under the CHI-01 project comprises the rehabilitation and construction of the water supply network, transmission pipeline and Reservoirs and pumping stations. In particular CHI-01 sub-project consists of the following works:

1. The **rehabilitation** of the existing WS system by replacing the old pipework;
2. **Connection** of the new pipes to the existing pipes;
3. **Rehabilitation of the reservoirs**
   - Bisi (3,000 m^3). Through a central pumping station, it supplies water to all Chiatura streets, except for Petriashvili and Gogrosmedze streets, which need a separate additional pumping station (under construction in the reservoir area) and the addition of 200 meters of network. 100% of the work is completed.
   - Memorial (1,000 m^3),
   - Lenintsminda (1,000 m^3),
   - Rustaveli (350 m^3),
   - Perevisa (60 m^3)
   - Village Perevisa (60 m^3)
   - Tohlas (1,000 m3)
   - Navardzeti (350 m^3)
4. **Construction of two new reservoirs** – one in Sachkhere and another one alongside the existing Bisi reservoir – Amaisel 1000 m3. Construction is temporarily suspended. Water is drawn from the Bisi reservoir through a pumping station, it is planned to connect 350 users.

5. Rehabilitation of PSs – one in Luchubani (170 m3/h) and two in Perevisa (108 m3/h)
6. **Construction** of new transmission lines to the reservoirs Sachkhere – Bisi and Perevisa – Lelesh (with the exception of the one going from Central Pumping Station (CPS) to Perevisa reservoir)
7. **New water supply wells** in the small touristic town of Sachkhere.
   - Central Pumping station - commissioned in 2020 and fully completed. About 150,000 m3 of water is supplied to the population through this station per day. From this station, water is supplied to those areas of Chiatura where the pressure of the BISI reservoir is not sufficient.

The contract No P43400-ICB-CHI-01 was signed on August 2[illegible], 2017 with "Akkord Industry Construction Investment Corporation" OJSC" (Azerbaijan), the initial completion date on April 15, 2019. The original date for the defect notification is April 14, 2020. Subsequently the works were divided in two sections; section 1 comprised original contract works and section two included generators for pumping stations, additional water connections, servicing etc.

The Contract time for section 1 was extended up to 30 Jun 2021 and these works are taken over and now operated by local service center. Contract time for section 2 works was extended up to 5 April 2022. However, section 2 works are incomplete, and the Contractor has stopped and abandoned site.

Location of the Chiatura project site is provided below in the Map.

Map 1: Location of Chiatura and Project Sites

3 MAIN STAKEHOLDERS OF THE PROJECT

The main institutions that are involved in implementation of the EMP are:

- **Implementing Agency (IA)** – United Water Supply Company of Georgia (UWSCG);
- **Supervision Consultant (SC)** – [illegible] International N.V. (Netherlands).
- **The IPMO – Department of Management of Projects Financed by Donor Organizations** has an Environmental Specialist – Koloman Chomakhidze who is responsible for management of the environmental aspects of USIIP Tranches 1-6.
- **Department of Permits, Environmental Protection and Social Affairs** consists of two divisions: Division of Permits (Head of Division Mrs. [illegible]) and Division of Environmental Protection and Permits (Head of Division Ms. Salome Modebadze).
- **The Construction Contractor** – "Akkord Industry Construction Investment Corporation" OJSC" (Azerbaijan), and Investment Program Management Office (IPMO) established within UWSCG is responsible for the day to day management of the project including implementation of the EMP.

The Investment Program Management Office (IPMO) under UWSCG is responsible for the day-to-day management of the project, including the implementation of the EMP. IPMO has an Environmental Specialist Ms. Ketevan Chomakhidze who is responsible for managing the environmental aspects of the USIIP. The acting head of the department is Mr. [illegible].

The IPMO Environmental Specialist's responsibilities in respect of implementation of the EMP are as follows: Approve the Site Specific Environmental Management Plan (SSEMP) before Contractor takes possession of construction site; Monitor implementation of EMP and ensure the environmental safeguards compliance; Review the updated IEE and/or SSEMP and send it for clearance to ADB; ensure that contractors have access to the EMP and IEE report; Develop SSEMR (and other reports upon project completion), send it to ADB and address potential ADB's comments and undertake corrections.

The SC [illegible] hires a full time Environmental Specialist Mr Nikoloz Nozadze to assist the IPMO oversee day to day implementation of EMPs by contractors under USIIP, including compliance with all government rules and regulations; support IPMO in the review and endorsement of contractor's SSEMP; Conduct inspections on contractor's implementation of SSEMP and compliance with government rules and regulations; ensure contractors comply with health and safety requirements per approved SSEMP's Health and Safety Management Plan; Conduct investigations on grievances/complaints, incidents and accidents; Assist IPMO in addressing any grievances in a timely manner as per the GRM; issue non compliance notifications to CC; monitor corrective actions as required in CAPs, and ensure non compliances are rectified immediately and are not occurring repeatedly. Prepare recommendations for contractors repeated non-compliances on safeguards and OHS requirements; Submit monthly and quarterly environmental monitoring reports to IPMO.

The Construction Contractor also appointed a full time Environmental specialist under CHI-01 sub project, [illegible]. The contractor's environmental specialist is responsible for preparing the specific Environmental Management Plan

(SSEMP) for endorsement by Supervision Consultant and approval by the UWSCG prior to the Contractor taking possession of the construction site and provide site works photo documentation; [illegible] throughout the construction period; establish and maintain the records of weekly site inspections using checklists based on [illegible], accidents and incidents, environmental [illegible] including restoration activities and environmental monitoring data; Developing Corrective action plans in response to non-compliance issues by the SC and UWSCG. Conduct Community relations activities including maintaining complaints register; [illegible] of SSEMP compliance and community liaison activities; [illegible] Occupational health and safety requirements; [illegible] site clean-up measures after civil works finalization.

3.1 LIST OF CONTRACTS

Main organizations involved in the project and related to environmental safeguards are presented in the Table 1 below:

Table 1. List of contracts under the Project

Organization	Name of main staff and Environmental Specialist	Contact data (including phone and web-site) and address of the organization
Asian Development Bank	ADB Country Environmental Focal	Nimesha R. Pagadiaga E-mail: [illegible]
	ADB RETA International Environmental Consultant	Giorgi Kolbaladze [illegible] [illegible]
	Associate Safeguards Officer, Georgia Resident Mission, Asian Development Bank	Nino Nadashvili +995 [illegible] E-mail: [illegible]
UWSCG	UWSCG, Department of Department of Permits, Environmental Protection and Social affairs	Ms. [illegible] Tel: +995 [illegible] E-mail: [illegible]
	UWSCG/PMD Department of Management of Projects Financed by Donor Organizations, Acting Head	Mr. David Akhvlediani E-mail: [illegible]
UWSCG/ADB/PPTA	Environmental Specialist	Ms. Ketevan Chomakhidze Tel: +995 577 [illegible] E-mail: [illegible]
Supervision Consultant: Hill International N.V. (Netherlands)	Environmental and H&S Specialist	Mr. Nikoloz Neparidze Tel: +995 [illegible] E-mail: [illegible]
"Akkord Industry Construction Investment Corporation" OJSC (Azerbaijan)	Environmental and H&S Specialist	Environmental Specialist of CC: Name: Mr. Teodor Kamakhelidze Tel: +995 595 977 977 E-mail: kamakhelicaetedore@gmail.com

4. SUMMARY OF PREVIOUS ENVIRONMENTAL INSPECTIONS

In 2020-2024, environmental monitoring of the "**Construction of Water Supply System in Chiatura** ". System was carried out by several organizations:

- ADB – Donor Organization
- UWSCG - Implementing Agency
- Construction Company - "Akkord Industry Construction Investment Corporation" OJSC" (Azerbaijan), by an environmental specialist
- Supervision Consultant - Hill International N.V

The main identified inconsistencies can be divided into the following sectors:

1) Deep trenches / transitions – walls Safety shields must be used. During non-working hours, contractor must keep a special tape or net. It will be necessary to install warning lighting at night. – 15 cases (34.9%);
2) After the work, the staff should remove or fence construction materials and ground waste, don't leave tools in the area. – 11 cases (25.6%);
3) Roads must be temporarily closed during the works. Speed limit and warning signs must be installed – 7 cases (16.2%);
4) Use of Personal Protective Equipment. – 7 cases (16.2%);
5) Hazardous/oily waste must be neutralized with a special absorbent and transferred to a hazardous waste container. – 3 cases (6.9%);

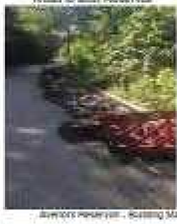
Photos of Non-compliances reviled during the construction process are presented in the Photos below:

BISI Reservoir –
Not protected Tranches

Avariani Reservoir –
Dangerous Tranches

BISI Reservoir – Building Materials

Road to BISI Reservoir



Avariani Reservoir – Oil spill

Avariani Reservoir - Building Materials

Avariani Reservoir - Building Materials

5. SUMMARY OF OBSERVATIONS OF THE SITE VISITS

Post Construction Environmental Audit of "**Construction of Water Supply System in Chiatura**" sub-project was conducted on 19 March 2024 by HB International N.V. and its Environmental Specialist Mr. Nikoloz Nepanidze.

The following facilities were visited during the post construction audit:
CONSTRUCTION OF WATER SUPPLY SYSTEM IN CHIATURA

Central Pumping Station

Main Inlet Pipe to the central Station

Control

Bisi Reservoir

Avanosi Reservoir

6. IMPLEMENTATION OF THE CORRECTIVE ACTIONS.

During the audit, non-compliances were identified, which require the preparation and implementation of the corrective actions.

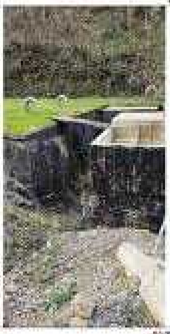
1. **Attention should be paid to disposal of topsoil after completion of work.**
2. **Construction, household and hazardous waste placed in the area.**

   As for various wastes, it is necessary to divide the wastes according to types:

- **Household waste** - Must go to the municipal landfill.
- **Construction waste** - According to the class of waste, it should be sent to a paid or free landfill.
- **Hazardous waste** - When disposing of hazardous waste, the terms and conditions of the contract must be observed and, if necessary, a representative of the company will accompany the truck to the landfill.

Bisi Reservoir. Construction and Household Waste	
	

3. **Deep trenches and excavation should be fenced.**

Danger places	
BISI Reservoir	
	
AVERIONI Reservoir	
	

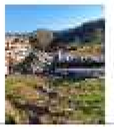
7. CONCLUSIONS AND RECOMMENDATIONS

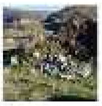
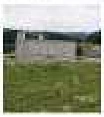
The Contract period for section 1 of CHI-01 sub-project was expired on June 30, 2021 and these works have been successfully taken over and now operated by [illegible] local service center in [illegible]. These works encompassed: the rehabilitation of the existing WS [illegible] by replacing the old [illegible], connection of the new pipes to the existing pipes; rehabilitation of the reservoirs: Bisi (3,300 m3), [illegible] Village Reservoir (30 m3), Tetrisa (1,000 m3), [illegible] (300 m3), construction of two new reservoirs – one in Sachkhere and another one alongside the existing Bisi reservoir – Averioni [illegible], rehabilitation of Pumping stations – one in [illegible] (170 m3/h) and two in Perevisa (100 m3/h); construction of new [illegible] lines to the reservoirs Sachkhere – Bisi and Perevisa – Tetrisa; new water supply wells in the neighbouring town of [illegible].

The contract period for Section 2 works within the CHI-01 sub-project was extended until April [illegible]. However, these works remain incomplete, as the Contractor has stopped construction activities and abandoned the sites. Approximately 45% of the Section 2 works still need to be finished, including the finalization of the Averioni reservoir, including fencing and providing [illegible] equipment and [illegible] pumping station. A new tender will be issued to complete these remaining tasks, with funding provided through the central government budget. UWSCG is responsible for ensuring the completion of the CHI-01 sub-project.

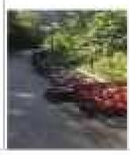
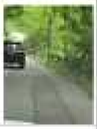
Table gives the summary information about the non-compliances observed during the environmental audit and due corrective actions and proposed terms of their realization and progress of corrective actions.

Table 2. Summary information of [illegible] the environmental audit, CHI-01 sub-project, April 2024

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishment of responsibility	Progress of Corrective Actions
			Averioni Reservoir		
1	Averioni reservoir, uncontrolled disposal of construction waste were [illegible]	Construction waste must be collected and disposed from the project area		UWSCG End of June 2024	Completed June 2024 
2	Averioni Reservoir [illegible]	Containers will be[illegible]		UWSCG End of June	Completed June 2024 [illegible]

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishment of responsibility	Progress of Corrective Actions
	Fuels and lubricants spills to be eliminated	should be managed properly stored at the project organized place with concrete floor and roofing to avoid leakage and ground contamination.		2024	leakage were identified in the project area 
3	Averioni Reservoir surplus waste soil and soil were piled up on the construction area	Averioni Reservoir surplus waste soil should be removed completely removed from the disposed area		UWSCG End of June 2024	Completed June 2024
4	Prevent access of public to the reservoir site. The fence of the reservoir should be done properly and equipped with Signs, information and warnings	Reservoirs sites should be properly fenced, equipped with proper warning signs		UWSCG A new tender will be issued to complete these remaining tasks with funding provided through the central government budget. UWSCG is responsible for ensuring the completion of the CHI-01 sub-project	
	There are deep Trenches around the	Trenches on the Averioni Reservoir should be		UWSCG A new tender will be issued	

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishme nt Responsibility	Progress of Corrective Actions
	Avarani Reservoir without Protection	filled or fenced off their borders.		to complete these remaining tasks, with funding provided through the central government budget. UWSCG is responsible for ensuring the completion of the CHI-01 sub-project.	
			BIDI Reservoir and Pumping Station		
	Open trenches of the BIDI Pumping Station are observed.	Trenches on the BIDI reservoir should be filled or fenced off their borders.		UWSCG A new tender will be issued to complete these remaining tasks, with funding provided through the central government budget. UWSCG is responsible for ensuring the completion of the CHI-01 sub-project. In the working area, the facts of uncontrolled disposal of construction	

#	Non-compliance	Corrective action	Construction Site	Terms of accomplishme nt Responsibility	Progress of Corrective Actions
				waste were fixed.	
	Uncontrolled disposal of construction waste were outside the BIDI reservoir was fixed.	Construction Waste must be collected and disposed from the project area.		UWSCG End of May 2024	Completed May 2024 

8. POST-CONSTRUCTION ENVIRONMENTAL AUDIT CHECKLIST

Required mitigation measures of environmental impact	Measures implemented				Comment
	yes	partially	no	N/A	
Site territory fenced fully		X			All project zones were fenced except of Avarani Reservoir
Topsoil placed at original location	X				Where the rehabilitation work has been completed the Topsoil is restored properly.
Vegetation cover reinstated	X				Green cover of grass is properly reinstated.
Trees replanted as needed				X	No trees were planted in the project zone
Construction waste and surplus/waste soil removed completely and disposed properly	X				A large part of construction and household waste is removed from the project area.
Hazardous waste removed and disposed properly	X				Hazardous waste is not removed from the project area.
Fuels and lubricants spills eliminated	X				No traces of leakage were identified in the project area
Contractor equipment and machinery removed	X				The construction equipment was removed from the project zones.
All temporary facilities removed and cleaned up	X				The temporary auxiliary buildings are not removed from the site.
Streets with transport network reinstated to pre-construction or better conditions	X				The access roads to the project zone are reinstated. Their physical state is satisfactory.
Post Construction territory reinstated to pre-construction or better conditions	X				All post construction territory except of Avarani and BIDI reservoirs are reinstated to pre-construction or better conditions

ANNEX
NON-COMPLIANCES

Non compliances observed during the environmental inspections/audits conducted during the 2021-2024 reporting period.

In Chapter 8, there is a list showing whether the given recommendations have been implemented or not.

Date	Subject
2021	
6 August	[illegible] the street
3 September	Road reinstatement works should be carried out in Avarani area.
4 November	The contractor shall complete trenches which are abandoned and cause public inconvenience and are safety hazards.
8 November	The contractor shall ensure that all workers are conducted in a safe manner and works are provided with safety equipment and supervision by each personnel.
16 November	Proper signage at the narrow streets should be arranged to provide proper barricades
16 November	Occupational safety issues must be taken into consideration, during the visit it observed that some excavations at narrow streets are barricaded only with safety tapes, full barricades
17 November	Provide warning signs or safety tapes around open trenches
17 November	The top soil of about 20-30cm depth shall be removed and stored separately during excavation work, and after the construction of the main trunk the same soil shall be replaced on the top, in exposed areas.
17 November	All construction material should be properly segregated and stored adequately in proper waste (Hazardous Household) containers with roof & should be enclosed at the storage area. Waste should be placed only at the proper waste container. Containers with fuel/lubricant should be located securely (stored at the proper inspection plant with concrete floor and roofing) to avoid leakage and ground contamination.

Contact / Issues

Date	Subject
	Concrete wash out pit should be arranged at construction site, spilled soil should be immediately removed from the site.
2023	
[illegible] May	the site during the night time, poor safety condition.
[illegible] May	The contractor shall ensure that all workers are [illegible] and works are provided with safety equipment and supervised by H&S personnel.
23 Mar	The Contractor shall complete activities, which are [illegible] consultations from locals.
17 March	Entrance to the site is muddy and not maintained, there is huge pile of [illegible] at the side of the road that contains the risk of [illegible], blocking the road and creating hazard of passengers and pollution of the river that is very close to the road.
17 March	Contractor to avoid piling the subsoil high height [illegible] on the roads and especially to the river.
17 March	Implement [illegible] protection measures that will ensure stability of the [illegible] roads.
17 March	[illegible] the access road to the site.
17 March	Remarks from: Concrete washout pit is [illegible], but there is no information that it was [illegible]. [illegible] proper concrete washing pit must be [illegible]
17 March	Storage area for hazardous waste handling is prepared, but it is not managed properly.
17 March	Not properly segregated waste is observed in the project area.
17 March	[illegible] issue to be improved.
17 March	[illegible] areas are [illegible], but they are [illegible] vegetation [illegible] around the site.
17 March	Construction waste [illegible] is observed on waste soil along the access road.

Content / Issues

The contractor is obliged to [illegible] solving the indicated problems [illegible]

Submit the [illegible] Non-Compliance Report.

Date	Subject
17 March	In case [illegible] adequate [illegible] spreading of accidentally spilled liquid (Precaution measures include secondary containment [illegible]) should be arranged.
17 March	Top Soil should be stored properly and managed in accordance with the required regulations.
17 March	Proper waste containers [illegible] should be installed at the storage area.
17 March	Provide warning signs or safety tapes around open trenches on the construction area [illegible] workers.
17 March	Workers always should use complete set of PPE.

The contractor is obliged to [illegible]

[illegible] Non-Compliance Report.

ANNEX E: FLOODING UNDER MAR-02 SUB-PROJECT, 26 MAY 2024

Flooding in River Algety was observed on 26 May 2024 in morning. The water level in River appeared to be about 20-40 cm below top of the retaining wall (Please see Annex F and figure N1). Thus, the water level in River was about 380 m which is the maximum design flood level.

The Resident Engineer (RE) inspected the site works on 26 May and 27 May to identify damages in WWTP and to locate places from where water entered WWTP premises.

As it was stated by the RE about 30% of water to WWTP area came from the retaining wall constructed by Road Department under the MRDI on the upper side of River along alternate access road. Water was observed to be coming from retaining wall at 3-4 places. Some water was coming from the retaining wall and some water may be from its foundation, which came after eroding the soil beneath the foundation.

The irrigation pipeline passing though alternate access road discharges water in River Algety in normal course. However, when the river level rose above the pipe level, reverse flow happened in the irrigation pipe and River water came through this pipe and it flew to WWTP area through the gate. This water was about 40% and contributed maximum incoming water in WWTP.

The river water also entered WWTP premises from the place where the retaining wall ends i.e. Storage area of mechanical equipment, and this water was going back partly to River from Contractors office area side. About 20% of the water to WWTP came from this side.

About 10% of the water to WWTP came from the rain in WWTP area as the drainage system is not yet constructed. Photos are provided in Figure 1 and Figure 2 below:

Fig. N1

Fig. N2