# SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT

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**#10 Semiannual Report**

(Reporting Period: January-June 2022)

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


First Submission Date:

July 2022

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September 2022

## ABBREVIATIONS

| | |
|---|---|
| **ADB** | Asian Development Bank |
| **CCTV** | Closed-Circuit Television Video |
| **CAP** | Corrective Action Plan |
| **DC** | Design Consultant |
| **DEPP** | Department of Environmental Protection and Permits |
| **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 |
| **OJSC** | Open Joint Stock Company |
| **SAEMR** | Semi-Annual Environmental Monitoring Report |
| **SC** | Supervision Consultant |
| **USIIP** | Urban Sector Improvement Investment Program |
| **UWSCG** | United Water Supply Company of Georgia |
| **WS** | Water Supply |
| **WSS** | Water Supply & Sewerage |
| **WWTP** | Waste Water Treatment Plant |

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# I. INTRODUCTION

## 1.1 Preamble

1. This report represents the Semi-annual Environmental Monitoring Review (SAEMR) for the Urban Services Improvement Investment Program, Tranche 6 and describes the period of January-June 2022.

2. This report is the 10$^{Th}$ Environmental Monitoring Review (EMR) of USIIP/Tranche 6.

## 1.2 Headline Information

3. During the reporting period construction activities were carried out only under MAR-02 and CHI-01 sub-projects and therefore this report describes the activities performed within the framework of these projects.

4. Construction work under the MAR-01 subproject: Construction of water supply and waste water systems in Marneuli and construction of waste water system and collector in Bolnisi during the reporting period were not carried out due to the termination of the construction contract because of the serious financial constrains faced by contractor. The overall progress of construction work on Mar-01 is about 31.4%. More detailed information is provided in the paragraphs 37-40 below.

5. ADB's Country Safeguard Mission (May 2022) headed by Ms. Ninette Pajarillaga, Country Environmental Focal, Senior Environment Specialist (Portfolio, Results, Safeguards and Gender Unit, Central and West Asia Department of ADB), visited MAR-01 and MAR-02 sub-projects under USIIP/T6. Among other environmental and social safeguard issues the mission discussed the issue of i) Flooding of WWTP site in July 2020 and in May 2022 and possible future flooding of private properties, ii) revision in IEE due to change in layout of WWTP, iii) complaints log of social and environmental issues, iv) stakeholder mapping within 250 m distance of WWTP.

6. It was clarified during the site visit by SC/HILL and Contractor/Toshiba Water Solutions Pvt. Ltd and IN-SI LLC (JV partner) (India/Georgia) that flooding in July 2020 inundated WWTP site and damaged fencing. The local population feared that once the proposed retaining wall was built, WWTP site will be protected from flood and the river water will flood their houses. After many meetings between local municipal council, UWSCG and public, the works were restarted and assurance was given that suitable measures will be taken to protect private properties from flooding. Flooding in May 2022 inundated some part of WWTP again and it got cleared after 3-4 days. Engineering team further clarified that contractor was asked to prepare technical solution so that private properties are not impacted by floods. Therefore contractor submitted proposals for extension of retaining wall to UWSCG. UWSCG team informed ADB mission that the work has been assigned to Roads Department and it is likely to be tendered in one month.

7. The IEE under MAR-02 sub-project has been updated by SC/HILL and UWSCG/USIIP Environmental Specialist to include layout changes, flooding, mapping of houses near wastewater treatment plants, etc. The proposed IEE is being revised again as some issues need to be addressed by HILL and UWSCG those need to be completed. The final agreed version will be presented to the UWSCG by the end of July, and the main findings will be reflected in the next SAEMR report, July-December 2022.

# 2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

## 2.1 Project Description

8. 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.

9. 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 waste water treatment plants.

10. **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:**

11. **Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Waste Water System and Collector in Bolnisi (MAR-01):** Mar-01 project envisages the rehabilitation and construction of reservoirs with the total capacity of 12,000$M^3$=(2X3000+3X2000); construction of cast iron transmission pipeline with the diameter of 700 mm - 10 km and 600 mm – 4km; construction of network with Polyethylene pipes of OD 50 to OD 500. The project measures for the sewer network comprise the lying about 150 km new gravity pipes (DN 150 to DN 800) and 2.7 km new pressure pipes (OD 110 and OD 225). There will be 9 new wastewater pumping stations; 600mm to 1000 mm diameter inspection wells (concrete or polyethylene) and 400 mm diameter house connections (polyethylene). Proposed project envisages construction of sewerage system in Bolnisi which will work entirely by gravity (DN 200 and DN 250 HDPE pipes) and will be connected at 3 different points to the future DN 500 HDPE interceptor that will convey the collected sewer from Bolnisi to Marneuli WWTP.

12. Three separate IEEs were prepared for MAR-01 project: Improvement of Marneuli Water Supply System (August 2016); Improvement of Marneuli Wastewater System (August 2016); Improvement of Bolnisi Wastewater System (August 2016) and further updated and approved in January 2019 due to the finalization of the project design (please see para 3 above).

**13.** The contract No P43405-ICB-MAR-01 was signed on November 20, 2018 with "Akelik Group OJSC" (Azerbaijan). The original completion date of the contract is March 29, 2021, proposed extension by contractor is 210 days. Revised completion date was December 2021.

**14.** Since the progress of contractor was very slow, contractor didn't manage to start several works in parallel - such as transmission pipe, CCTV inspection of laid sewer lines, hydraulic testing of sewer lines, M&E works, pipe crossing works under rail, river, road and irrigation channels, house connections etc. The progress deteriorated further from the last week of September 2020. Finally, the contractor stopped all works on the sites from June 14 2021 and the contract was terminated. Based on the above mentioned, decision was made to split the work in 6 lots based on geographical boundaries and similarity of nature of works and announce the new tender.

**Brief Description of 6 lots and scope of works**

**15.** **Lot 1:** Marneuli city is divided in 6 zones. Zone 1 under LOT-01 mainly include 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]

**16.** **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. Earlier laid water supply and sewer lines by AKELIK GROUP OJSC would also need to be tested and commissioned. 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

**17.** **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. Earlier laid water supply and sewer lines by AKELIK GROUP OJSC would also need to be tested and commissioned. 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.)

**18.** **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)

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

19. **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)

20. **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)

21. Projects should start in the last Quarter of 2022, and be completed in no more than 18 months.

22. **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.

23. 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 is May 2021, Completion date has been proposed to be extended by 385 days. Revised completion date for physical works for MAR 02 was 18 June 2022. Contractor has submitted time extension claim. Proposed extension is under process in UWSCG.

24. **Construction of Water Supply System in Chiatura (CHI-01).** The work under the CHI-01 project comprises the rehabilitation and construction of the water supply network, transmission pipeline and Reservoirs. In particular, Chi-01 project consists of the following works: the rehabilitation of the existing WS system by replacing the old pipework, rehabilitation of existing reservoirs and pumping stations; construction of 2 new reservoirs and pump houses; construction of 7 new borewells in Sachkhere and connect these to Bisi reservoir; laying of new transmission mains.

25. The contract No P43405-ICB-CHI-01 was signed on August 21, 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, which has been extended to December 2021. The completion date for section 1 was 30 June 2020 and it was substantially completed. Completion date for section 2 was 5 April 2021. The works are not completed. Completion date has not been extended. Now, Contractor is working with liquidated damages for delay.

### 2.2 Project Contracts and Management

26. The main institutions that are involved in implementation of the EMP are UWSCG executing agency (EA), Supervision Consultant (SC) the Contractor and to a lesser extent the Ministry of Environmental Protection and Agriculture of Georgia (MoEPA).

**27.** The Investment Program Management Office (IPMO) under UWSCG, is the Donors Funded Project Management Department, which is responsible for the day-to-day management of the project, including the implementation of the EMP. IPMO has an Environmental Specialist who is responsible for managing the environmental aspects of the USIIP. The acting head of the department is Ms. Irina Chikhladze.

**28.** The IPMO (Environmental Specialist) 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) Finalize SAEMRs (and Final EMRs upon project completion), send it to ADB and address potential ADB's comments until SAEMR disclosure; Provide ENG and 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

**29.** The SC include a full time Environmental Specialist to assist the IPMO oversee day-to-day implementation of EMPs by contractors, 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; 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.

**30.** The Contractor also appoint a full time Environmental specialist to be a senior member of the construction management team based on site for the duration of the contract. The ES has a university degree (preferably at Masters level) in Environmental Science or related discipline and have at least 10 years work experience in environmental management of infrastructure project. Environmental Specialist of contractor 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 pre-works photo documentation; Ensuring the SSEMP is implemented effectively throughout the construction period; establishing and maintaining site records of: weekly site inspections using checklists based on SSEMP; environmental accidents/incidents including resolution activities; environmental monitoring data; non-compliance notifications issued by the SC; Corrective action plans issued to the SC in response to non-compliance notices; Community relations activities including maintaining complaints register; Routine reporting of SSEMP compliance and community liaison activities; Implement Occupational Health and safety requirements, including COVID-19 prevention measures. Implement site clean-up measures after civil works finalization.

**31.** Department of Environmental Protection and Permits of UWSCG work together with IPMO on addressing the Environmental Safeguard issues of USIIP sub-projects. More detailed description of implementation arrangements; responsibilities and staffing are provided in the **Table 1 below**.

**Table 1: Institutionnel Arrangement, Responsabilités and Staffing**

| # | Millstones/Actions | Contractor (Environmental Specialist) | Construction Supervision Consultant (Environmental Specialist) | IPMO (Environmental Specialist) | Environmental Protection and Permits Department (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<br>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;<br>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) | Environmental Protection and Permits Department (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;<br>2. Prepare inputs to semi-annual environmental monitoring report (SAEMR) to be submitted to IPMO for further review, comments and improvement.<br>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;<br>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) | Environmental Protection and Permits Department (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.<br>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;<br>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 |

**32.** Main organizations involved in the project and related to environmental safeguard are presented in the Table 2 below:

**Table 2: 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<br>E-mail:<br>npajarillaga@adb.org |
| | | Associate Safeguards Officer<br>Georgia Resident Mission<br>Asian Development Bank | Nino Nadashvili<br>Tel: +995 595 070442<br>E-mail:<br>nnadashvili@adb.org |
| | | ADB RETA, Environmental Consultant | George Kobaladze<br>Tel: +995 599 689834<br>E-mail<br>gkobaladze.consultant@adb.org, me |
| Borrower | UWSCG | UWSCG, Department of Environmental Protection and Permits, Head | Ms. Maka Goderdzishvili<br>Tel: +995 599 229925<br>E-mail:<br>m.goderdzishvili@water.gov.ge |
| | | UWSCG/IPMO the Donor Funded Project Management Department, Acting Head | Ms. Irine Chikhladze<br>Tel: +995 598 179898<br>E-mail:<br>ana.onashvili@water.gov.ge |
| Borrower | UWSCG/USIIP/T6 | Environmental Specialist | Ms. Ketevan Chomakhidze<br>Tel: +995 577 380309<br>E-mail:<br>Chomakhidzek@yahoo.com |

| Type of project participant | Name of Agency/Company | Environmental Staff | Name and contact details |
|---|---|---|---|
| Supervision Consultant | . Supervision Consultant: Hill International N.V. (Netherlands) | Environmental Specialist . | [2]Mr. Rezo Enukidze<br>Tel: +995 599 164 469<br>E-mail:<br>r.enukidze@gmail.com |
| Contractor<br>CHI-01 | "Akkord Industry Construction Investment Corporation" OJSC (Azerbaijan) | EH&S Specialist | Environmental Specialist of CC:<br>Name:<br>Mr. Teodor Kalmakhelidze<br>Tel:<br>+995 598 977 977<br>E-mail:<br>kalmakhelidzetedore@gmail.com |
| Contractor<br>MAR-01 | Akelik Group OJSC<br>(Azerbaijan ) | Environmental Specialist | Mr. Paata Chankotadze<br>Tel:<br>+995 599 181753<br>E-mail:<br>paatachank@yahoo.com |
| | | HSE Manager | Mr. Natig Aliev<br>E-mail:<br>aliyevnatig@mail.ru<br>Mob: +995 593 60 44 48 |
| | | HSE Engineer | Mr. Zaur Askerov<br>E-mail:<br>askerovzaur43@gamil.com<br>Mob: +995 593 39 00 29 |
| Contractor<br>MAR-02 | Toshiba Water Solutions Pvt. Ltd and IN-SI LLC (JV partner) (India/Georgia) | Environmental H&S Specialist | Mr. Guram Tandilashvili<br>E-Mail:<br>guram.tandilashvili@gmail.com<br>Mob: +995 577 36 37 29 |

[2] Mr.Rezo Enukidze has left this assignment because of his other engagements and the supervision consultant HiLL has proposed another person, Mr.Nikoloz Neparidze as replacement. In the meantime, Kety Chubabria the social expert of supervision consultant is supporting the supervision consultant for implementation of environment management plan.

## 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

**33.** The construction works under CHI-01 sub-project resumed on 30 April 2022. The aggregate progress for section 1 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%.

**34.** The physical progress of construction activities under CHI-01 sub-project during the reporting period, January-June 2022 is given in the Table 3 below.

**Table 3: Physical Progress of Works under CHI-01 sub-project, January-June 2022**

| Item No | Description | Unit | Quantity Project | Quantity Completed as of 30.06.22 | Percentage |
|---|---|---|---|---|---|
| **Works related to Avarioni Water Supply** | | | | | |
| 1 | HDPE Pipes installation including fittings and end cups as required. | M | 7,384.00 | 5625.09 | 76.17 % |
| 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 | 13.00 | 29.55 % |
| 5 | House connections implementation and administrative requirements | n | 340.00 | 165.00 | 48.53 % |
| 6 | Hydraulic Chambers | n | 12.00 | 10.00 | 83.33 % |
| 7 | New Reservoir 500 m3 | n | 1.00 | 88.65% | 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 | 0 | 0% |
| **B: Mislenious 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 | 33.00% | 33.00 % |

**35.** The physical progress concerning the main contract is given in the Table 4 below.

**Table 4: Progress Concerning the Main Contract**

| Pipeline | Unit | Quantity (BoQ) | Up to Previous Month | This Month | Cumulative to date | 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% |
| 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 Res | 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%** |
| | | | | | | |

| Pipeline | Unit | Quantity (BoQ) | Up to Previous Month | This Month | Cumulative to date | Progress |
|---|---|---|---|---|---|---|
| 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% |
| Reinstatement of Asphalt | m2 | 50000 | 37,595 | 0 | 37,595 | 75% |
| Reinstatement of Concrete Pavement | m2 | 4,600 | 275 | 0 | 275 | 6% |

| **Cumulative Progress** | **Up to Previous Month** | | | | | **Up to This Month** | | | |
|---|---|---|---|---|---|---|---|---|---|
| Structures | 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% |

**36.** The cumulative total physical progress is given in the Table 5 below.

**Table 5: Cumulative Total Physical Progress under CHI-01 sub-project**

| Cumulative total physical progress | | |
|---|---|---|
| **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 (MAR-01)

**37.** There were no construction activities under MAR-01 sub-project during the reporting period, January-June 2022.

**38.** The Contract for MAR-01 sub-project under USIIP/T6, was awarded to AKELIK GROUP OJSC (Azerbaijan). The commencement date was December 10, 2018. Original time for completion was 840 days and original completion date - 28 March 2021.

**39.** The progress of contractor was very slow. Contractor didn't manage to start several works in parallel - such as transmission pipe, CCTV inspection of laid sewer lines, hydraulic testing of sewer lines, M&E works, pipe crossing works under rail, river, road and irrigation channels, house connections etc. The progress deteriorated further from the last week of September 2020. Finally, the contractor stopped all works on the sites from June 14 2021, as a result some of the major works such as City reservoir, Kolagiri pump house and Jandhari reservoir were stopped and abandoned.

**40.** Therefore, it is proposed to divide the work into 6 lots in order to complete the remaining rehabilitation work carried out by the contractor and commission the entire system. The Draft version of Supplementary Initial Environmental Examination (SIEE), including the separate EMPs for each Lot is prepared by USIIP Environmental Specialist Ms. Kate Chomakhidze and sent to ADB for final approval. SIEE is considered together with existing three IEEs[3].

[3] Three IEEs are prepared for presented sub-project: IEE for Construction and Rehabilitation of Marneuli Water Supply System; Construction and Rehabilitation of Warneuli Waste water System and Construction of WWTP in Marneuli and Construction and Rehabilitation of Bolnisi Waste Water System, https://www.adb.org/sites/default/files/project-document/185763/43405-028-iee-04_1.pdf; https://www.adb.org/sites/default/files/project-document/185762/43405-028-iee-03_1.pdf; https://www.adb.org/sites/default/files/project-document/185761/43405-028-iee-02_1.pdf

41. The physical progress of construction activities under MAR-01 sub-project is provided in the Table 6 below.

**Table 6: Physical Progress of Structures up to June 2022**

| Structure | Civil | Mechanical | July-December 2021 |
|---|---|---|---|
| Jandhari Reservoir | 82% | 5% | 0% |
| Kolagiri Pumping Station | 82% | 3% | 0% |
| City Reservoir | 45% | 0 | 0% |

42. Cumulative physical progress of water supply and sewer pipes are presented in the Table 7 below.

**Table 7: Cumulative Physical Progress of Water Supply and Sewer Pipes up to June 2022**

| Particulars | Water Supply Pipes | | | Sewer Pipes | | |
|---|---|---|---|---|---|---|
| | To be laid | laid | % | To be laid | Laid | % |
| Marneuli | 191555 | 112,634.13 | 58.80% | 150512 | 68,441.92 | 45.47% |
| Bolnisi | 0 | 0 | 0.00% | 61100 | 8,364.68 | 13.69% |
| Interceptor | 0 | 0 | 0.00% | 22000 | 8,195.74 | 37.25% |
| Total | 191555 | 112,634.13 | 58.80% | 233612 | 72,519.56 | 31.04% |

43. Thus, overall, 72,519.56 m sewer pipes (31.04% of required) & 112,634.13 m water supply lines (58.80% of required) have been laid.

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

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

**Table 8: Progress of Construction work of WWTP in Marneuli under MAR-02 Sub-Project**

| Overall Progress | Amount in Euro | | % of contract amount | |
|---|---|---|---|---|
| | Current Month | Cumulative | Current Month | Cumulative |
| Physical | 79,179.15 | 4,810,678.42 | 0.89 | 53.97 |
| Financial | 63,343.32 | 3,892,650.12 | 3.08 | 48.28* |

*Note: Cumulative financial progress in %=Amount paid through IPCs for works+advance balance to recover ie 43.68%+4.60%=48.28%*

45. Schedule-wise Progress under MAR-02 Sub-project is presented in the Table 9 below.

**Table 9: Cumulative Total Progress under MAR-02 Sub-project**

| Cumulative Total Progress | | | | |
|---|---|---|---|---|
| **Schedule** | **Particulars** | **Up to Previous Month** | **Current Month** | **Total** |
| (I) | Site Mobilization | 99,23% | 0% | 99,23% |
| (II) | Excavation work | 76.50% | 1,30% | 77,80% |
| (III) | Installation Civil work | 41,29% | 15,05% | 56,34% |
| (III-1) | Installation Architectural work | 14,80% | 1,83% | 16,63% |
| IV) | Supply of Equipments | 58,64% | 0,50% | 59,14% |
| (V) | Installation Mechanical | 0% | 0% | 0% |
| (VI) | İnstallation electrical | 0% | 0% | 0% |
| VII) | Algeti 35kv Power Line relocation ( change order 1) | 100,00% | 0% | 100,00% |

**46.** Structure wise progress under MAR-02 Sub-project is presented in the Table 10 below.

**Table 10: 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 |
| Temporary Fence | 100 | No | No | No | | 0 | No | No | No | 100,0 | No | No | No |
| RC Wall | 98,12 | No | No | No | | 0 | No | No | No | 98,12 | No | No | No |
| Coarse screen | | | | | | | | | | | | | |
| Inlet PS | 79,83 | No | No | No | | 0 | No | No | No | 79,83 | No | No | No |
| Fine screen | | | | | | | | | | | | | |
| Aerated grit chamber | | | | | | | | | | | | | |
| Primary sed. tanks | 11,19 | 0,00 | 0,00 | 0,00 | | 4,30 | 0,00 | 0,00 | 0,00 | 15,49 | 0,00 | 0,00 | 0,00 |
| Aeration tanks & distribution chamber | 73,33 | 0.00 | 0,00 | No | | 6,54 | 0,00 | 0,00 | 0,00 | 79,87 | 0,00 | 0,00 | No |
| Blower Building | | | | | | | | | | | | | |

| 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 |
| Final sed. Tanks & distribution chamber | 5,60 | 0,00 | 0,00 | No | 0,00 | 0,00 | 0,00 | No | 5,60 | 0,00 | 0,00 | No |
| Sludge sump cum PS | | | | | | | | | | | | |
| Digester | | | | | | | | | | | | |
| Biogas utilization building &thickened sludge pump | | | | | | | | | | | | |
| Primary sludge thickener & Digested sludge pump | | | | | | | | | | | | |
| Mechanical Pre thickening building | 100,0 | 0 | 0 | 6,50 | 0,00 | 0 | 0 | 1,75 | 100,0 | 0 | 0 | 8,25 |
| Emergency sludge storage place | | | | | | | | | | | | |
| Sludge dewatering building | 98,81 | 0 | 0 | 6,50 | 0,00 | 0 | 0 | 1,75 | 98,81 | 0 | 0 | 8,25 |
| Venturi channel cum outlook structure | | | | | | | | | | | | |
| Treated effluent channel inlet box | | | | | | | | | | | | |
| Treated effluent box | | | | | | | | | | | | |
| Gas holder | | | | | | | | | | | | |
| Gas torch | | | | | | | | | | | | |
| Fecl3 dosing system | | | | | | | | | | | | |
| Administration building | 100,0 | 0,0 | 0,0 | 25,30 | 0,0 | 0,0 | 0,0 | 2,80 | 100,0 | 0,0 | 0,0 | 28,10 |
| Service water tank & cum PS | | | | | | | | | | | | |
| Garage & workshop | 100,0 | 0,0 | 0,0 | 13,00 | 0,0 | 0,0 | 0,0 | 3,50 | 100,0 | 0,0 | 0,0 | 16,50 |
| Scrubber area | | | | | | | | | | | | |
| diesel tank area | | | | | | | | | | | | |
| substation building-MCC 2 | 100,0 | 0,0 | 0,0 | 13,00 | 0,0 | 0,0 | 0,00 | 3,50 | 100,0 | 0,0 | 0,0 | 16,50 |
| control room - operation build. | 100,0 | 0,0 | 0,0 | 35,00 | 0,0 | 0,0 | 0,0 | 3,50 | 100,0 | 0,0 | 0,0 | 38,50 |

| 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 |
| MCC-1 | | | | | | | | | | | | | | |
| MCC-3 | 100,0 | 0,0 | 0,0 | 36,50 | | 0,0 | 0,0 | 0,0 | 3,50 | | 100,0 | 0,0 | 0,0 | 40,00 |
| Inter connection pipes including champers & manholes for drainage, pipe work, air piping system, potable<br><br>water and technical water, fire-fighting system. | | | | | | | | | | | | | | |
| Roads & Landscaping | | | | | | | | | | | | | | |
| Commissioning of WWTP | | | | | | | | | | | | | | |

### 2.3.4 Description of Any Changes to Project Design

**47.** During the reporting period January-June 2022, there were no changes in the design of the project. The layout of the Marneuli WWTP was changed during the previous reporting period. A DRAFT updated IEE has been prepared by the SC reflecting layout changes and sent to the UWSCG for review and comments, the agreed version will be sent to ADB for further comments and final approval in July 2022.

### 2.3.5 Description of Any Changes to Agreed Construction methods

**48.** During the reporting period there were no changes in construction methods.

# 3. ENVIRONMENTAL SAFEGUARD ACTIVITIES

## 3.1 General Description of Environmental Safeguard Activities

**49.** A total of 6 site visits have been conducted at different times during reported period (January - June 2022) under CHI-01 and MAR-02 sub-projects and included:

- The monitoring of compliance of construction activities under CHI-01 project sites to the IEE/EMP requirements;
- The monitoring of compliance of construction activities under MAR-02 project sites to the IEE/EMP requirements.

**50.** A summary of the status of the monitoring visits, including dates of site visits, photographs, persons involved in site visits, etc., is shown in Table 12 below. During the reporting period, onsite training workshop and a meeting with representatives of the Contractors and the Supervision Consultant were held.

**51.** Individual monitoring activities were conducted by Environmental Specialist of UWSCG/USIIP Ms. Ketevan Chomakhidze. Environmental Specialist of contractor under CHI-01 sub-project, Mr.Teodor Kalmakhelidze conducted daily monitoring of construction sites and developed monthly monitoring reports and represented to SC / Hill. Mr. Teodor Kalmakhelidze left the position during the reporting period and a new specialist has not been identified yet. IPMO will clarify the reason for the EP's removal, and details will be provided in the next SAEMR report as of in July-December 2022.

**52.** 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.

**53.** Environmental Monitoring Specialist, Mr. Rezo Enukidze hired by Supervision Company under USIIP/T6 developed quarterly monitoring reports for UWSCG/USIIP based on the monthly reports submitted by Contractor, and environmental monitoring of construction sites. Mr. Rezo Enukidze also left the position during the reporting period and it was proposed to replace him with another specialist, Mr. Nikoloz Neparidze. IPMO will clarify this issue with the replacement of the environmental specialist, and the details will be presented in the next SAEMR report as of July-December 2022.

**54.** Environmental Specialist of UWSCG/USIIP, Ms. Ketevan Chomakhidze performed monitoring of contractor's performance with the approved EMPs and SSEMPs, environmental standards and other environmental commitments of the contractor. ES 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.

**55.** The construction activities under CHI-01 sub-projects affecting the environment during the reporting period are as follows:

- Excavation works;
- Removal of Surplus Soil;
- Backfilling of Trenches;
- PPE;
- Manual works;
- Reinforcement

**56.** The construction activities under CHI-01 and MAR-02 sub-projects affecting the environment during the reporting period are as follows:

- Excavation works;
- Removal of Surplus Soil;
- PPE;
- Top soil stripping and storage;
- Manual works;
- Reinforcement

**57.** In accordance with the IEE, and the accompanying Environmental Monitoring Plan (EMP), the Contractor is required to undertake parametric measurements and observations on air quality, noise and socio-cultural resources. The monitoring guidelines were set as shown in the Table 11 below.

**Table 11: Parametric Measurement Guidelines under CHI-01 and MAR-02 Sub-projects**

| Parameters | Frequency & Location | Remarks |
|---|---|---|
| **CHI-01** | | |
| Air Quality | Quarterly. Reservoirs, Networks, Transmission Main | Watering site during excavation works to avoid dust spreading<br><br>Conduct measurements of PM2.5, PM10; CO Mg/m3; NO2 Mg/m3; SO2 Mg/m3 |
| Noise | Quarterly. Reservoirs, Networks, Transmission Main | Ensure that all equipment & vehicles used for construction activity are in good condition<br>Limiting working hours to 8 am – 6 pm |
| Incorrect surplus/waste soil management | Monthly during the site Inspection and audit | Utilize surplus/waste soil for beneficial purposes such as in construction or to raise the ground-level of low lying sites. Dispose extra waste soil at special disposal place identified by Municipality |
| Cultural heritage Disturbance to cultural resources | Every time along the alignment Archaeological & Cultural Properties | Contractor shall put in place a protocol for conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.<br><br>Calling in the state archaeological authority if a find is suspected, and taking any action they require to ensure its removal or protection. |

| Parameters | Frequency & Location | Remarks |
|---|---|---|
| **MAR-02** | | |
| Air Quality | WWTP construction site | Watering site during excavation works to avoid dust spreading<br><br>Conduct measurements of PM2.5, PM10; CO Mg/m3; NO2 Mg/m3; SO2 Mg/m3 |
| Noise | WWTP construction site | Ensure that all equipment & vehicles used for construction activity are in good condition<br>Limiting working hours to 8 am – 6 pm |
| Cultural heritage Disturbance to cultural resources | Every time along the alignment Archaeological & Cultural Properties | Contractor shall put in place a protocol for conducting any excavation work, to ensure that any chance finds are recognized and measures are taken to ensure they are protected and conserved.<br><br>Calling in the state archaeological authority if a find is suspected, and taking any action they require to ensure its removal or protection. |
| | | |

**58.** The whole reporting period (January – June 2022) went through pandemic situation of COVID-19. However, this did not affect the construction process and civil work went on regular basis. UWSCG and SC directed all concerned to take proper measures to prevent the pandemic and contractor's workers were advised to keep proper heath hygiene by wearing facemask, hand washing and maintaining physical distances at the work sites.

**59.** In response to COVID-19, the Government of Georgia and its Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia, issued the General Guidelines Related to Infection (COVID-19) which applies to all sectors of economic activity.

**60.** General guidelines on COVID-19 have been additionally developed specifically for the construction sector (see Appendix D) by the Government of Georgia.

**61.** This COVID-19 Construction Sector Guidelines have been created to provide construction project owners/operators and their employees and contractors with precautions to protect against the spread of COVID-19 on indoor and outdoor construction sites.

**62.** In May 2020 SC / HILL has developed an emergency response plan (ERP) to prevent employees against COVID-19 (Please see ANNEX G). In addition, in June 2020 contractors updated all EH&S documents, including health and safety plans and site-specific environmental management plans.

**63.** During the reporting period per the ERP plan and regulations, some additional precautions were taken against the spread of COVID-19 within the MAR-02 sub-project.

**64.** There are no protected areas, wetlands, mangroves, or estuaries. Trees, vegetation (mostly shrubs and grasses), and animals in the subproject sites are those commonly found in built-up areas. The geological structure of the area is stable and no potential land subsidence is foreseen.

### 3.2 Site inspections/monitoring

**65.** Inspection and monitoring of construction sites under CHI-01 and MAR-02 sub-projects were conducted by ES of USIIP Ms. Kate Chomakhidze and safeguards team of SC/HILL including the social expert Ms. Kete Chubabria, taking into account all restrictions and regulations described in 30-35 paragraphs above. Day to day monitoring of sites under MAR-02 sub-project was conducted by the Environmental Specialist of Construction Company Mr. Guram Tandilashvili during the reporting period as well.

**66.** ADB's Country Safeguard Mission (May 2022) headed by Ms. Ninette Pajarillaga, Country Environmental Focal, Senior Environment Specialist (Portfolio, Results, Safeguards and Gender Unit, Central and West Asia Department of ADB), visited MAR-01 and MAR-02 sub-projects under USIIP/T6. Ms. Nino Nadashvili, Associate Safeguards Officer, ADB Resident Mission in Georgia; Giorgi Kobaladze, ADB/PETA environmental consultant; Giga Gvelesiani, ADB RETA, resettlement consultant participated in the safeguards mission. Among other environmental and social safeguard issues the mission discussed the issue of i) Flooding of WWTP site in July 2020 and in May 2022 and possible future flooding of private properties, ii) revision in IEE due to change in layout of WWTP, iii) stakeholder mapping within 250 m distance of WWTP.

**67.** The representatives of the SC explained during the site visit that flooding in May 2022 inurned some part of WWTP and it got cleared after 3-4 days. Engineering team further clarified that contractor was asked to prepare technical solution so that private properties are not impacted by floods. Therefore contractor submitted proposals for extension of retaining wall to UWSCG. The following issues were agreed under MAR-02 sub-project to be fulfilled by UWSCG and SC/HILL: (i) IEE under Marneuli waste water system needs to be revised due to change of layout design of the project (prepared and sent to ADB for approval in August 2022); (ii) flooding accident report to be prepared, including action taken to avoid similar situation in future (prepared by SC/HILL in August 2022); (iii) flooding emergency response plan to be developed (prepared by UWSCG and SC/HILL in August 2022); (iv) mapping of properties within 250-meters radius and stakeholder engagement plan – shall part of semiannual environmental monitoring report (prepared by SC/HILL and UWSCG in June 2022); (v) report on actions taken by the Roads Department of Georgia on embankment protection (prepared in June 2022).

**68.** The schedule of Joint inspection and summary of inspections/monitoring carried out under sub-projects during the reporting period January-June 2022 are provided in the Table 12 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 Table 28 below.

**Table 12. Summary of site inspections/monitoring for CHI-01, MAR-01 and MAR-02 sub-projects.**

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| [5]Continuously during reporting period (January-June 2022) | "Akkord Industry Construction Investment Corporation" OJSC CHI-01 | Environmental, H&S Specialist of Contractor Mr. Teodor Kalmakhelidze | Day to day monitoring of sites Compliance with Environmental and HES requirements | Environmental, Health and safety issues on construction sites | Prepare Monthly Environmental Monitoring Reports and send to SC | Completed on the monthly basis during the reporting period, January-June 2022 |
| | | Environmental Specialist of Supervision Company HILL Mr. Rezo Enukidze | Compliance with Environmental safeguard requirements | Environmental issues on construction sites | Prepare Quarterly Environmental Monitoring Reports and send to UWSCG; Issue non-compliance if necessary | Completed in March 2022 and June 2022 |
| 30 June 2022 | | Social expert Ms.Kety Chubabria | Compliance with Environmental safeguard requirements | "Safari", "Avarioni" and "Bisi" area<br>Workers in indispensable PPE<br>Occupational safety issues must be taken into consideration, excavations at narrow streets are not barricaded with safety tapes and light barricades to safe | Letter describing Non-Compliance Notice observed during the site visit on 30 June 2022, please see Annex C to this report. | Completed, June 2022<br><br>Not completed, please see table 28 - Recommendations to Address Environmental |

[4] The USIIP/T6/MAR-01 subproject has several pending non-compliance, which are described in paragraphs 52-57 in the subsection entitled: Pending issues under MAR-01 sub-project, and Implemented Measures.

5 Due to the fact that construction work on the CHI-01 subproject was resumed only in May 2022, only a few monitoring activities were carried out during the reporting period

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | | | the site during the night time, poor safety condition, please see photo below, Photo N1<br>  | | Issues under USIIP/T6 sub-projects below, will be completed in July 2022 and reflected in the next SAEMR, July-December 2022 |
| 28 May 2022 | | Environmental Specialist of SC Mr. Rezo Enukidze | Regular monitoring of sites | The contractor shall ensure that all workers are conducted in a safe manner and works are provided with safety equipment and supervised by H&S personal<br><br>The Contractor shall complete activities, which are abandoned and might cause complaints from locals. | Verbal instruction was given to contractor to immediately improve the situation. | Completed in June 2022<br><br>Completed in June 2022 |
| Continuously during reporting period | Toshiba Water Solutions Pvt. Ltd and IN-SI | Environmental, H&S Specialist of Contractor<br><br>Mr. Guram | Day to day monitoring of sites<br><br>Compliance with | Safety issues on construction sites, Workers always should use complete set of PPE. | Prepare Monthly Environmental Monitoring Reports and send to SC | Performed monthly during the reporting period |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| (January-June 2022)<br><br>GPC Coordinates:<br><br>X 44.840296<br><br>Y 41.465192 | LLC<br><br>**MAR-02** | Tandilashvili | Environmental and HES requirements | | | |
| 17 March 2022 | | Environmental Specialist of Supervision Consultant HILL Mr.Rezo Enukidze | Regular Environmental monitoring of sites | Entrance to the site is muddy and not maintained, there is huge pile of the subsoil at the side of the road that contains the risk of landslide, blocking the road and creating hazard of passengers and pollution of the river that is very close to the road.<br><br>Contractor to avoid piling the subsoil high height and too close to the roads and especially to the river.<br><br>Implement some protection measures that will ensure stability of the piled earth<br><br>Gravel the access road to the site, please see Photo | Verbal instruction was given to contractor to immediately improve the situation.<br><br>Non-Compliance Notice was issued and is presented in Annex C of this report.<br><br>(Photo-documentations are presented in Annex C, non-compliance note, 17 March 2022) | Not yet completed, please see table 28 - Recommendations to Address Environmental Issues under USIIP/T6 sub-projects below.<br><br>Instructions are given to contractor to arrange pilling subsoil in accordance with standards , will be completed in the end of July 2022 and reflected in the next SAEMR, July-December 2022 |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | | | N1<br>  <br>Flooding<br><br>Flooding may destroy site surroundings and in case if during this year flooding will have place repeatedly the site itself will be flooded again. A retaining wall along the channel is considered to protect locals from possible flooding | | Not yet completed, instruction is given to contractor to arrange pilling subsoil in accordance with standards , will be completed in the end of July 2022 and reflected in the next SAEMR, July-December 2022<br><br>Completed, May |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | | | Remaining from Concrete washing pit is excavated, but it there is no information that it was disposed according to WMP; Seems lots of concrete works are ahead proper concrete washing pit must be organized<br><br>Storage area for hazardous waste handling is prepared, but it is not managed properly, please see Photo No1<br><br>Photo N1:<br>  <br><br>Not properly segregated waste is observed in the project area, please see Photo No2<br><br>Photo N2 | | 2022<br><br>Completed May 2022<br><br>Completed, May 2022 |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | | |  <br>Housekeeping have to be improved.<br>Smoking areas are marked, but they are not used, cigarette packs and butts are thrown all around the site.<br>Additional training on this subject is needed.<br>Construction waste possibly dumped by Local population is observed on waste soil along the access road. | | Completed, April 2022<br><br>Completed, April 2022<br><br>Completed April2022<br><br>Completed April 2022 |
| 19.03.2022 | | USIIP Environmental Specialist Ms. Kate Chomakhidze<br><br>Site visit was attended by the Head of the Department of Environmental Protection and | Regular Environmental monitoring of sites | Site internally should be better arranged, materials should be better segregated/stored and cleaned regularly, Photo N1 | Verbal instruction was given to contractor to immediately improve the situation.<br><br>Non-Compliance Notice was issued and is presented in Annex C of this report. | Completed, April 2022, please see improved photo of site<br>Photo N1 |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | Permits Ms. Maka Goderdzishvili | |  <br><br>Although the insecure connection to the power socket has been partially improved, all cables in the facility must be protected to avoid any damage to users of the power supply<br><br>Concrete wash out pit should be arranged at construction site, "Concrete Rivers" should be immediately removed from the soil, Photo N2 | (Photo-documentations are presented in Annex C, non-compliance note, 17 March 2022)<br><br>Corrective Action Plan was prepared by contractor and is presented in the Annex D to this report. |  <br><br>Completed, April 2022<br><br>Completed, April 2022, please photo N2 below<br>  <br><br>Existing concrete |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | | |  <br><br>In case planned to have some amount of fuel on the site – adequate protection of environment from spreading of accidentally spilled liquid (Precaution measures include – secondary containment capable to retain 110% of container volume should be arranged<br><br>Top Soil should be stored properly and managed in accordance with the required regulations | | spots on WWTP site were removed, please see photo N3 below<br>  <br><br>Completed, April 2022<br><br>Partially Completed in April 2022, additional improvements are required |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | | | Proper waste containers with roof & and concrete basement should be installed at the storage area<br><br>Provide warning signs or safety tapes around open tranches on the construction area for safety issues of workers, Photo N3<br><br>  <br><br>Workers always should use complete set of PPE | | Completed, April 2022<br><br>Completed, April 2022<br><br>Completed, April 2022 |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| 24 May 2022, ADB's Country Safeguards Mission | | Headed by Ms. Ninet Pajarilaga, Country Environmental Focal;<br>Ms. Nino Nadashvili, Associate Safeguards Officer Georgia Resident Mission Asian Development Bank;<br>George Kobaladze, ADB RETA, Environmental Consultant;<br>Giga Gvelesiani, ADB RETA, Resettlement Consultant<br><br>Ms. Kate Chomakhidze UWSCG/USIIP/Environmental | Annual environmental Safeguard Mission | The following issues were agreed under MAR-02 sub-project to be fulfilled by the end of June 2022:<br><br>(i) IEE under Marneuli waste water system needs to be revised due to change of layout design of the project;<br><br>(ii) flooding accident report to be prepared, including action taken to avoid similar situation in future;<br><br>(iii) flooding emergency response plan to be developed;<br><br>(iv) mapping of properties within 250-meters radius | Non-compliance issues were discussed at the wrap-up meeting at UWSCG, on May 24 2022 | A DRAFT updated IEE has been prepared by the SC and sent to the UWSCG for review and comments, the agreed version will be sent to ADB for further comments and recommendations in July 2022.<br><br>Completed June 2022<br><br>Not yet completed, will be prepared in July 2022<br><br>Completed, please |

| Date of Visit | Name of Company<br><br>Name of Contract | Auditors Name | Purpose of audit | Summary of any Significant Findings | Implemented Actions | [4]Implementation Status |
|---|---|---|---|---|---|---|
| | | consultants | | and stakeholder engagement plan – shall part of semiannual environmental monitoring report;<br><br>(v) copy of hydrological study prepared by contractor to be part of updated IEE;<br>(vi) report on actions taken by the Roads Department of Georgia on embankment protection<br><br>Other Environmental and social issues<br><br>(i) Complaints log of social and environmental issues to be easily available at construction site, and filled by affected people | | see paragraph 74-75 of this report<br><br>Completed, June 2022<br><br>Completed, June 2022<br><br>Completed immediately, compliant log. is available at WWTP construction site. |

### 3.3 Issues Tracking (Based on Non-Conformance Notices)

**69.** One Non-Conformances Notice (NCN) have been issued to contractor after the site visits under CHI-01 sub-project and two NCN under MAR-02 sub-project. 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. Non-compliances issued under CHI-01and MAR-02 sub-projects are presented in table 12 above and Annex C of this report. Corrective action plans were developed by contractors and improved photos of sites were send to UWSCG, please see Annex D to this report.

**70.** A summary of the identified environmental issues for January-June 2022 under CHI-01 sub-project is presented in Table 13 below.

**71.** There is one open issues under CHI-01 sub-project. Occupational safety issues must be taken into consideration, excavations at narrow streets are not barricaded with safety tapes and light barricades to safe the site during the night time

**Table 13: Summary of Issues Tracking Activity for Current Period CHI-01**

| Total Number of Issues for Project | 4 |
|---|---|
| **Issues Opened This Reporting Period** | 1 |
| **Issues Closed This Reporting Period** | 3 |
| **Percentage Closed** | 75% |

**72.** A summary of the identified environmental issues for January-June 2022 under MAR-02 sub-project is presented in Table 14 below.

**Table 14: Summary of Issues Tracking Activity for Current Period MAR-02**

| Total Number of Issues for Project | 9 |
|---|---|
| **Issues Opened This Reporting Period** | 2 |
| **Issues Closed This Reporting Period** | 7 |
| **Percentage Closed** | 78% |

**73.** There are three open issues under MAR-02 sub-project, as contractor has improved most of the non-compliances during the reporting period. Non-compliances that still needs improvement is as follows: (i) Entrance to the WWTP site is muddy and not maintained; (ii) there is huge pile of the subsoil at the side of the road that contains the risk of landslide, blocking the road and creating hazard of passengers and pollution of

the river that is very close to the road; Contractor to avoid piling the subsoil high height and too close to the roads and especially to the river; (iii) flooding may destroy site surroundings and in case if during this year flooding will have place repeatedly the site itself will be flooded again. A retaining wall along the channel is considered to protect locals from possible flooding

### 3.4 Trends

**74.** The information from previous period reports and the current period are used to identify trends in issues solved and closed. The status of main issues in SAEMR during the previous and current reporting periods are presented in table 15 below.

**75.** Overall improvement is observed in environmental conformance since the number of total non-compliances is being decreased from 33 to 13, but still needs efforts to improve the situation as percentage of issues which are still open is being increased. Non-compliances that still needs improvement are already discussed in previous section in para 69 and 73. The trending of issues presented in table below depicts that percentage of issued not yet closed is being increased from 6% to 23% and overall trends are not positive.

**76.** There is also one pending issue which is not solved not only within the current SAEMR but during the previous reporting period as well, this is the huge pile of the subsoil under MAR-02 sub-project at the side of the road that contains the risk of landslide, blocking the road and creating hazard of passengers and pollution of the river that is very close to the road; Contractor to avoid piling the subsoil high height and too close to the roads and especially to the river; and flooding which may destroy site surroundings and in case if during this year flooding will have place repeatedly the site itself will be flooded again. Instruction are given to contractor to improve the situation and to conduct relevant mitigation measures by the end of July 2022

**77.** Corrective actions are being taken by the contractors to fix the non-compliance highlighted during the reporting period related to HSE conditions improvements, Storage area for hazardous waste handling is prepared, but it is not managed properly Proper waste containers with roof & and concrete basement should be installed at the storage area. Contractor is reporting the follow up actions to SC as attached in Annex E to this report.

**78.** A summary of identified trends for CHI-01 and MAR-02 sub-projects for the reporting period January-June 2022 compared to July-December 2021 is presented in Table 15 below.

**Table 15: Summary of identified trends in environmental issues**

| Semi-Annual EMR No | Total No of Issues | % issues Closed | % issues closed late |
|---|---|---|---|
| July-December 2021 | 33 | 94% | 6% |
| January-June 2022 | 13 | 77% | 23% |

**79.** As it was already mentioned above all EH&S issues still opened under the CHI-01 and MAR-02 sub-projects are presented in the table 28 below. Deadlines for improvement of situation are indicated by the end of July 2022. The Summary of identified trends under CHI-01 and MAR-02 sub-projects during the reporting period – January-June 2022 is presented in the Table 15 above.

## 3.5 Unanticipated Environmental Impacts or Risks

**COVID-19**

**80.** During the reporting period, COVID-19 is viewed as an unanticipated impact and risk to the community and workers, however, IPMO, SC and Contractor have taken all appropriate measures to minimize this risk. These measures, inter alia, included updating the relevant SEMPs by the contractor, developing emergency management plan by SC, etc. More details are provided in paragraphs 58-64 above.

**Flooding of the WWTP site:**

**81.** The WWTP site is located on the banks of the Algeta River, and due to increased water flow in the river, the WWTP site was flooded on July 16, 2020. Flood waters occupied the territory of the WWTP, damaging some temporary fences, lighting poles, entrance gates, etc.

**82.** Contractor informed SC and UWSCG that the population of Sabirkendi village (Marneuli WWTP construction area) will not allow access to WWTP site from 21 July 2020 because they have apprehension that construction of WWTP will change landscape and expose them to flooding risk as Algety river may be forced to change its flood plain once restricted by WWTP. The population of village did not allow works to proceed. The works were restarted from November 2020 after many meetings with local population and assurance to provide flood protection measures.

**83.** UWSCG in March 2021 asked SC for proposals to protect private houses and properties from flooding. The 95% of retaining wall has been constructed in beginning of year 2021.

**84.** The environmental and social experts of SC and UWSCG visited site on 24 September 2021 and reported that the Local people, living close to the site informed that the retaining wall constructed in WWTP will protect construction site from the flood water during the flood season, but it will direct water to their farmland and living houses. The population requested to build the retention wall along the Algeti riverbank adjusting the farming lands.

**85.** The flood water of Algeti River has again entered WWTP site in morning of 09.05.2022. The flooding water came from north – west direction where Wall extension has been proposed. On request of UWSCG, Contractor conducted soil investigations and reviewed hydrology of River provided by UWSCG and submitted proposals for extension of retaining wall by 223.5 m length in North-west direction, mapped the houses and identified most vulnerable residential and agricultural areas.

Hydraulic study of the area has already been conducted.

86. UWSCG was consulting with the contractor to order construction of additional retention wall, but after lot of discussions the decision was made to build this retention wall by the Roads Department under MRDI.

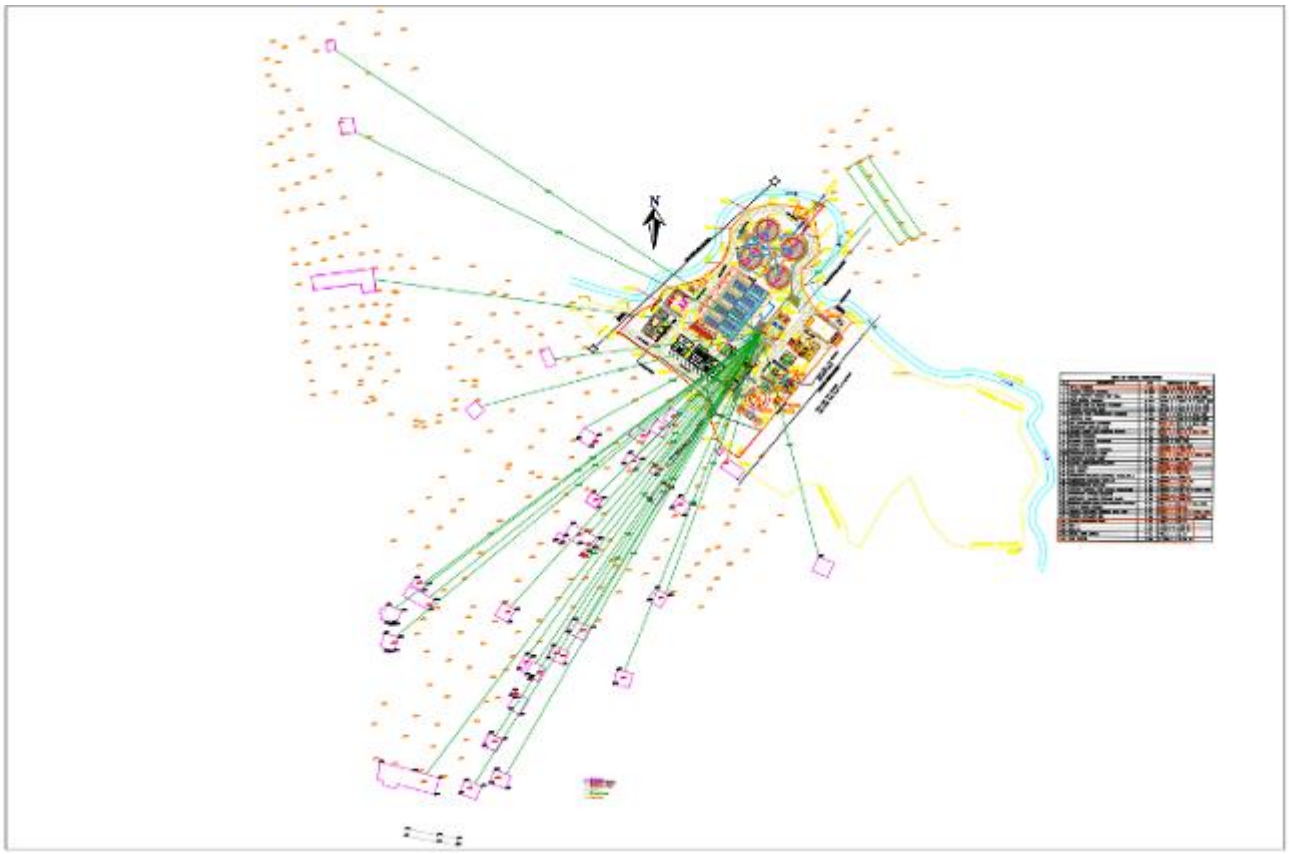
87. According to the latest information from the Road Department, the tender will be announced for this work probably in late August 2022**.**

**Stakeholder Mapping under MAR-02 sub-project within 250 m distance from WWTP**

88. In order to protect WWTP for further flooding the Map of the houses and green properties near WWTP site was prepared in June 2022 (please see Fig.1 below). There are two green field areas on opposite bank and are shown as rectangles in green colour. The water level of these two areas is 377 and maximum flood level is 380. As such these are likely to be flooded in vase of flood with level more than 377. The houses are shown in pink rectangles. There are 3 houses having ground level less than 380 and these are to be flooded with flood of 380 level. But the level of these houses is about 379.5 m. As such these will be flooded in case of flood of more than 379.5 m. The frequency of such floods will be low. In all there are 3 houses located at a distance of less than 250 m. other houses are located at a distance more than 250 m are also shown in the figure 5.

89. The houses are shown in pink rectangles. There are 3 houses having ground level less than 380 and these are to be flooded with flood of 380 level. But the level of these houses is about 379.5 m. As such these will be flooded in case of flood of more than 379.5 m. The frequency of such floods will be low. In all there are 13 houses located at a distance of less than 250 m. other houses are located at a distance more than 250 m are also shown in the map.

**Figure 1: Mapping of Houses near WWTP**



# 4. RESULTS OF ENVIRONMENTAL MONITORING

## 4.1 Overview of Monitoring Conducted during Current Period

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

**91.** Noise standards defined by IFC/WHO 1999, are presented in the Table 16 below.

**Table 16: 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 |

**92.** Air pollution standards by IFC/WHO 1999, are presented in the Table 17 below.

**Table 17: 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).<br>PM10 – 0,02/1 Year<br>0,05/24 Hour<br>PM2,5-0,01/1 Year<br>0,025/24 Hour |
| Carbonic monoxide | n/a |
| Nitrogen dioxide ($NO_2$) | 0,2/ 1 Hour<br>0,04/1 Year |

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

**93.** Georgian Standards for noise level is presented in the table 18 below.

**Table 18: 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.*

**94.** Table 19 shows the threshold values of the major air pollutants as defined by the GEO, IFC and EU legislation.

**Table 19: 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 | - | - |
| | 1 Year | - | 40 | 40 |

| Parameter | Averaging Period | Limit (µg/m$^3$) | | |
|---|---|---|---|---|
| | | Maximum Permissible Concentration (MPC) in Georgia | IFC Guideline Value | EU Ambient Air Quality Guidelines |
| 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 |

**95.** The Georgian Standards for vibration are designed for human comfort. These are shown in 20. Note that no standards for building damage exist.

**Table 20: 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 inconstant 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.*

**96.** During the reporting period, environmental quality measurements were not carried out within the framework of CHI-01 sub-project, therefore UWSCG/USIIP issued SC to issue a non-compliance notice to the contractor to ensure that environmental quality measurements are carried out during the next reporting period (July-December 2022) and provide the measurement data to UWSCG.

**97.** During the reporting period January-June 2022, environmental quality measurements under the MAR-02 subproject have been carried out only once, and not on the monthly basis, as required by the IEE/EMP. To improve the situation, the UWSCG/USIIP Environmental Consultant gave the Contractor and the Supervision Consultant several verbal instructions, and issued non-compliances via email communication. Additional

measures will be conducted by UWSCG to improve the frequency of environmental quality measurements and reflected respectively in the next SAEMR, July-December 2022.

**98.** Environmental quality measurements of ambient air quality, noise and vibration within the framework of the MAR-02 subproject were carried out by the Ltd. “ECO-Spectri” in June 18, 2022, for more detailed information please see Annex A to this report. The results of the measurement are presented in the Tables 21, 22 and 23 below. All measurements were carried out from 10:18 to 11:55 period.

**99.** Below are shown 20 min. average air pollution concentration data of (PM2.5 and PM10) measured on June 22 2022 (10:44 - 12:03), by LTD “Eco-Spectri” in Marneuli WWTP Construction site (more details are provided in Annex A to this report). As the results showed, the average dust concentration was not exceeded the limit, and therefore no additional mitigation measures are required.

**Table 21: Environmental quality measurements results MAR-02, January-June 2022**

| # | Place of measurement | Coordinates | Results | |
|---|---|---|---|---|
| | | | PM2.5 µg/m3<br>24 hours | PM10 µg/m3<br>24 hours |
| | National Environmental Standard<br>(Maximum Permissible Level) and WHO Standards | | 25 (WHO) | 50 (WHO)<br>50 (National Regulations) |
| 1 | Marneuli WWTP<br>Result - N1 Point (At the Construction site) | X 44.840153<br>Y 41.464544 | **6.4** | **14.65** |

**100.** Below are shown 20 min. average air pollution concentration data of CO, NO2, O3, measured on June 22 2022 (10:44 - 12:03) in Marneuli WWTP Construction site (more details are provided in Annex A to this report). As the results showed, the average air pollution concentration is not exceeded the limit, therefore no additional mitigation measures are required. Georgian regulation son Ambient Air Quality Standards are presented in the table 19 above.

**Table 22: Measurement results air pollutants**

| # | Place of Measurement | CO (µg/m3) | NO2 (µg/m3) | O3 (µg/m3) | VOC (µg/m3) |
|---|---|---|---|---|---|
| **1** | Marneuli WWTP<br><br>Result - N1 Point (At the Construction site) | **<0,0** | **98.8** | **12.4** | **138.7** |

**101.** Below are shown average noise level, measured on 22 June 2022 (10:18 - 11:55) in Marneuli WWTP Construction site on two locations: 10m distance from noise source and the nearest sensitive receptor (50m distance from the noise source - the yard of the nearest residential house). More detailed measurement data is provided in Annex A to this report. According measurement data of 22 June 2022, conducted by the LTD "Eco-Spectri" noise level exceed the standards of the National Regulations and World Health Organization (IFC/WHO),1999 in Marneuli WWTP construction site and therefore additional mitigation measures are required. IFC/WHO standards for Noise and Air pollution are presented in Tables 16 and 17 above. Mitigation measures which include but not to limited the following actions: to 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; Install noise barriers (e.g., panels, curtains, or partitions) to reduce the emission of engine noise. More detailed information is provided in the Table 28 below.

**102.** It should be noted also that environmental quality measurements carried out at the nearest sensitive receptors of construction sites, were temporary and conducted during the daytime from 10:18am to 11:55pm and no complaints were received from the local population about the noise during the reporting period.

**Table 23: Results of Noise measurement in Construction site and the nearest residential house**

| # | Location | Coordinates | dBA Results 24 hours | dBA National Regulations | | dBA WHO | |
|---|---|---|---|---|---|---|---|
| | | | | Daytime 07:00-22:00 | Nighttime 22:00-07:00 | Daytime 07:00-22:00 | Nighttime 22:00-07:00 |
| 1 | Marneuli WWTP<br><br>Result - N1 Point (At the | X 44.840153<br><br>Y 41.464544 | 64.7 | 55 | 45 | 55 | 45 |

| # | Location | Coordinates | dBA Results 24 hours | dBA National Regulations | | dBA WHO | |
|---|---|---|---|---|---|---|---|
| | | | | Daytime 07:00-22:00 | Nighttime 22:00-07:00 | Daytime 07:00-22:00 | Nighttime 22:00-07:00 |
| | Construction site) | | | | | | |
| 2 | Nearest residential house<br>Result - N2 Point (At the Res. Building) | X 44.839881<br>Y 41.465206 | 48.9 | | | | |

**Used Measuring Device Noise, vibration, Air Pollution**

**Noise**

**103.** The Ltd “Eco-Spectri” used the equipment of the Polish company "SVANTEK", "SVAN 971" series for measuring noise (Figure 2, Figure 3).

**104.** 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 2: “REED” R8080 Sound Level Meter**

**Figure 3: Organization-owned noise meter**

**105.** 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**

**106.** 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 4: Triaxial Vibration Monitor VM40A/B**


**107.** 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**

**108.** 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).

**109.** The Figure 5 and Figure 6 - below shows the “Aeroqual Series 500 Portable Air Quality Monitor”.

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

**Figure 6.: "Aeroqual Series 500 Portable Air Quality Monitor"**

**110.** 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).

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

**Conducted Measurements**

**112.** As it was already mentioned above 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 06/22/2022, for two hours. The measurement of noise, vibration and concentrations of the main polluting substances of the ambient air was carried out continuously for two hours.

**113.** 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. During the measurement, construction works were being carried out with high intensity, and during the measurement period a truck, a construction excavator and a mobile crane were moving to the construction site.

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

- 2022/06/23 - 23 oC - Relative Humidity 46%.[6]

**115.** The concentration levels of noise, vibration and major air pollutants were measured in line with the requirements of Georgian Legislation and the methodology and procedures developed by the Company.

**116.** Figure 7 and Figure 8 below show the measurement points, project zone and measurement location.

**Figure N7: Project Zone**


**Figure N8: Measurement Locations**


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

**117.** 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 Annex A to this report and its 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.

**118.** For the average values of the conducted measurements see in Table 24 below.

**Table 24: Result of measurements**

<table>
<tr><th colspan="3">Measurement Parameter</th><th>Value</th><th>Source of Pollution</th></tr>
<tr><td rowspan="6">Noise dBA</td><td rowspan="2">Norm of Georgian legislation (Adjacent to Residential house)</td><td>Day</td><td>55</td><td rowspan="7">Construction Works</td></tr>
<tr><td>Night</td><td>45</td></tr>
<tr><td>Norm of Georgian legislation (Commercial / Industrial Territory)</td><td>Day - Night</td><td>60</td></tr>
<tr><td>Recommendation of the “US National Institute for Occupational Safety and Health” (NIOSH)</td><td>8 Hour</td><td>85</td></tr>
<tr><td>Result - N1 Point (At the Construction site)</td><td>2 Hour</td><td>64.7</td></tr>
<tr><td>Result - N2 Point (At the Res. Buildint)</td><td>2 Hour</td><td>48.9</td></tr>
<tr><td>Vibration</td><td>DIN 4150-3 Standard</td><td colspan="2">5</td></tr>
</table>

| Measurement Parameter | | | Value | Source of Pollution |
|---|---|---|---|---|
| mm/s | Result (Maximum value recorded) | 1.82[7] | | |
| PM2.5 (µg/m3) | Allowable Concentration | 24 Hour | 25 | |
| | Result | 20 Minute | 6 | |
| PM10 (µg/m3) | Allowable Concentration | 24 Hour | 50 | |
| | Result | 20 Minute | 15 | |
| NO2 (µg/m3) | Allowable Concentration | 1 Hour | 200 | |
| | Result | 20 Minute | 99 | |
| O3 (µg/m3) | Allowable Concentration | 8 Hour | 120 | |
| | Result | 20 Minute | 12 | |
| CO (µg/m3) | Allowable Concentration | 8 Hour | 10 | |
| | Result | 20 Minute | <0.0 | |
| VOC (µg/m3) | Allowable Concentration | - | 1000 | |
| | Result | 20 Minute | 128 | |

**119.** As can be seen from the received data, the noise level at point N1 (construction site) exceeds the norm established by the legislation of Georgia (commercial / industrial area). The noise level observed at this point is significantly lower than the permissible norm of "NIOSH" (85 dBA). The noise level at point N2 (near the house) is lower than the norm established by the Georgian legislation and amounts to 45.5 dBA.

**120.** 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, there was no significant change in the noise level in the vicinity of the residential house.

**121.** At point N2 (near the house), the peak noise level was recorded in the five-minute interval from 10:05 to 10:10, which was 52.1 dBA.

[7] 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.

122. During the measurement period, an increase in the level of vibration exposure was systematically recorded. It should be noted that in the building where the vibration measurement was taking place, people were moving, which significantly affected the vibration level. Nevertheless, during the measurement period, there was no exceedance of the reference indicators of the DIN 4150-3 standard.

123. According to the subjective assessment of the vibration measurement operator, the increase in the above-mentioned vibration level is caused by the movement of people in the building, and not by the production of construction works.

124. As can be seen from the measurement results, 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.

125. In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 10 (µg/m3), and PM10 - 24 (µg/m3).

126. The concentrations of the main air polluting substances (CO, NO2, O3, VOC) are lower than the norm established by the legislation of Georgia.

## 4.2 Trends

127. All mitigation measures identified within the IEE/EMP, SEMPs under CHI-01 and MAR-02 sub-projects are mostly implemented, but additional mitigation measures required which are presented in the table 28 below.

## 4.3 Summary of Monitoring outcomes

128. Noise level during the construction period under MAR-02 sub-project exceeded the existing standards of IFC/WHO and therefore additional mitigations measures are required from contractor, those are presented in table 28 below.

## 4.4 Material resources Utilization

### 4.4.1 Current Period

129. The following information for material resources utilization was provided by the contractor within the framework of the MAR-02 sub-project during the reporting period January-June 2022.

**Table 25: Material Resources Utilized under MAR-02 sub-project**

| Item | Quantity (January-June 2022) |
|---|---|
| Water | 5,00.00 $m^3$ |
| Electricity | 32,700.00 kW |
| Fuel | 41196 L |

**130.** The contractor didn't provided data on material resources utilization under CHI-01 sub-project. Contractor is strongly requested by IPMO and SC to provide this information for the next reporting period, which will be reflected in the next SAEMR, July-December 2022.

### 4.4.2 Cumulative Resources Utilization

**131.** Cumulative resources utilization was nor provided by contractor, despite the numerous verbal requests and instruction given to contractor and SC. UWSCG will ensure to provide requested information in the next SAEMR, July-December 2022.

## 4.5 Waste Management

### 4.5.1 Current Period

CHI-01

**132.** CHI-01: At the construction sites under the CHI-01 sub-project is mainly produced household, construction (inert, surplus soil) and hazardous waste.

**133.** Mainly household waste is collected in municipal containers. Local municipality is responsible for the disposal of household waste.

**134.** The local Municipality of Chiatura is responsible for the disposal of household waste under CHI-01 sub-project, LTD "Sanitary" is constructed by contractor "AKKORD" for the disposal of hazardous waste. For disposal of inert waste, the special place is allocated for contractor which is previously agreed with the Municipality of Chiatura.

MAR-02

**135.** MAR-02: At the construction sites under MAR-02 sub-project mainly household, construction (inert, surplus soil) and hazardous waste are produced.

**136.** Household waste about 15 m3 (monthly) is collected by Municipal waste service company in municipal containers and disposed at the Marneuli landfill.

**137.** Household waste is collected by Municipal waste service company and disposed at the Marneuli landfill - village Kizilajlo

**138.** Construction waste (inert, surplus soil) are disposed according to the letter from Solid Waste Management Company at the Marneuli landfill.

**139.** Hazardous waste (paint/oil containers, gloves contaminated by oil and other) is collected/stored at the construction territory on the special arranged place for future disposal.

**140.** Hand over forms for Disposal of household waste and disposal of the construction waste and soil is provided in the Annex H below.

**Table 26: Material Resources Utilized under MAR-02 sub-project**

| Item | Monthly |
|---|---|
| Household waste | 15m$^3$ |

### 4.5.2 Cumulative Waste Generation

Not yet applicable.

## 4.6 Health and Safety

### 4.5.1 Community Health and Safety

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

### 4.5.2 Worker Safety and Health

**CHI-01**

**142.** Environmental H&S specialist of contractor under CHI-01 sub-project Mr. Tengo Kalmakhelidze 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.

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

- Ground works;
- Manual works;
- Removal waste;
- PPE;
- Reinforcement;
- Upgrade Safety Hard and Warning Barricades

**144.** Despite the fact that SC and UWSCG / USIIP strictly requested from contractor to adequately fill the Near Misses forms and reflect in their monthly monitoring reports no Near Missis were reported by contractors under CHI-01 sub-project. IPMO and SC ensure that the Contractor takes a proactive approach to improving environmental management, including completing Mear missis forms and reporting them in monthly reports. Discussions will be continued and the filled Near Misses will be provided in the next SAEMR, July-December 2022.

**145.** During the reporting period no workers health and safety incidents have been fixed.

**MAR-02**

**146.** Environmental H&S specialist of contractor under MAR-02 sub-project Mr. Guram Tandilashvili 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.

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

- Housekeeping;
- PPE;
- Ground works;
- Manual works;
- Oil spill response issues;
- Upgrade Safety Hard and Warning Barricades

**148.** During the reporting period, no Near-Misses were identified by contractor within the framework of the MAR-02 subproject.

**149.** SC and UWSCG / USIIP strictly requested from contractor to adequately fill the Near Misses forms and reflect in their monthly monitoring reports.

**150.** Additional meetings will be conducted with the contractor and minutes of meetings will be presented in the next SAEMR, July-December 2022.

### 4.7 Training

**151.** On site environmental and H&S safeguard training were conducted for environmental team of MAR-02 and CHI-01 sub-projects on a regular basis. Environmental specialists of contractors were introduced with all necessary safeguard requirements of ADB/SPS 2009.

**152.** COVID-19 workplace safety trainings were carried out as well to reduce the potential for COVID-19-related illness including education of employees on hygiene, face-covering and cleaning measures needed to prevent the virus from. SC is requested to closely monitor Contractors' implementation of COVID-19 prevention measures and provide more evidences and photo materials of anti-COVID measures implementation.

**153.** During the Country Environmental Safeguard Mission in May 2022, Headed by the Country Environmental Focal, Ms. Ninette R. Pajarillaga the need for environmental and social training for SCs and CCs under USIIP was identified. Requests for training on environmental and social issues have been sent to UWSCG/USIIP for ADB planning consideration. The following topics have been identified by UWSCG/USIIP, Supervision Consultant and contractor for training sessions for ADB:

**154.** Social Safeguard Issues:

- Social Safeguard Expert /Roles and Responsibilities;
- Overview of ADB's social safeguard policy;
- Principles and elements of a GRM;
- Essential skills of a GRM;

- Steps in handling complaints;
- GRM processes (what are the project related complaints, how to register them, how to maintain complaint logs, how to proceed with investigations and escalation of the complaints, etc)
- Effective consultation and participation;
- What are the proper communication with the project impacted people and who should be the source of the communication;
- Communicating for understanding;
- Working with vulnerable groups;
- Stakeholder engagement in GRM issues;
- Monitoring and reporting on social safeguard

**155.** Environmental Safeguard Issues:

- Environmental Management Plan (EMP);
- Environmental Impact and Mitigation Measures during Construction phase (including top soil and excess soil management generated due to the excavation works, waste management, reduction of dust, noise, and vibration during construction);
- Reduction of odor generation during operation

**156.** Detailed information on the follow-up to the training request will be reflected in the next SAEMR July-December 2022.

# 5. FUNCTIONING OF THE SEMP

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

**157.** 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.

**158.** 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)

**159.** 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

**MAR-02 sub-project:**

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

**160.** All SEMPs were prepared by Contractor, endorsed by SC and approved by UWSCG. SEMPs were reviewed/commented by the RETA International Environmental Consultant of ADB under RETA 9541 - Ms. Keti Dgebuadze.

**161.** UWSCG and the supervision consultant will review and verify the SSEMP under Mar-01 sub-project to ensure this is applicable and appropriate to the site conditions and impacts. No works will be allowed until the SSEMP is cleared and the pre-works photo-documentation has been submitted.

# 6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

## 6.1 Good Practice

**162.** There is need to improve close monitoring, guidance and interactions between IPMO, consultant supervision team and contractors to avoid non-conformances and improve current situations in order to improve the tracking of actions to address non-conformances under USIIP/T6 sub-projects.

## 6.2 Opportunities for Improvement

**163.** During the next the reporting period the tracking of actions to address non-conformances will be improved by IPMO. Close monitoring, guidance and interactions between PIU, SC and CC will be improved to avoid non-conformances and improve current situations. All non-conformances addressed will be reflected in the next SAEMR, July-December 2022.

# 7. SUMMARY AND RECOMMENDATIONS

## 7.1 Summary

**164.** Individual and joint on-site monitoring activities were conducted by Environmental Monitoring Specialist of SC, Mr. Rezo Enukidze and Environmental Specialist of USIIP Ms. Ketevan Chomakhidze. During the reporting period, Mr.Rezo Enukidze left the USIIP/T6 and this assignment because of his other engagements and the supervision consultant HiLL has proposed another person, Mr.Nikoloz Neparidze as replacement. In the meantime, IPMO will clarify this issue with the replacement of the environmental specialist, and the details will be presented in the next SAEMR report as of July-December 2022. Kety Chubabria the social expert of supervision consultant is supporting the SC for implementation of EMP as well.

**165.** Due to the fact that The World Health Organization (WHO) on March 11, 2020, has declared the novel coronavirus (COVID-19) outbreak a global pandemic the Government of Georgia and its Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia, issued the General Guidelines Related to Infection (COVID-19) which applies to all sectors of economic activity (Annex F).

**166.** The General Guideline for COVID-19 was also developed by the Government of Georgia specifically for the construction sector.

**167.** This Guidance for Construction Activities during the COVID-19 was created to provide owners/operators of construction projects and their employees and contractors with precautions to help protect against the spread of COVID-19 as indoor and outdoor construction sites.

**168.** An emergency response plan was developed by SC for preventions of employees workers against the COVID-19 as well in June 2020, please see Annex G to this report.

**169.** In accordance with the IEE, the Contractor was required to undertake parametric measurements and observations on air quality and noise under MAR-02 sub-project.

**170.** No Environmental Quality Measurement was conducted under CHI-01 sub-project. SC is strongly required to follow environmental safeguard requirements under USIIP/T6 and request from contractor to conduct EQM in January 2022.

**171.** Environmental quality measurements of ambient air prolusion and noise level was conducted under MAR-02 sub-project. Noise level exceeded the existing standards of national and international regulations and therefore additional mitigation measures to improve the situation are provided in the Table 28 below.

**172.** Table 28 below provides information on the implementation Status of Corrective Actions proposed in the previous SAEMR, July-December 2021.

**Table 27: Implementation Status of Corrective Actions proposed in the last environmental monitoring report (January-June 2022)**

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| ***CHI-01, MAR-02*** | | | | | | |
| **CHI-01** | | | | | | |
| 1 | Public & Worker Safety | Occupational safety issues must be taken into consideration, excavations at narrow streets are not barricaded with safety tapes and light barricades to safe the site during the night time, poor safety condition | CC | End of July 2022 | Not Completed by the end of reporting period, June 2022.<br><br>Contractor is given strong instruction to improve the situation and provide improved photos of sites by the end of July 2022 | Additional actions required |
| 2 | | The contractor shall ensure that all workers are | CC | May 2022 | Completed, | No further actions |

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| ***CHI-01, MAR-02*** | | | | | | |
| | | conducted in a safe manner and works are provided with safety equipment and supervised by H&S personal | | | June 2022 | required |
| | | The Contractor shall complete activities, which are abandoned and might cause complaints from locals. | CC | May 2022 | Completed, June 2022 | No further actions required |
| **MAR-02** | | | | | | |
| 1 | Incorrect surplus/waste management | Entrance to the site is muddy and not maintained, there is huge pile of the subsoil at the side of the road that contains the risk of landslide, blocking the road and creating hazard | CC | End of July 2022 | Not Completed by the end of reporting period - June 2022. Contractor is given strong instruction to | Additional actions required |

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| *CHI-01, MAR-02* | | | | | | |
| | | of passengers and pollution of the river that is very close to the road.<br><br>Contractor to avoid piling the subsoil high height and too close to the roads and especially to the river.<br><br>Implement some protection measures that will ensure stability of the piled earth | | | improve the situation and provide improved photos of sites by the end of July 2022 | |
| 2 | Safety of Public and disturbance of nearby population | Flooding may destroy site surroundings and in case if during this year flooding will have place repeatedly the site itself will be flooded again. A retaining wall along the channel is considered to protect | CC | End of July 2022 | Not Completed by the end of reporting period, June 2022.<br><br>Contractor is given strong | Additional actions required |

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| *CHI-01, MAR-02* | | | | | | |
| | | locals from possible flooding | | | instruction to improve the situation and provide improved photos of sites by the end of July 2022 | |
| 3 | Waste management | Storage area for hazardous waste handling is prepared, but it is not managed properly | CC | May 2022 | Completed, June 2022 | No further actions required |
| 4 | | Proper waste containers with roof & and concrete basement should be installed at the storage area | CC | May 2022 | Completed, June 2022 | No further actions required |
| 5 | Noise Impacts on nearby | Noise level I acceded the required standards in | CC | Mid July | Not yet completed, all | Further actions, provided in |

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| | | | ***CHI-01, MAR-02*** | | | |
| | Population | Marneuli WWTP project near the sensitive receptor (the yard of the nearby residential house, 50m from the construction site) | | 2022 | mitigation measures are provided in the table 28 below. | the table 28 is required |
| 6 | Public & Worker Safety | Workers should always use PPE | CC | May 2022 | Completed, June 2022 | No further actions required |
| 7 | Concrete Mixer Trucks Washout activities | Remaining from Concrete washing pit is excavated, but it there is no information that it was disposed according to WMP; Seems lots of concrete works are ahead proper concrete washing pit must be organized | CC | May 2022 | Completed, June 2022 | No further actions required |

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| | | | ***CHI-01, MAR-02*** | | | |
| 8 | Fuel spills | In case planned to have some amount of fuel on the site – adequate protection of environment from spreading of accidentally spilled liquid (Precaution measures include – secondary containment capable to retain 110% of container volume should be arranged | CC | May 2022 | Completed, June 2022 | No further actions required |
| 9 | Loss of topsoil due to incorrect stripping and storage | Top Soil should be stored properly and managed in accordance with the required regulations<br>The Marneuli WWTP site construction requires top soil stripping from the area of 23,000 $m^2$ in the amount of 7,100$m^3$. | CC | December 2021 | Partially Completed by the end of June 2022, contractor is given strong instruction to improve the situation and provide improved | Additional actions required |

| # | Issue | *Required Action* | *Responsibility* | *Timing (Target Dates)* | *Description of Resolution and Timing (Actual)* | *If not yet resolved, indicate the reason why and specify further required action and timeframe.* |
|---|---|---|---|---|---|---|
| *CHI-01, MAR-02* | | | | | | |
| | | | | | photos of sites by the mid. January 2022 | |
| | | | | | | |

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## 7.2 Recommendations

**173.** During the reporting period, January-June 2022, the USIIP/T6 was implemented in accordance with the requirements of ADB - SPS 2009 and the National Legislation.

**174.** More detailed recommendations for the implementation of USIIP/T6 during the next reporting period July-December 2022 are provided in the Table 28 below:

**Table 28: Recommendations to Address Environmental Issues under USIIP/T6 sub-projects**

| **Recommendations under CHI-01 and MAR-02 sub-projects** | |
|---|---|
| | |
| **Recommendations CHI-01** | **Implementation Status and Date** |
| Occupational safety issues must be taken into consideration, excavations at narrow streets are not barricaded with safety tapes and light barricades to safe the site during the night time, poor safety condition, | Instruction are given to contractor to improve the situation and to conduct relevant mitigation measures by the end of July 2022 |
| **Recommendations MOR-02** | **Implementation Status and Date** |
| Entrance to the site is muddy and not maintained;<br><br>There is huge pile of the subsoil at the side of the road that contains the risk of landslide, blocking the road and creating hazard of passengers and pollution of the river that is very close to the road. Contractor to avoid piling the subsoil high height and too close to the roads and especially to the river.<br><br>Flooding may destroy site surroundings and in case if during this year flooding will have place repeatedly the site itself will be flooded again. A retaining wall along the channel is considered to protect locals from possible flooding | Instruction are given to contractor to improve the situation and to conduct relevant mitigation measures by the end of July 2022 |
| Noise from the construction activities should not cause disruption and nuisance to nearby community and other | Instruction are given to contractor to improve the situation and to conduct |

| **Recommendations under CHI-01 and MAR-02 sub-projects** | |
|---|---|
| sensitive receptors (i.e. school, hospitals). | following mitigation measures immediately.<br><br>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;<br><br>Noisy construction activities will be avoided during night time;<br><br>All construction equipment and vehicles shall be well maintained, regularly inspected for noise emissions;<br><br>Impose speed limits on construction vehicles to minimize emissions along areas where sensitive receptors are located (i.e. temples, hospitals, schools, houses)<br><br>Install noise barriers (e.g., panels, curtains, or partitions)<br>to reduce the emission of engine noise.<br><br>Conduct meetings with population and provide information related to schedule of construction activities and noise caused by the project activities. |

**175.** Conduct quarterly monitoring of Noise and Air quality under CHI-01 project at the nearest sensitive receptors. The schedule of environmental quality measurements to be carried out during the next reporting period, July-December 2022 is presented in the Table 29 below.

**Table 29: Conduct Monitoring of Environmental Quality under CHI-01 project**

| Parameters | Quarterly measurement |
|---|---|
| Dust | September 2022 |
| $PM_{2.5}$ and $PM_{10}$ | September 2022 |
| Vibration | September 2022 |
| Carbon monoxide | September 2022 |
| Nitrogen dioxide | September 2022 |
| Noise | September 2022 |

**176.** 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, July-December 2022 is presented in the Table 30 below.

**Table 30: Conduct Monitoring of Environmental Quality under MAR-02 sub-project**

| Parameters | Quarterly measurement |
|---|---|
| Dust | September 2022 |
| $PM_{2.5}$ and $PM_{10}$ | September 2022 |
| Vibration | September 2022 |
| Carbon monoxide | September 2022 |
| Nitrogen dioxide | September 2022 |
| Noise | September 2022 |

# ANNEXES

## ANNEX A: ENVIRONMENTAL QUALITY MEASUREMENT DATA, (MAR-02), 23 JUNE 2022

**Construction of a waste water treatment plant in Marneuli**

**Report of environmental qualitative characteristics measurements**

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**2022 Y.**

*Construction of a waste water treatment plant in Marneuli*

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*Construction of a waste water treatment plant in Marneuli*

**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 humanauditory system. |
| **„IFC"** | - | International Finance Corporation. |
| **"NIOSH"** | - | "National Institute for Occupational Safety & Health" USA. |

*Construction of a waste water treatment plant in Marneuli*

## 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 "Inzi" company.

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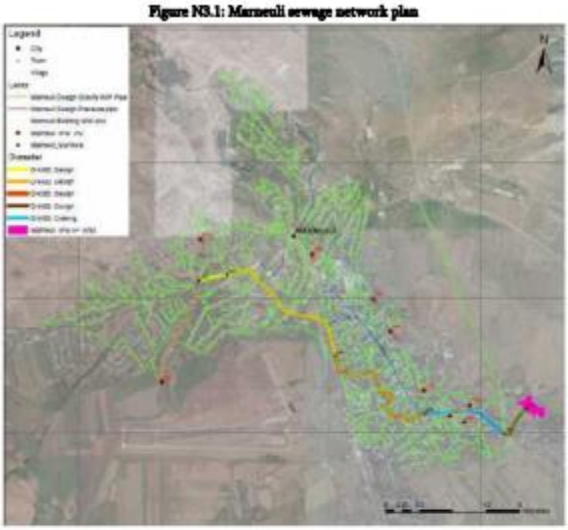
**Figure N3.1: Marneuli sewage network plan**



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 concentrations of major pollutants in ambient air at the locations specified by the customer.

## 4. Environmental qualitative characteristics

### 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,

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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

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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:

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– **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

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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**

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| № | 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.

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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 |
| 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

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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, Lim3, Lim5, 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.

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

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**Figure N6.1.1: "REED" R8080 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**

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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);
- Nitrogen Dioxide (NO2);
- Carbon Monoxide (CO);
- Ozone (O3);
- Volatile Organic Compounds (VOC).

The pictures 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 20 minutes.

## 7. Conducted Measurement

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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 06/22/2022, for two hours. The measurement of noise, vibration and concentrations of the main polluting substances of the ambient air 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. During the measurement, construction works were being carried out with high intensity, and during the measurement period a truck, a construction excavator and a mobile crane were moving to the construction site.

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

- 2022/06/23 - 23 -C - Relative Humidity 46%.[2]

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

Figure N7.1 and N7.2 below show the measurement points.

**Figure N7.1: Project Zone**

**Figure N7.2: Measurement Locations**

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

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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.

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 | |

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| Measurement Parameter | | | Value | Source of Pollution |
|---|---|---|---|---|
| | Recommendation of the "US National Institute for Occupational Safety and Health" (NIOSH) | 8 Hour | 85 | |
| | Result - N1 Point (At the Construction site) | 2 Hour | 64.7 | |
| | Result - N2 Point (At the Res. Building) | 2 Hour | 48.9 | |
| Vibration mm/s | DIN 4150-3 Standard | 5 | | |
| | Result (Maximum value recorded) | 1.82[1] | | |
| PM2.5 | Allowable Concentration | 24 Hour | 25 | |
| (µg/m3) | Result | 20 Minute | 6 | |
| PM10 | Allowable Concentration | 24 Hour | 50 | |
| (µg/m3) | Result | 20 Minute | 15 | |
| NO2 | Allowable Concentration | 1 Hour | 200 | |
| (µg/m3) | Result | 20 Minute | 99 | |
| O3 | Allowable Concentration | 8 Hour | 120 | |
| (µg/m3) | Result | 20 Minute | 12 | |
| CO | Allowable Concentration | 8 Hour | 10 | |
| (µg/m3) | Result | 20 Minute | <0.0 | |
| VOC | Allowable Concentration | - | 1000 | |
| (µg/m3) | Result | 20 Minute | 128 | |

As can be seen from the received data, the noise level at point N1 (construction site) exceeds the norm established by the legislation of Georgia (commercial / industrial area). The noise level observed at this point is significantly lower than the permissible norm of "NIOSH" (85 dBA). The noise level at point N2 (near the house) is lower than the norm established by the Georgian legislation and amounts to 45.5 dBA.

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, there was no significant change in the noise level in the vicinity of the residential house.

At point N2 (near the house), the peak noise level was recorded in the five-minute interval from 10:05 to 10:10, which was 52.1 dBA.

[1] 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.

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During the measurement period, an increase in the level of vibration exposure was systematically recorded. It should be noted that in the building where the vibration measurement was taking place, people were moving, which significantly affected the vibration level. Nevertheless, during the measurement period, there was no exceedance of the reference indicators of the DIN 4150-3 standard.

According to the subjective assessment of the vibration measurement operator, the increase in the above-mentioned vibration level is caused by the movement of people in the building, and not by the production of construction works.

As can be seen from the measurement results, 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.

In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 10 (μg/m³), and PM10 - 24 (μg/m³).

The concentrations of the main air polluting substances (CO, NO2, O3, VOC) are lower than the norm established by the legislation of Georgia.

*Persons responsible for the measurements:*

| | |
|---|---|
| **Archil Rewazishvili** | **David Kaviladze** |
| **LTD "Eco-Spectri"** | **LTD "Eco-Spectri"** |
| **Signature** | **Signature** |
| **Head of Examination Laboratory** | **Senior specialist of Environmental and Social issues** |

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## 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 major pollutants in ambient air 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 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 major air pollutants 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, and during the measurement period a truck, a construction excavator and a mobile crane were moving to the construction site;
- As can be seen from the received data, the noise level at point N1 (construction site) exceeds the norm established by the legislation of Georgia (commercial / industrial area). The noise level observed at this point is significantly lower than the permissible norm of "NIOSH" (85 dBA). The noise level at point N2 (near the house) is lower than the norm established by the Georgian legislation and amounts to 45.5 dBA;
- 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, there was no significant change in the noise level in the vicinity of the residential house;
- At point N2 (near the house), the peak noise level was recorded in the five-minute interval from 10:05 to 10:10, which was 52.1 dBA;
- During the measurement period, an increase in the level of vibration exposure was systematically recorded. It should be noted that in the building where the vibration measurement was taking place, people were moving, which significantly affected the vibration level. Nevertheless, during the measurement period, there was no exceedance of the reference indicators of the DIN 4150-3 standard;
- According to the subjective assessment of the vibration measurement operator, the increase in the above-mentioned vibration level is caused by the movement of people in the building, and not by the production of construction works;

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- As can be seen from the measurement results, 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;
- In the 20-minute measurement interval, the highest level of particulate matter was recorded as PM2.5 - 10 (μg/m³), and PM10 - 24 (μg/m³);
- The concentrations of the main air polluting substances (CO, NO2, O3, VOC) are lower than the norm established by the legislation of Georgia.

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**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** |
|  |  |

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**Annex N2: Noise Measurement Results**

| N1 Measurement | | |
|---|---|---|
| Date | Location | Distance from Project Area |
| 22.06.2022 | Construction Site | 10 m. |
| N1 Measurement Result | | |
| Average | 10:18 - 11:55 | |
| | 64,7 | |
| 5 Minute Average | | |
| 1 | 22.06.2022 10:18 | 64,9 |
| 2 | 22.06.2022 10:23 | 75,5 |
| 3 | 22.06.2022 10:28 | 69,9 |
| 4 | 22.06.2022 10:33 | 65,2 |
| 5 | 22.06.2022 10:38 | 66,7 |
| 6 | 22.06.2022 10:43 | 61,3 |
| 7 | 22.06.2022 10:48 | 67,0 |
| 8 | 22.06.2022 10:53 | 61,8 |
| 9 | 22.06.2022 10:58 | 57,3 |
| 10 | 22.06.2022 11:03 | 54,4 |
| 11 | 22.06.2022 11:08 | 64,4 |
| 12 | 22.06.2022 11:13 | 67,5 |
| 13 | 22.06.2022 11:18 | 65,3 |
| 14 | 22.06.2022 11:23 | 64,5 |
| 15 | 22.06.2022 11:28 | 67,7 |
| 16 | 22.06.2022 11:33 | 65,2 |
| 17 | 22.06.2022 11:38 | 60,0 |
| 18 | 22.06.2022 11:43 | 63,6 |
| 19 | 22.06.2022 11:48 | 62,4 |
| 20 | 22.06.2022 11:53 | 57,6 |
| 21 | 22.06.2022 11:55 | 76,0 |

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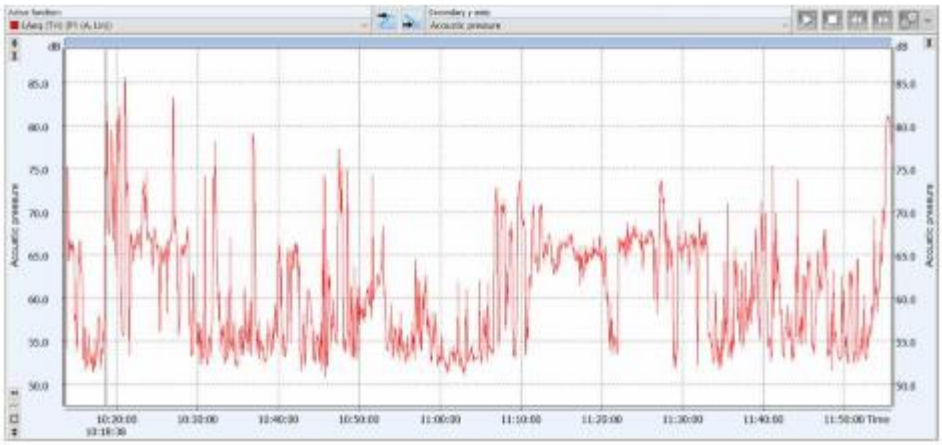
| N2 Measurement | | |
|---|---|---|
| Date | Location | Distance from Project Area |
| 22.06.2022 | Residential Building Yard | 50 m. |
| N2 Measurement Result | | |
| Average | 10:10 - 11:55 | |
| | 48,9 | |
| 5 Minute Average | | |
| 1 | 22.06.2022 10:10 | 52,1 |
| 2 | 22.06.2022 10:15 | 50,3 |
| 3 | 22.06.2022 10:20 | 49,6 |
| 4 | 22.06.2022 10:25 | 50,3 |
| 5 | 22.06.2022 10:30 | 51,0 |
| 6 | 22.06.2022 10:35 | 48,4 |
| 7 | 22.06.2022 10:40 | 46,2 |
| 8 | 22.06.2022 10:45 | 48,2 |
| 9 | 22.06.2022 10:50 | 44,7 |
| 10 | 22.06.2022 10:55 | 47,0 |
| 11 | 22.06.2022 11:00 | 47,3 |
| 12 | 22.06.2022 11:05 | 43,2 |
| 13 | 22.06.2022 11:10 | 45,4 |
| 14 | 22.06.2022 11:15 | 50,5 |
| 15 | 22.06.2022 11:20 | 49,2 |
| 16 | 22.06.2022 11:25 | 49,9 |
| 17 | 22.06.2022 11:30 | 52,0 |
| 18 | 22.06.2022 11:35 | 49,0 |
| 19 | 22.06.2022 11:40 | 51,2 |
| 20 | 22.06.2022 11:45 | 50,9 |
| 21 | 22.06.2022 11:50 | 49,2 |
| 22 | 22.06.2022 11:55 | 50,8 |

*Construction of a waste water treatment plant in Marneuli*

**Annex N3: Graphical data for noise measurement**

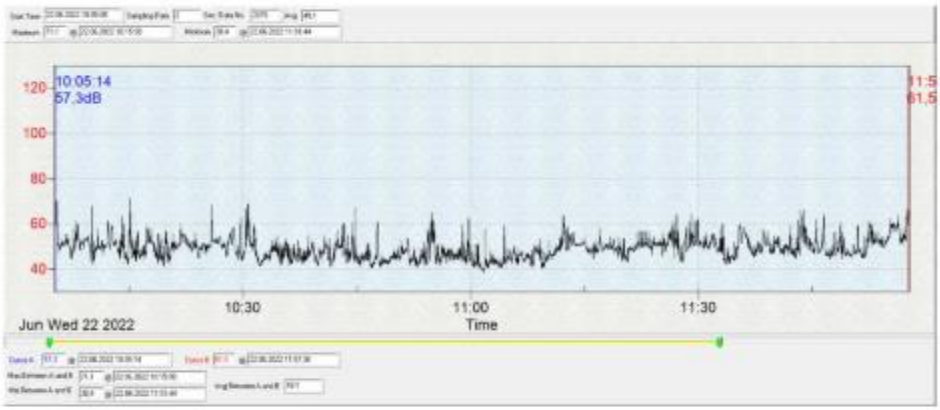
**Graphical data for noise measurement- N1 point (Construction Site)**






*Construction of a waste water treatment plant in Marneuli*

**Graphical data for noise measurement- N1 point (At the residential House)**



*Construction of a waste water treatment plant in Marneuli*

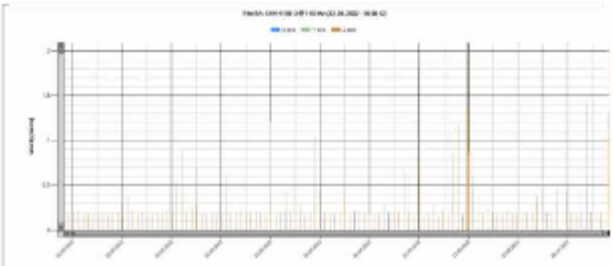
**Annex N4: Vibration Measurement Results (Protocol)**

| **Measurement protocol N1** | |
|---|---|
| **1. General** | |
| 1.1 Person in charge | Archil Revazishvili - Head of the Examination Lab |
| 1.2 Measurement period | 22.06.2022 10:08:12 - 22.06.2022 11:58:36 |
| **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 | |

*Construction of a waste water treatment plant in Marneuli*

| | |
|---|---|
| **5. Environmental conditions** | open space from three sides; Smooth floor surface |
| **6. Subjective observations** | The vibration of the working specifics does't affect on the general condition |
| **7. Measuring chain** | Triaxial Vibration Meter VM40B<br>Serial number: 180665<br>Calibration Date: June 2022<br>Measurement method: DIN 4150-3<br>Settings: short res. found.:<br>Frequency range: 1-80 Hz<br>Trigger mode: 060s + events<br>Measurement processing and report generation done with VM40MDB software. |
| **8. Measurement result** | |
| 8.1 Event chart | |

*Construction of a waste water treatment plant in Marneuli*



| Date | Time | X-axis | Y-axis | Z-Axis | Unit | Trigger event |
|---|---|---|---|---|---|---|
| 22.06.2022 | 10:08:12 | 58,63 | 94,96 | 221,43 | mm/s | (T) |
| 22.06.2022 | 10:09:12 | 0,14 | 0,16 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:10:12 | 0,17 | 0,18 | 0,14 | mm/s | (T) |
| 22.06.2022 | 10:11:11 | 0,15 | 0,22 | 0,15 | mm/s | (T) |
| 22.06.2022 | 10:12:11 | 0,15 | 0,16 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:13:11 | 0,17 | 0,19 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:14:11 | 0,16 | 0,17 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:15:10 | 0,18 | 0,18 | 0,18 | mm/s | (T) |
| 22.06.2022 | 10:16:11 | 0,19 | 0,18 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:17:10 | 0,15 | 0,18 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:18:10 | 0,19 | 0,19 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:19:10 | 0,19 | 0,17 | 0,2 | mm/s | (T) |
| 22.06.2022 | 10:20:09 | 0,18 | 0,3 | 0,15 | mm/s | (T) |
| 22.06.2022 | 10:21:09 | 0,21 | 0,37 | 0,19 | mm/s | (T) |
| 22.06.2022 | 10:22:09 | 0,14 | 0,17 | 0,22 | mm/s | (T) |
| 22.06.2022 | 10:23:09 | 0,14 | 0,18 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:24:08 | 0,17 | 0,17 | 0,2 | mm/s | (T) |
| 22.06.2022 | 10:25:08 | 0,16 | 0,17 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:26:08 | 0,15 | 0,19 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:27:08 | 0,19 | 0,19 | 0,19 | mm/s | (T) |
| 22.06.2022 | 10:28:07 | 0,14 | 0,18 | 0,19 | mm/s | (T) |
| 22.06.2022 | 10:29:07 | 0,19 | 0,23 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:30:07 | 0,19 | 0,21 | 0,19 | mm/s | (T) |
| 22.06.2022 | 10:31:06 | 0,44 | 0,53 | 0,15 | mm/s | (T) |
| 22.06.2022 | 10:32:07 | 0,5 | 0,88 | 0,3 | mm/s | (T) |
| 22.06.2022 | 10:33:06 | 0,18 | 0,23 | 0,15 | mm/s | (T) |
| 22.06.2022 | 10:34:06 | 0,2 | 0,26 | 0,18 | mm/s | (T) |
| 22.06.2022 | 10:35:06 | 0,43 | 0,71 | 0,28 | mm/s | (T) |
| 22.06.2022 | 10:36:05 | 0,16 | 0,17 | 0,18 | mm/s | (T) |
| 22.06.2022 | 10:37:05 | 0,17 | 0,16 | 0,16 | mm/s | (T) |

*Construction of a waste water treatment plant in Marneuli*

| | | | | | | |
|---|---|---|---|---|---|---|
| 22.06.2022 | 10:38:05 | 0,15 | 0,19 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:39:05 | 0,16 | 0,19 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:40:04 | 0,16 | 0,17 | 0,18 | mm/s | (T) |
| 22.06.2022 | 10:41:05 | 0,25 | 0,62 | 0,19 | mm/s | (T) |
| 22.06.2022 | 10:42:04 | 0,17 | 0,18 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:43:03 | 0,19 | 0,2 | 0,18 | mm/s | (T) |
| 22.06.2022 | 10:44:04 | 0,2 | 0,21 | 0,22 | mm/s | (T) |
| 22.06.2022 | 10:45:03 | 0,15 | 0,19 | 0,15 | mm/s | (T) |
| 22.06.2022 | 10:46:03 | 0,14 | 0,2 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:47:03 | 0,21 | 0,18 | 0,15 | mm/s | (T) |
| 22.06.2022 | 10:48:02 | 0,17 | 0,18 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:49:02 | 0,17 | 0,17 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:50:02 | 0,46 | 1,21 | 0,45 | mm/s | (T) |
| 22.06.2022 | 10:51:02 | 0,16 | 0,16 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:52:01 | 0,19 | 0,16 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:53:02 | 0,22 | 0,43 | 0,14 | mm/s | (T) |
| 22.06.2022 | 10:54:01 | 0,17 | 0,21 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:55:00 | 0,49 | 0,7 | 0,26 | mm/s | (T) |
| 22.06.2022 | 10:56:01 | 0,24 | 0,29 | 0,17 | mm/s | (T) |
| 22.06.2022 | 10:57:00 | 0,15 | 0,17 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:58:01 | 0,17 | 0,21 | 0,16 | mm/s | (T) |
| 22.06.2022 | 10:59:00 | 0,71 | 1,04 | 0,3 | mm/s | (T) |
| 22.06.2022 | 10:59:59 | 0,33 | 0,45 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:01:00 | 0,18 | 0,18 | 0,19 | mm/s | (T) |
| 22.06.2022 | 11:01:59 | 0,18 | 0,17 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:02:59 | 0,17 | 0,15 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:03:59 | 0,13 | 0,19 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:04:58 | 0,72 | 1,04 | 0,39 | mm/s | (T) |
| 22.06.2022 | 11:05:58 | 0,18 | 0,16 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:06:58 | 0,2 | 0,16 | 0,22 | mm/s | (T) |
| 22.06.2022 | 11:07:58 | 0,18 | 0,16 | 0,22 | mm/s | (T) |
| 22.06.2022 | 11:08:57 | 0,14 | 0,2 | 0,14 | mm/s | (T) |
| 22.06.2022 | 11:09:57 | 0,17 | 0,13 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:10:57 | 0,15 | 0,2 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:11:57 | 0,15 | 0,2 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:12:57 | 0,16 | 0,28 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:13:56 | 0,19 | 0,22 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:14:56 | 0,15 | 0,2 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:15:56 | 0,17 | 0,17 | 0,19 | mm/s | (T) |
| 22.06.2022 | 11:16:55 | 0,4 | 0,67 | 0,25 | mm/s | (T) |
| 22.06.2022 | 11:17:55 | 0,14 | 0,21 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:18:55 | 0,19 | 0,19 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:19:54 | 0,93 | 1,82 | 0,81 | mm/s | (T) |
| 22.06.2022 | 11:20:55 | 0,14 | 0,17 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:21:54 | 0,13 | 0,19 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:22:54 | 0,18 | 0,3 | 0,14 | mm/s | (T) |

*Construction of a waste water treatment plant in Marneuli*

| | | | | | | |
|---|---|---|---|---|---|---|
| 22.06.2022 | 11:23:54 | 0,16 | 0,14 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:24:53 | 0,18 | 0,23 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:25:54 | 0,14 | 0,17 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:26:53 | 0,62 | 0,85 | 0,33 | mm/s | (T) |
| 22.06.2022 | 11:27:52 | 1,12 | 1,13 | 1,19 | mm/s | (T) |
| 22.06.2022 | 11:28:53 | 0,14 | 0,16 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:29:43 | 36,88 | 2,26 | 0,14 | mm/s | 0-A |
| 22.06.2022 | 11:29:44 | 36,88 | OVERL | OVERL | mm/s | A-0 |
| 22.06.2022 | 11:29:46 | 36,88 | OVERL | OVERL | mm/s | 0-A |
| 22.06.2022 | 11:29:49 | 0,85 | 0,31 | 1,34 | mm/s | A-0 |
| 22.06.2022 | 11:29:50 | 0,49 | 0,63 | 6,86 | mm/s | 0-A |
| 22.06.2022 | 11:29:51 | 0,14 | 0,08 | 0,76 | mm/s | A-0 |
| 22.06.2022 | 11:29:52 | 45,96 | OVERL | OVERL | mm/s | (T) |
| 22.06.2022 | 11:29:58 | 0,08 | 0,07 | 20,23 | mm/s | 0-A |
| 22.06.2022 | 11:30:00 | 0,18 | 0,2 | 0,86 | mm/s | A-0 |
| 22.06.2022 | 11:30:52 | 0,61 | 0,61 | OVERL | mm/s | (T) |
| 22.06.2022 | 11:31:52 | 0,24 | 0,38 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:32:51 | 0,17 | 0,19 | 0,19 | mm/s | (T) |
| 22.06.2022 | 11:33:52 | 0,16 | 0,19 | 0,23 | mm/s | (T) |
| 22.06.2022 | 11:34:51 | 0,17 | 0,2 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:35:50 | 0,15 | 0,17 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:36:51 | 0,18 | 0,19 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:37:50 | 0,15 | 0,19 | 0,22 | mm/s | (T) |
| 22.06.2022 | 11:38:50 | 0,15 | 0,18 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:39:50 | 0,15 | 0,17 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:40:50 | 0,14 | 0,18 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:41:49 | 0,16 | 0,17 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:42:49 | 0,15 | 0,18 | 0,19 | mm/s | (T) |
| 22.06.2022 | 11:43:49 | 0,32 | 0,38 | 0,31 | mm/s | (T) |
| 22.06.2022 | 11:44:49 | 0,19 | 0,19 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:45:49 | 0,19 | 0,16 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:46:48 | 0,15 | 0,18 | 0,19 | mm/s | (T) |
| 22.06.2022 | 11:47:48 | 0,2 | 0,47 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:48:48 | 0,18 | 0,17 | 0,18 | mm/s | (T) |
| 22.06.2022 | 11:49:47 | 0,24 | 0,44 | 0,16 | mm/s | (T) |
| 22.06.2022 | 11:50:48 | 0,14 | 0,19 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:51:47 | 0,14 | 0,18 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:52:46 | 0,17 | 0,2 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:53:47 | 0,45 | 1,42 | 0,49 | mm/s | (T) |
| 22.06.2022 | 11:54:46 | 0,2 | 0,18 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:55:46 | 0,21 | 0,21 | 0,15 | mm/s | (T) |
| 22.06.2022 | 11:56:46 | 0,19 | 0,2 | 0,2 | mm/s | (T) |
| 22.06.2022 | 11:57:46 | 0,22 | 0,26 | 0,17 | mm/s | (T) |
| 22.06.2022 | 11:58:10 | 51,35 | 32,83 | 58,87 | mm/s | 0-A |
| 22.06.2022 | 11:58:13 | 1,3 | 1,13 | 1,04 | mm/s | A-0 |
| 22.06.2022 | 11:58:36 | 0,11 | 0,12 | 0,08 | mm/s | END |



*Construction of a waste water treatment plant in Marneuli*

| | |
|---|---|
| **9. Evaluation** | Generated vibration from construction works does not affect the overall condition |
| **10. Signs** | |
| Signature | Archil Revazishvili  |

*Construction of a waste water treatment plant in Marneuli*

**Annex N5: 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 | 22 Jun 2022 10:11 | | | | | | 11 | 5 | |
| 2 | 22 Jun 2022 10:12 | 1 | 1 | | | | 13 | 6 | |
| 3 | 22 Jun 2022 10:13 | 1 | 1 | | | | 16 | 6 | |
| 4 | 22 Jun 2022 10:14 | 1 | 1 | | | | 14 | 7 | |
| 5 | 22 Jun 2022 10:15 | 1 | 1 | | | | 11 | 6 | |
| 6 | 22 Jun 2022 10:16 | 1 | 1 | | | | 15 | 7 | |
| 7 | 22 Jun 2022 10:17 | 1 | 1 | | | | 24 | 10 | |
| 8 | 22 Jun 2022 10:18 | 1 | 1 | | | | 13 | 6 | |
| 9 | 22 Jun 2022 10:19 | 1 | 1 | | | | 13 | 6 | |
| 10 | 22 Jun 2022 10:20 | 1 | 1 | | | | 15 | 7 | |
| 11 | 22 Jun 2022 10:21 | 1 | 1 | | | | 15 | 7 | |
| 12 | 22 Jun 2022 10:22 | 1 | 1 | | | | 11 | 5 | |
| 13 | 22 Jun 2022 10:23 | 1 | 1 | | | | 9 | 4 | |
| 14 | 22 Jun 2022 10:24 | 1 | 1 | | | | 15 | 6 | |
| 15 | 22 Jun 2022 10:25 | 1 | 1 | | | | 12 | 4 | |
| 16 | 22 Jun 2022 10:26 | 1 | 1 | | | | 16 | 8 | |
| 17 | 22 Jun 2022 10:27 | 1 | 1 | | | | 22 | 9 | |
| 18 | 22 Jun 2022 10:28 | 1 | 1 | | | | 15 | 6 | |
| 19 | 22 Jun 2022 10:29 | 1 | 1 | | | | 16 | 6 | |
| 20 | 22 Jun 2022 10:30 | 1 | 1 | | | | 17 | 7 | |
| 21 | 22 Jun 2022 10:38 | 1 | 1 | | 123 | | | | |
| 22 | 22 Jun 2022 10:39 | 1 | 1 | | 123 | | | | |
| 23 | 22 Jun 2022 10:40 | 1 | 1 | | 109 | | | | |
| 24 | 22 Jun 2022 10:41 | 1 | 1 | | 123 | | | | |
| 25 | 22 Jun 2022 10:42 | 1 | 1 | | 119 | | | | |
| 26 | 22 Jun 2022 10:43 | 1 | 1 | | 100 | | | | |



*Construction of a waste water treatment plant in Marneuli*

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 27 | 22 Jun 2022 10:44 | 1 | 1 | | 105 | | | | |
| 28 | 22 Jun 2022 10:45 | 1 | 1 | | 96 | | | | |
| 29 | 22 Jun 2022 10:46 | 1 | 1 | | 96 | | | | |
| 30 | 22 Jun 2022 10:47 | 1 | 1 | | 88 | | | | |
| 31 | 22 Jun 2022 10:48 | 1 | 1 | | 90 | | | | |
| 32 | 22 Jun 2022 10:49 | 1 | 1 | | 84 | | | | |
| 33 | 22 Jun 2022 10:50 | 1 | 1 | | 80 | | | | |
| 34 | 22 Jun 2022 10:51 | 1 | 1 | | 100 | | | | |
| 35 | 22 Jun 2022 10:52 | 1 | 1 | | 90 | | | | |
| 36 | 22 Jun 2022 10:53 | 1 | 1 | | 96 | | | | |
| 37 | 22 Jun 2022 10:54 | 1 | 1 | | 98 | | | | |
| 38 | 22 Jun 2022 10:55 | 1 | 1 | | 88 | | | | |
| 39 | 22 Jun 2022 10:56 | 1 | 1 | | 84 | | | | |
| 40 | 22 Jun 2022 10:57 | 1 | 1 | | 84 | | | | |
| 41 | 22 Jun 2022 11:03 | 1 | 1 | | | | | | 280 |
| 42 | 22 Jun 2022 11:04 | 1 | 1 | | | | | | 260 |
| 43 | 22 Jun 2022 11:05 | 1 | 1 | | | | | | 190 |
| 44 | 22 Jun 2022 11:06 | 1 | 1 | | | | | | 180 |
| 45 | 22 Jun 2022 11:07 | 1 | 1 | | | | | | 120 |
| 46 | 22 Jun 2022 11:08 | 1 | 1 | | | | | | 110 |
| 47 | 22 Jun 2022 11:09 | 1 | 1 | | | | | | 110 |
| 48 | 22 Jun 2022 11:10 | 1 | 1 | | | | | | 150 |
| 49 | 22 Jun 2022 11:11 | 1 | 1 | | | | | | 110 |
| 50 | 22 Jun 2022 11:12 | 1 | 1 | | | | | | 105 |
| 51 | 22 Jun 2022 11:13 | 1 | 1 | | | | | | 90 |
| 52 | 22 Jun 2022 11:14 | 1 | 1 | | | | | | 115 |
| 53 | 22 Jun 2022 11:15 | 1 | 1 | | | | | | 95 |
| 54 | 22 Jun 2022 11:16 | 1 | 1 | | | | | | 80 |
| 55 | 22 Jun 2022 11:17 | 1 | 1 | | | | | | 85 |

*Construction of a waste water treatment plant in Marneuli*

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 56 | 22 Jun 2022 11:18 | 1 | 1 | | | | | | 75 |
| 57 | 22 Jun 2022 11:19 | 1 | 1 | | | | | | 75 |
| 58 | 22 Jun 2022 11:20 | 1 | 1 | | | | | | 90 |
| 59 | 22 Jun 2022 11:21 | 1 | 1 | | | | | | 120 |
| 60 | 22 Jun 2022 11:22 | 1 | 1 | | | | | | 110 |
| 61 | 22 Jun 2022 11:27 | 1 | 1 | | | 4 | | | |
| 62 | 22 Jun 2022 11:28 | 1 | 1 | | | 9 | | | |
| 63 | 22 Jun 2022 11:29 | 1 | 1 | | | 0 | | | |
| 64 | 22 Jun 2022 11:30 | 1 | 1 | | | 0 | | | |
| 65 | 22 Jun 2022 11:31 | 1 | 1 | | | 0 | | | |
| 66 | 22 Jun 2022 11:32 | 1 | 1 | | | 4 | | | |
| 67 | 22 Jun 2022 11:33 | 1 | 1 | | | 0 | | | |
| 68 | 22 Jun 2022 11:34 | 1 | 1 | | | 13 | | | |
| 69 | 22 Jun 2022 11:35 | 1 | 1 | | | 13 | | | |
| 70 | 22 Jun 2022 11:36 | 1 | 1 | | | 13 | | | |
| 71 | 22 Jun 2022 11:37 | 1 | 1 | | | 26 | | | |
| 72 | 22 Jun 2022 11:38 | 1 | 1 | | | 9 | | | |
| 73 | 22 Jun 2022 11:39 | 1 | 1 | | | 28 | | | |
| 74 | 22 Jun 2022 11:40 | 1 | 1 | | | 28 | | | |
| 75 | 22 Jun 2022 11:41 | 1 | 1 | | | 28 | | | |
| 76 | 22 Jun 2022 11:42 | 1 | 1 | | | 24 | | | |
| 77 | 22 Jun 2022 11:46 | 1 | 1 | <0,0 | | | | | |
| 78 | 22 Jun 2022 11:47 | 1 | 1 | <0,0 | | | | | |
| 79 | 22 Jun 2022 11:48 | 1 | 1 | <0,0 | | | | | |
| 80 | 22 Jun 2022 11:49 | 1 | 1 | <0,0 | | | | | |
| 81 | 22 Jun 2022 11:50 | 1 | 1 | <0,0 | | | | | |
| 82 | 22 Jun 2022 11:51 | 1 | 1 | <0,0 | | | | | |
| 83 | 22 Jun 2022 11:52 | 1 | 1 | <0,0 | | | | | |
| 84 | 22 Jun 2022 11:53 | 1 | 1 | <0,0 | | | | | |



*Construction of a waste water treatment plant in Marneuli*

| 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) |
|---|---|---|---|---|---|---|---|---|---|
| 85 | 22 Jun 2022 11:54 | 1 | 1 | <0,0 | | | | | |
| 86 | 22 Jun 2022 11:55 | 1 | 1 | <0,0 | | | | | |
| 87 | 22 Jun 2022 11:56 | 1 | 1 | <0,0 | | | | | |
| 88 | 22 Jun 2022 11:57 | 1 | 1 | <0,0 | | | | | |
| 89 | 22 Jun 2022 11:58 | 1 | 1 | <0,0 | | | | | |
| 90 | 22 Jun 2022 11:59 | 1 | 1 | <0,0 | | | | | |
| 91 | 22 Jun 2022 12:00 | 1 | 1 | <0,0 | | | | | |
| 92 | 22 Jun 2022 12:01 | 1 | 1 | <0,0 | | | | | |
| 93 | 22 Jun 2022 12:02 | 1 | 1 | <0,0 | | | | | |
| 94 | 22 Jun 2022 12:03 | 1 | 1 | <0,0 | | | | | |
| **20 min. Average** | | | | **<0,0** | **99** | **12** | **15** | **6** | **128** |

*Construction of a waste water treatment plant in Marneuli*

**Annex N6: Certificates of expert participating in the measurement**

**ISO 9001:2015 - Quality Management System Auditor Certificate**

**Archil Revazishvili**

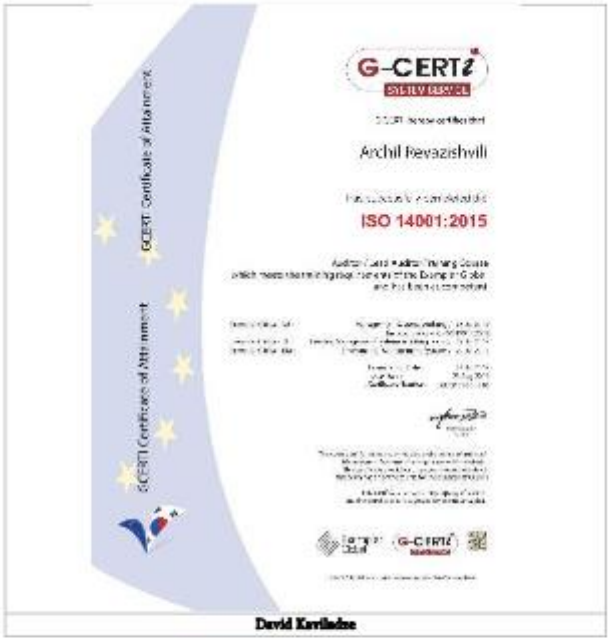

**David Kavliashvili**

*Construction of a waste water treatment plant in Marneuli*


**ISO 14001:2015 - Environmental Management System Lead Auditor Certificate**

**Archil Revazishvili**

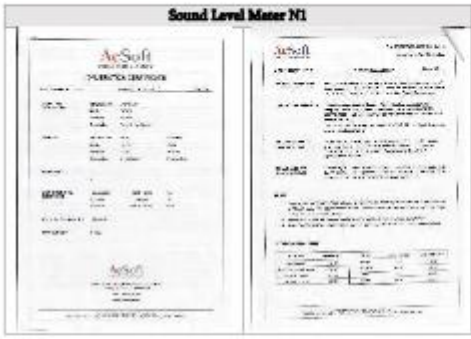
*Construction of a waste water treatment plant in Marneuli*




**David Kvrivishvili**

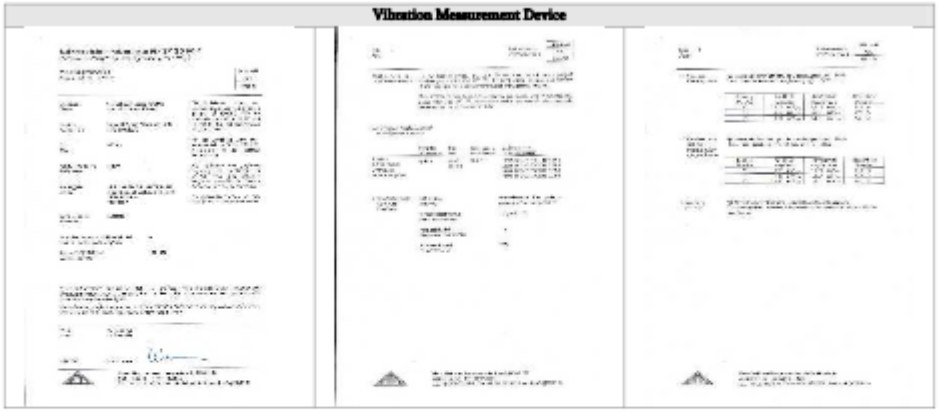
*Construction of a waste water treatment plant in Marneuli*

**Annex N7: Calibration certificates for measuring Devices**

| Sound Level Meter N1 | Sound Level Meter N2 |
|---|---|
|  |  |





| Vibration Measurement Device |
|---|
|  |

*Construction of a waste water treatment plant in Marneuli*

| Air quality Measurement Device | | | | |
|---|---|---|---|---|
| PM 10 - 2,5 | VOC | CO | NO2 | O3 |
|  |  |  |  |  |



## ANNEX B: PHOTOS OF SITES

### MAR-02, CONSTRCUTION OF WWTP IN MARNEULI

**Photo N1**

**Photo N2**

**Photo N3**


**Photo N5**

**Photo N6**

**CONSTRUCTION AND REHABILITATION OF THE WATER SUPPLE SYSTME IN CHIATURA (CHI-02)**

**PHOTO No1 – WELLFIELD BOREHALL N1**

**PHOTO No2 – AVARIONI WATER METER INSTALATION**

**CONSTRUCTION AND REHABILITATION OF THE WATER SUPPLE SYSTME IN MARNEULI MAR-01**

**JANDARI RESERVOIR**

**PHOTO No1**

## ANNEX C: NON-COMPLIANCE NOTICE, MAR-02, 17 MARCH 2022

### Social Safeguard Report of WWTP. MAR-02

**Site:** **Marneuli (MAR - 02)**
**Contractor:** **Toshiba Water Solutions Pvt. Ltd and IN-SI LLC (JV partner)**
**Date:** **17.03.2022**
**Inspectors:** **Social safeguard specialist of the Engineer**

On 17th of March 2022 Social Safeguard Specialist of the Engineer inspected construction activities of Wastewater Treatment Plant. Entrance to the site is muddy and not maintained, there is huge pile of the subsoil at the side of the road that contains the risk of landslide, blocking the road and creating hazard of passengers and pollution of the river that is very close to the road.

COVID prevention measures is successfully implemented at the site. The signs illustrating hand washing and mask wearing rules are posted at information desk. The log of daily temperature measurement is regularly maintained and kept at camp office. Hand sanitizer present at the site.

Corrective action:

1. Contractor to avoid piling the subsoil high height and too close to the roads and especially to the river.
2. Implement some protection measures that will ensure stability of the piled earth.
3. Gravel the access road to the site

Photo 1: informative signs for preventive measures against COVID

Photo 2: Muddy road and excavated materials

Photo 3: Muddy access road

Photo #7

Photo #8

Photo #9

All these conditions have to be remedied within 7 days (12.04.2022) by the prime Contractor (JV TWS-INSI)

| **Date of site visit 17.03.2022** | |
|---|---|
| Kate Chomakhidze<br>UWSCG/USIIP Environmental Consultant | Site visit was attended by Ms.Maka Goderdzishvili, Head, Department of Environmental Protection and Permits (DEPP) of UWSCG |

## NON-COMPLIANCE NOTICE, MAR-02, 19 March 2022

**United Water Supply Company of Georgia** **19.03.2022**

**Non-Compliance Notice**

| | |
|---|---|
| **Project:** Urban Services Improvement Investment Program, Georgia<br>**Contract No:** UWSCG-ICB-MAR-02-2019<br>**Contractor:** JV TWS-INSI<br>**Reference:** Construction of Waste Water Treatment Plant in Marneuli | **Non-compliance Notice 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**

**MARNEULI WWTP**

- Site internally should be better arranged, materials should be better segregated/stored and cleaned regularly (photo #1)
- Although the insecure connection to the power socket has been partially improved, all cables in the facility must be protected to avoid any damage to users of the power supply; (photo #2)
- Concrete wash out pit should be arranged at construction site, "Concrete Rivers" should be immediately removed from the soil (Photo #3)
- In case planned to have some amount of fuel on the site – adequate protection of environment from spreading of accidentally spilled liquid (Precaution measures include – secondary containment capable to retain 110% of container volume should be arrainged (Photo #4)
- Top Soil should be stored properly and managed in accordance with the required regulations (Photo #5, #6)
- Proper waste containers with roof & and concrete basement should be installed at the storage area (Photo #7)
- Provide warning signs or safety tapes around open tranches on the construction area for safety issues of workers (Photo #8)
- Safety issues on construction sites, Workers always should use complete set of PPE (Photo #9).

**Photos of Marneuli WWTP**

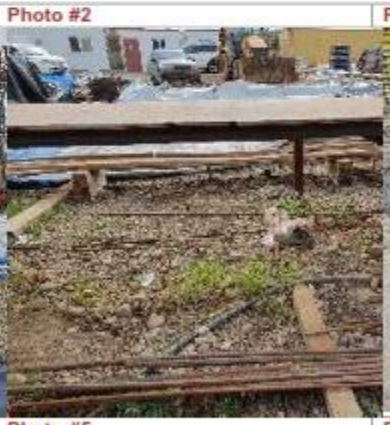
| Photo #1 | Photo #2 | Photo #3 |
|---|---|---|
|  |  |  |
| **Photo #4** | **Photo #5** | **Photo #6** |

Photo #7

Photo #8

Photo #9

All these conditions have to be remedied within 7 days (12.04.2022) by the prime Contractor (JV TWS-INSI)

| **Date of site visit 19.03.2022** | |
|---|---|
| Kate Chomakhidze<br>UWSCG/USIIP Environmental Consultant | Site visit was attended by Ms.Maka Goderdzishvili, Head, Department of Environmental Protection and Permits (DEPP) of UWSCG |

All these conditions have to be remedied within 7 days by the prime Contractor (JV TWS-INSI)

| **Date of site visit 08.12.2021** | |
|---|---|
| Kate Chomakhidze<br>UWSCG/USIIP Environmental Consultant | Site visit was attended by Ms.Maka Goderdzishvili, Head, Department of Environmental Protection and Permits (DEPP) of UWSCG |

## ANNEX E: CORRECTIVE ACTION PLAN MAR-02, 12 APRIL 2022

**Corrective Action Plan**

| Non-compliance point | Non-compliance photo | Corrective action photo |
|---|---|---|
| 1. Site internally should be better arranged, materials should be better segregated/stored and cleaned regularly |  |  <br>  |

| Non-compliance point | Non-compliance photo | Corrective action photo |
|---|---|---|
| 2. Although the insecure connection to the power socket has been partially improved, all cables in the facility must be protected to avoid any damage to users of the power supply |  |  <br>Partially power cable is protected by black corrugated pipe and missing part will be repaired shortest |
| 3. Concrete wash out pit should be arranged at construction site, "Concrete Rivers" should be immediately removed from the soil |  |  <br>Concrete wash out pit is arranged |

| Non-compliance point | Non-compliance photo | Corrective action photo |
|---|---|---|
| | |  <br>  <br>Concrete spots are removed |

| Non-compliance point | Non-compliance photo | Corrective action photo |
|---|---|---|
| 4. In case planned to have some amount of fuel on the site – adequate protection of environment from spreading of accidentally spilled liquid (Precaution measures include – secondary containment capable to retain 110% of container volume should be arranged |  |  <br>Pump was used temporarily and now is totally removed |
| 5. Proper waste containers with roof & and concrete basement should be installed at the storage area |  |  <br>Container is used only for Household waste and does not need roof & and concrete basement |

| Non-compliance point | Non-compliance photo | Corrective action photo |
|---|---|---|
| 6. Provide warning signs or safety tapes around open tranches on the construction area for safety issues of workers |  |  Warning signs and safety tapes around deep excavation zone are arranged |

## ANNEX F: GENERAL GUIDELINES RELATED TO INFECTION (COVID-19) CAUSED BY NOVEL CORONAVIRUS (SARS-COV-2) FOR CONSTRUCTION SECTOR

MINISTRY OF INTERNALLY DISPLACED PERSONS FROM THE OCCUPIED TERRITORIES, LABOUR, HEALTH AND SOCIAL AFFAIRS OF GEORGIA

Labour Conditions Inspection Department
Create Together Safe Working Environment!

**Annex №2**

**General Guidance Related to Infection (COVID-19) Caused by Novel Coronavirus (SARS-CoV-2) for Construction Sector**

Note: In accordance with Order N281/N of the Minster of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia on "the rule for Examination for Short-term Employment Disability and Issuance of Doctors Note", the Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia will issue an equivalent document to the doctors excuse note (Medical Certificate) to persons quarantined in order to prevent the spread of coronavirus. The document will serve as the basis to receive monthly payment and therefore, the working days spend in quarantine or in self-isolation will be legitimate and fully paid to the employees. In order to get the certificate, an interested person has to apply to the Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia at - info@moh.gov.ge.

For further information, please contact: 1505 116 001

StopCoV.ge

*The job of builders involves constantly changing work places and work activity existing in open-air conditions. For this reason, in terms of virus spread, construction falls within the medium risk sector because its specificity covers natural ventilation. Nevertheless, it is important to consider the following preventive measures at construction work.*

**The staff must not appear in the workplace if they :**

- Left the affected country over the past 14 days;
- Were in close contact with infected person/persons for the past 14 days (they must be self-isolated/quarantined as per the rule);
- Have symptoms of respiratory infection (coughing, temperature, sneezing, difficulty in breathing, general weakness etc.);
- Are among the ones who have high risk of getting infected with COVID-19 or serious complications: over 70 years of age, people suffering from chronicle diseases (cardio-vascular diseases, diabetes, bronchial asthma and other respiratory diseases.

## Employer's responsibilities

- Whether or not the incidence of infection is detected, employer should develop an emergency action plan to support reduction of working days missed due to illness, and in case of detection – prevention of spread;
- Provide employees with information about safe working procedures and about prevention of virus spread (guide with the recommendations defined by LEPL L. Sakvarelidze National Center for Disease Control and Public Health of the Ministry of Internally Displaced Persons from the Occupied Territories, Labour, Health and Social Affairs of Georgia);
- Inside the working space post announcements about COVID-19 and about the preventive measures that have been identified by LEPL L. Sakvarelidze National Center for Disease Control and Public Health;
- In relation to the employees who can perform job remotely (administrative personnel) ensure as much as possible use of such working mode;
- At the entrances of break room/dining room, place disinfecting rugs with relevant mandatory sign marking;
- Provide hand-washing facility with soap and other disinfectants. If hand-washing facility is not feasible, at least 70% alcohol-based hand cleansing liquid should be used;
- Visibly place the hand sanitizers and post the rules of their proper use;
- Make sure that employees have access to hand sanitizers and are aware of their use with proper rules;
- Provide all employees and contractors, personnel responsible for cleaning with information about relevant preventive measures to avoid spread of coronavirus in the working environment;
- Train the employees in proper use and further storage/removal of personal protective equipment and disinfectants;

- Depending on their work specificity, provide the employees with necessary personal protective equipment (protective clothing, protective shoes, helmet, gloves, respirator) and establish control on their use;
- Periodically, several times a day ensure natural ventilation of closed spaces/facilities;
- At certain periodicities disinfect frequently used working equipment and working places;
- Maintain ergonomics at construction site. Ensure timely cleaning of working space and timely disposal of construction waste.
- For employees and visitors ensure closed containers for used disposable tissues and other used hygienic waste in the working space.

## Employees' responsibilities

Ensuring proper hand hygiene regularly and thoroughly is the best way to be protected from most of the viruses. Therefore, it is necessary to take the following measures in the workplace:

- Follow hygiene rules in your workplace;
- Carry out the working process in accordance with emergency situations action plan defined by employer/occupational safety manager;
- When greeting do not shake hands and avoid contact with others (touching etc.);
- Avoid gatherings, it is recommended not more than 10 people in one working platform by keeping a safe distance (at least 2 m);
- While performing your work, fully use personal protective equipment provided by the employers;
- Treat with disinfectants the working places and tools used in the course of the work;
- Before and after taking meals, before and after using the restrooms thoroughly wash your hands with soap and water. After washing dry your hands well;
- If you can not wash and dry your hands, use alcohol-based hand sanitizers;
- Keep safe distance (at least 2 m);
- While coughing or sneezing, cover the face with a clean tissue or elbow and place used dispensable tissue in the waste bin;
- Avoid touching your eyes, nose and mouth with your hands.

2. These recommendations have been developed to be communicated to all employers, workers and stakeholders. Everyone is urged to regularly promote and adhere to this document;
3. Site inductions should be updated as required to include information on coronavirus (COVID-19) potential risks and workplace specific controls that have been implemented such as daily screening, health checks and symptoms of coronavirus (COVID-19), staggered start, finish and meal times, good hygiene practices and cleaning regimes and PPE requirements;
4. Toolbox talks should be regularly conducted, and workers are to be encouraged to put forward practical ideas for changing work practices to avoid the spread of coronavirus (COVID-19). Toolbox talks should also provide clarity to workers on leave arrangements for those that cannot work, and to encourage self-reporting and minimize the spread of risk;
5. Toolbox talks should also include updates from the responsible Health Officer as they occur and additional information on the severity of the pandemic and the importance of physical distancing at toolbox meetings.

**15. Other measures**

1. Construction sites are diverse and vary in complexity, employers must apply a risk-based approach and implement reasonably practical controls based on the environment and specific hazards at each construction site. In addition to the aforementioned measures and controls mentioned in this section, employers should consider other measures for implementation such as:
    - Using alternatives to face to face meetings where practicable;
    - Reducing the length and size of meetings, especially for critical employees, by requiring some or all to dial in;
    - consider off-site fabrication;
    - ensuring working from home arrangements are enabled where feasible;
    - Structuring management teams to ensure contingency in the event of team members needing to be isolated or quarantined at home.

**16. Vulnerable workers**

1. Has been identified the following groups of people as vulnerable workers in relation to coronavirus (COVID-19):

- people over the age of 70;
- people with chronic diseases (cardiovascular disease, diabetes, bronchial asthma and other respiratory diseases)

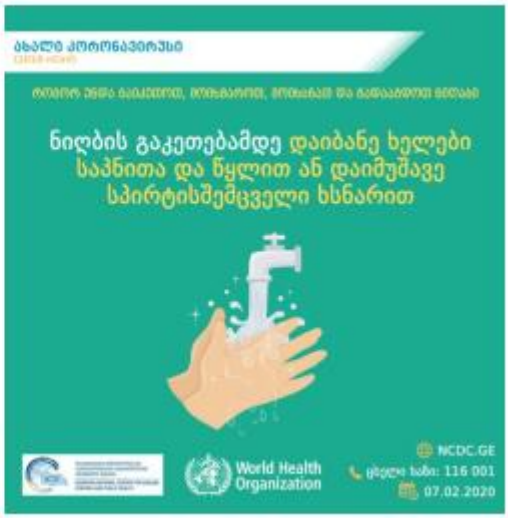
2. Where practical, reasonable action should be taken to minimize vulnerable workers from conducting higher risk roles.

### 17. Summary of recommendations and responsibility

| # | Activity | Responsible for implementation |
|---|---|---|
| 1. | To provide employees with the information about the work safety procedures and prevention of virus spread (guided by the recommendations of the Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia and LEPL L. Sakvarelidze National Center for Disease Control and Public Health) | Employer |
| 2. | To place ads in the workspace about the COVID-19 and its preventive measures defined by the LEPL I. Sakvarelidze National Center for Disease Control and Public Health | Employer |
| 3. | To ensure maximum use of remote work in relation to those employees who can perform work remotely (administrative personnel) | Employer |
| 4. | To put mattings at the entrance of the lounge room / dining room, with the relevant sign of indication | Employer |
| 5. | To ensure hand washing at the workspace with appropriate soap and other hygiene products. In case of inability to wash hands, to provide with at least 70% alcohol- based hand cleaning liquids | Employer |
| 6. | To place hand sanitizers and the instruction for their proper use in a prominent place | Employer |
| 7. | To ensure that employees have access to hand sanitizers and know how to use them in accordance with the relevant instructions | Employer |
| 8. | To provide information to all staff and contractors, as well as cleaning staff, on appropriate preventive measures to avoid the spread of coronavirus in the work environment | Employer |
| 9. | To train the employees on the proper use of personal protective equipment and its subsequent storage / disposal | Employer |
| 10. | To provide employees with the necessary personal protective equipment (overalls, special shoes, helmet, gloves, medical mask) based on the specifics of their job and establish control over their use | Employer |
| 11. | Periodically, several times a day ensure natural ventilation of indoor spaces/closets | Employer |
| 12. | Periodically ensure disinfection of workplaces and frequently used equipment | Employer |
| 13. | To keep ergonomics in order at the construction site. To ensure the prompt cleaning of workspace and removal of construction waste | Employer |
| 14. | To ensure placement of closed containers for the disposable napkins and other hygiene waste used by both employees and visitors | Employer |
| 15. | Follow the rules of hygiene at your workplace | Employee |

| | | |
|---|---|---|
| 16. | Carry out the work process in accordance with the Emergency Action Plan defined by the employer / work safety manager | Employee |
| 17. | Avoid shaking hands and direct contact with others (touch, etc.) while saluting | Employee |
| 18. | Avoid gathering, the work of more than 10 people on one work platform at a safe distance (less than 2 m) is not recommended | Employee |
| 19. | When performing the work, make full use of the personal protective equipment provided by the employer | Employee |
| 20. | Clean the workplaces and the tools and equipment used during the work process with disinfectants | Employee |
| 21. | Thoroughly wash your hands with soap and water before and after eating, as well as before and the bathroom. Dry your hands thoroughly after washing | Employee |
| 22. | Use alcohol-based hand sanitizers in case if you are unable to wash and dry your hands | Employee |
| 23. | Keep a safe distance (not less than 1.5 m); | Employee |
| 24. | Cover your mouth with clean napkin or elbow when coughing and sneezing and then throw the used disposable napkin in the trash | Employee |
| 25. | Avoid touching your eyes, nose, or mouth with your hands. | Employee |

**18. Informational banners for COVID -19**



ახალი კორონავირუსი
(2019-nCoV)
როგორ უნდა გაიკეთოთ, მოიხმაროთ, მოიხსნათ და გადააგდოთ ნიღაბი
მოხმარებისას არ შეეხოთ ნიღაბს;
შეხების შემთხვევაში, დაიბანეთ ხელები
საპნითა და წყლით ან დაიმუშავთ
სპირტისშემცველი ხსნარით.
NCDC
World Health Organization
NCDC.GE
ცხელი ხაზი: 116 001
07.02.2020


ახალი კორონავირუსი
(2019-nCoV)
როგორ უნდა გაიკეთოთ, მოიხმაროთ, მოიხსნათ და გადააგდოთ ნიღაბი
ნიღბის მოხსნის წესი:
მოიხსენით ნიღაბი უკანა თასმის მეშვეობით
(არ შეეხოთ ნიღბის წინა ნაწილს);
მოხსნისთანავე გადააგდეთ უახლოეს დახურულ ნაგვის
ურნაში; დაიბანეთ ხელები წყლითა და საპნით ან
დაიმუშავეთ სპირტისშემცველი ხნარით
NCDC
World Health Organization
NCDC.GE
ცხელი ხაზი: 116 001
07.02.2020

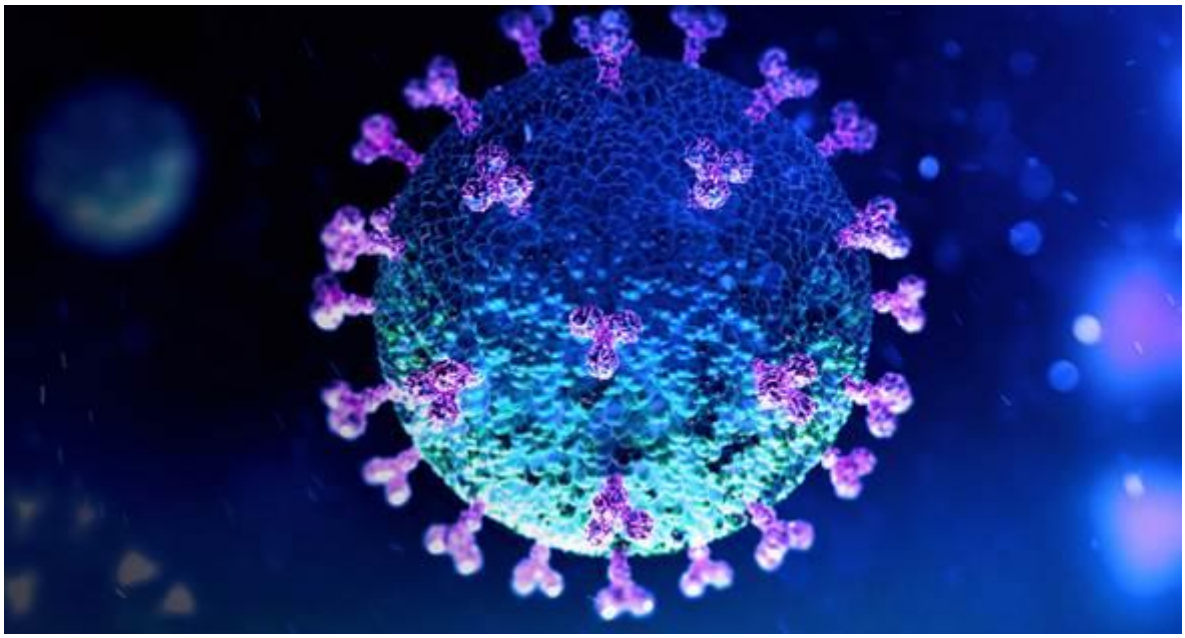
## ANNEX G: EMERGENCY RESPOCE PLAN, HILL

# HILL

**Georgia: CONSTRUCTION SUPERVISION CONSULTANCY SERVICES**
**FOR URBAN SERVICES IMPROVEMENT INVESTMENT PROJECT (USIIP)**

**Financed by the Asian Development Bank and Government of Georgia**

**COVID-19 Emergency Management Plan in Construction Sector**



Prepared by: **HILL -** Supervision Consultant

Tbilisi, Georgia

*For: Ministry of Regional Development & Infrastructure (MRDI)*

*United Water Supply Company of Georgia (UWSCG)*

**Content**

# 1. PREAMBLE

## A. 1.1 Project Description

177. 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.

178. 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 waste water treatment plants.

179. 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 in Marneuli (MAR-02);
- Construction of Water Supply System in Chiatura (CHI-01).

The following projects are financed under Tranche 6:

180. **Construction of Water Supply and Waste Water Systems in Marneuli and Construction of Waste Water System and Collector in Bolnisi (MAR-01):** Mar-01 project envisages the rehabilitation and construction of reservoirs with the total capacity of 12,000$M^3$=(2X3000+3X2000); construction of cast iron transmission pipeline with the diameter of 700 mm - 10 km and 600 mm – 4km; construction of network with Polyethylene pipes of OD 50 to OD 500. The project measures for the sewer network comprise the lying about 150 km new gravity pipes (DN 150 to DN 800) and 2.7 km new pressure pipes (OD 110 and OD 225). There will be 9 new wastewater pumping stations; 600mm to 1000 mm diameter inspection wells (concrete or polyethylene) and 400 mm diameter house connections (polyethylene). Proposed project envisages construction of sewerage system in Bolnisi which will work entirely by gravity (DN 200 and DN 250 HDPE pipes) and will be connected at 3 different points to the future DN 500 HDPE interceptor that will convey the collected sewer from Bolnisi to Marneuli WWTP.

181. Three separate IEEs were prepared for MAR-01 project: Improvement of Marneuli Water Supply System (August 2016); Improvement of Marneuli Wastewater System (August 2016); Improvement of Bolnisi Wastewater System (August 2016) and further updated and approved in January 2019 due to the finalization of the project design (please see para 3 above).

182. The contract No P43405-ICB-MAR-01 was signed on November 20, 2018 with "Akelik Group OJSC" (Azerbaijan). The date of completion of the contract is March 29, 2021.

183. Construction of Waste Water Treatment Plant in Marneuli (MAR-02). The project comprises of the construction of new Wastewater Treatment Plant in Marneuli with the capacity of 9,931 m³/day.

184. 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 contract completion date is April 2021.

185. Construction of Water Supply System in Chiatura (CHI-01). The work under the CHI-01 project comprises the rehabilitation and construction of the water supply network, transmission pipeline and Reservoirs. In particular, Chi-01 project envisages construction of network in Chiatura and Navardzeti, construction of a transmission lines, the rehabilitation of existing reservoirs and construction of 2 new reservoirs one near the intake and one new reservoir in Bisi, construction of pumping stations and replacement of network pipelines, more detailed information is provided in chapter 31 below.

186. The contract No P43405-ICB-CHI-01 was signed on August 21, 2017 with "Akkord Industry Construction Investment Corporation" OJSC" (Azerbaijan), the initial completion date on April 15, 2019 was extended twice, for the first time until April 1, 2020, and then another 91 days until July 30.

## B. 1.2 Coronavirus

1. Coronaviruses are a large family of viruses that cause respiratory infections. These can range from the common cold to more serious diseases. Coronavirus (COVID-19) is a disease caused by a new form of coronavirus. It was first reported in December 2019 in Wuhan City in China.
2. Health authorities around the world believe the coronavirus (COVID-19) is spread from close contact with an infected person, mostly through face-to-face contact or between members of the same household. The coronavirus (COVID-19) is spread by people with symptoms when they cough or sneeze. People may also pick up the coronavirus (COVID-19) from surfaces contaminated by a person with the infection.
3. Studies suggest that COVID-19 may persist on surface for a few hours or up to several days. This may vary under different conditions such as the type of surface, temperature or humidity of the environment.
4. A coronavirus infection can cause mild to severe respiratory illness. The most common coronavirus (COVID-19) symptoms reported are:
   - Fever
   - Breathing difficulties and breathlessness
   - Cough
   - Sore throat
   - Fatigue or tiredness.
5. Coronavirus (COVID-19) is most likely to spread from person-to-person through:
   - Close contact with an infected person.
   - Touching objects or surfaces (such as door handles or tables) contaminated by a person with the infection.
6. Close contact means having face-to-face contact for more than 15 minutes with someone who has a confirmed case of coronavirus (COVID-19) – or alternatively sharing a closed space with them for more than two hours.
7. Close contact can happen in many ways, but examples include:
   - Living in the same household or household-like setting (for example, a boarding school or hostel)
   - Direct contact with the body fluids or laboratory specimens of a confirmed case
   - Being in the same room or office for two hours or more
   - Face-to-face contact for more than 15 minutes in some other setting such as in a car or a lift or sitting next to them on public transport.

## II. 2. PURPOSE

8. The purpose of these document for the Construction sector, is to:
   - Provide direction to employers and workers
   - Outline the steps to be taken to best provide a safe and healthy environment, and
   - Identify the action available in the event of interruption to building and construction work, as a result of the coronavirus (COVID-19) pandemic.
9. The Document is intended to have application across all sectors of the building and construction sector. Construction sites are diverse and vary in complexity. To allow for flexible interpretation of these guidance, it is recommended that employers apply a risk-based approach and implement reasonably practical controls based on the environment and specific hazards at each construction site.
10. This Document have been developed to maintain the safe operation of construction sites, ensuring the safety of workers.
11. Following of these recommendations these is necessary to minimize and avoid the closure of any construction site.
12. The recommendations apply to all personnel attending on a building and construction site or project, whether management, staff, employees, contractors or service providers.

## III. 3. CONTROLLING RISKS ON SITE

13. To assist with providing and maintaining safe operations during coronavirus (COVID-19) the below measures should be implemented to assist in providing a safe and healthy environment at work.
    - Screening workers coming to site
    - Workplace Mapping
    - Physical Distancing
    - Hygiene
    - Shared Tools, Plant and Equipment
    - Cleaning and Disinfecting
    - Personnel Hoists
    - Personal Protective Equipment
    - Common Areas
    - Inspections
    - Travel
    - General Communications
    - Other measures
    - Vulnerable workers

### A. 3.1 Screening workers coming to site

14. To minimize the risk of transmission of coronavirus (COVID-19) on site, employers must implement a two-phase screening process; phase one being an initial declaration and phase two on going daily screening.
15. Initial declaration is to be conducted by all workers (this includes any person who attends site), including current and new-starters. Each worker must provide a declaration that they to the best of their knowledge:
    - have not been diagnosed with coronavirus (COVID-19) in the last 14 days, or
    - are not in a period of 14 day quarantine as directed by a health professional, or
    - have not been overseas in the last 14 days, or
    - have not been in contact with anyone who has coronavirus (COVID-19), or
    - have not been in contact with anyone who is currently being tested for coronavirus (COVID-19), or
    - do not have anyone in their household who has symptoms consistent with COVID-19.

16. Once the initial declaration has been made by the worker, ongoing screening (phase 2) should be conducted for every worker prior to the start of their shift, asking to the best of their knowledge:
    - have they been overseas in the last 14 days, or
    - have they been in contact with anyone who has coronavirus (COVID-19), or
    - have they been in contact with anyone who is currently being tested for coronavirus (COVID-19), or
    - do they have anyone in their household who has symptoms consistent with COVID-19.
17. If a worker declares any of the above they may be required to self-isolate.
18. Screening should be conducted, whilst maintaining safe distances or over the phone before entering site, on a mobile app, via text message system, or other non-contact methods. It is advisable to have a system in place that limits the sharing of pens/ notebooks/ computers etc.
19. If a worker has recently had close contact with a confirmed case, they need to:
    - self-isolate at home for a period of 14 days and follow the self-isolation Guidelines
    - not attend work
    - contact their employer
    - seek urgent medical attention if they have symptoms consistent with COVID-19
    - not return to work until they have been cleared by a medical practitioner.
20. If a worker is experiencing symptoms consistent with COVID-19 or had close contact with a confirmed case, they must:
    - not attend work
    - contact their employer for further advice and;
    - not return to work until they have been cleared by a medical practitioner.

## B. 3.2 Workplace Mapping

21. In the event of an employee being confirmed as having COVID-19, those who are potentially affected need to be quickly identified.
22. Employers should implement processes to record the schedule and work locations for workers that enables tracing of those who have come into contact with the confirmed case.
23. The record should include:
    - day and time work was undertaken
    - members of teams that worked together
    - specific work area on the construction site
    - any breaks taken, including time and location
24. Movement between sites, or areas within large sites, should be minimized as much as possible.
25. Where attending multiple sites is necessary (e.g. for HSRs, first aiders, emergency wardens) movement between sites should be recorded in the workplace mapping.

## C. 3.3 Physical Distancing

26. Physical distancing of at least 1.5-2 meters should be implemented wherever possible. Employers should consider each work task and whether there is a safe alternative way to undertake the work with an increased distance between workers.
    - Mark safe distances in work, transit and break areas (e.g. on floors and walls).
    - Consider different shift patterns to minimize the number of workers onsite (e.g. AM/PM shifts).
    - Stagger start times, breaks and finish times to avoid congestion in high traffic areas and minimize workers coming into contact with each other as they move around the site.
    - Plan for how physical distancing will be maintained during inclement weather (e.g. use of lunch or crib rooms and amenities).
    - Install temporary physical barriers (e.g. fences, screens) between work areas, where appropriate.
27. Where it is not possible to undertake work tasks and maintain physical distancing, other control measures need to be implemented. For example:
    - Minimize the number of worker to worker interactions that need to be completed within 1.5 meters

- Minimize the number of workers involved in activities that need to occur within 1.5 meters of each other
- Provide personal protective equipment (PPE) (e.g. gloves, masks, glasses).

28. Where essential work activities need to be undertaken in restricted spaces (e.g. lift shafts, personnel hoists, lifts), the number of workers working in the space should be minimized.

## D. 3.4 Hygiene

29. Good hygiene practices and general cleaning helps with minimizing the spread of coronavirus (COVID-19). Employers should review general hygiene requirements and the cleaning regimes in place.
30. Employers should display health information in prominent locations on the construction site such as tea rooms, site offices, toilets, foyers, lifts and site entrances.
31. Every effort must be made by employers to upgrade personal hygiene and minimize worker to worker contact and all workers must co-operate in all necessary measures to achieve these objectives. These measures need to include:
    - Promote regular hand washing with soap for at least 20 seconds. Employers must facilitate regular hand washing by providing ease of access/additional facilities where possible. Communicate to all workers where hand sanitizers are located and encourage their regular use.
    - Promote good cough etiquette by covering your cough and sneeze, or cough into your elbow or shoulder.
    - Avoid touching your nose, eyes or mouth.
    - Provide hand sanitizer and/or hand washing facilities with soap in all site entrances and exits hoists, amenities and areas/levels of the site.
32. Employers must ensure that workers have access to appropriate amenities. Employers should review and revise the number and locations of amenities, to reduce movement around the site.
33. Amenities need to include:
    - Hand washing facilities (whether permanent or temporary), such as a wash basin, clean running water, soap and paper towels, placed in strategic locations to ensure employees can access them in a timely manner.
    - Access to hand sanitizer.
    - Rubbish bins with touch-free lids (e.g. foot pedal bins).
    - Thorough and regular sanitation.
    - Appropriate waste management systems.

## E. 3.5 Shared tools, plant and equipment

34. Workers should avoid the shared use of tools, plant and equipment wherever possible. For example, drop saws, drills, grinders, ladders or elevating work platforms should not be used by more than one worker.
35. Where it is not possible to eliminate shared use:
    - Provide cleaning products (e.g. alcohol spray or solution) where communal tools, plant and equipment are located.
    - Keep cleaning products with tools, plant and equipment as they move around the site.
    - Ensure all operators thoroughly wash or sanitize their hands before and after every use.
    - Ensure all parts of tools, plant and equipment (e.g. including handles, handrails) are wiped down before and after use.
36. The shared use of phones, desks, offices, computers and other devices should also be avoided. Where this is not possible, these items should be regularly disinfected.

## F. 3.6 Cleaning and Disinfecting

37. Cleaning and disinfecting of surfaces is to be conducted using cleaning products as per DHHS Cleaning and Disinfection guidelines to reduce coronavirus (COVID-19) Transmission – the specific guidance is available here:
    - Cleaning and disinfection of amenities and meal areas must occur between work group breaks
    - Cleaning and disinfection of Personnel Hoists should occur at the end of each hoist operator shift
    - Implement regular cleaning and disinfection (minimum of twice daily) to 'Frequently Touched Surfaces', surfaces such as toilets, door handles, stair handrails, light switches, lift buttons, table tops.
    - Additional cleaning/disinfecting on-site. There must be an increased frequency of industrial grade cleaning/additional cleaning/disinfecting on sites across all areas including particular emphasis on commonly touched/communal surfaces;

## G. 3.7 Personnel hoists

38. Workers using hoists and lifts may be at greater risk of exposure to coronavirus (COVID-19), because they are required to be in close contact with others and potentially contaminated surfaces.
39. Control measures to reduce the risk in personnel hoists should include systems of work, physical distancing, personal hygiene, PPE and cleaning.
40. It is acknowledged that not all hoists and lifts are identical in size or dimension, and have varying weight limits.
41. Where it is not possible to implement physical distancing measures in a personnel hoist, all other available control measures need to be used.
42. Control measures may include:
    - Limiting worker movement between levels and floors on site, where it is possible and safe to do so.
    - Reviewing which hoists are available for use on site and identifying if additional hoists can be used (for example where a partially occupied building is under construction, consider whether a residential lift be used solely for construction persons).
    - Physical distancing of 1.5-2 m and hygiene systems to be followed when waiting for hoist, particularly on floors where worker volumes may increase during peak times (start, break, finish times). For example the ground floor, floors with meal or break out spaces and floors with bathroom amenities.
    - Determine how many workers can use a hoist at any time (including hoist operator) taking into consideration the limited duration and additional control measures in these Guidelines.
    - Mark out hoist floor, identifying:
        - where workers stand
        - what direction they are to face when in the hoist to avoid face to face contact
        - Sequencing of entering and exiting
    - Mark the hoist waiting area at each floor ensuring the physical distancing is maintained
    - Regularly communicate and remind workers (e.g. through posters, digital displays):
        - diagram of positioning of workers and sequence of worker entering
        - not to touch walls/doors of the hoist
        - advise the cleaning regime in place
    - During peak periods have system in place to limit crowding of workers entering/exiting the work area. For example:
        - developing a schedule for use of the hoist
        - Staggering what floors workers are to use the hoists. Hoist operators may be exposed to additional risk. They should:
    - Be provided with PPE that protects them from worker to worker transmission and from touching contaminated surfaces (e.g. face shield or surgical mask/P2 respirator and glasses).
    - Perform frequent hand washing with soap and water or the application of hand sanitizer positioned within the hoist.
    - Where possible, change hoist operator every two hours into a different role.

## H. 3.8 Personal Protective Equipment (PPE)

43. Employers must provide information, instruction and training on the safe use, decontamination and maintenance of any PPE provided.
44. Any PPE provided needs to be practical for the work environment (e.g. allowing the necessary visibility and mobility) and properly decontaminated or disposed of at the end of every shift.
45. Employers should monitor and encourage correct use of PPE, for example providing information on posters and digital screens about:
    - Washing or sanitizing hands before putting PPE on, and putting face protection on before gloves
    - Removing gloves before face protection, washing or sanitizing hands after removing PPE and decontaminating or disposing of used PPE safely.

## I. 3.9 Common areas

46. Common areas on sites such as the amenities pose risks, and these are reduced by ensuring the following measures are adopted.
47. The time spent in those areas must be limited so as not to breach time constraints recommended by DHHS.
48. Staggering of meal breaks and separation of work groups to achieve maximum personal space and reduce the number of workers accessing those areas at any one time consistent with the Government requirements.
49. Sanitization must occur between occupation of amenities by different work groups
50. Spread out furniture to ensure physical distancing measures in common areas
51. There must be an increased frequency of industrial grade cleaning/additional cleaning with specific emphasis on cleaning after each meal breaks in those areas
52. Workers electing to minimize amenity access
53. Staggered working hours must be considered on sites with appropriate consultation (consideration must be given to Construction Management Plans, and workers must be given adequate notice of a change in hours).

## J. 3.10 Inspections

54. During inspections of the sites everyone should ensure all measures are in place to ensure compliance. Employers and Health and Safety Representatives are encouraged to work together to assist in this important objective.

## K. 3.11 Travel

55. Adequate arrangements are to be made by workers to ensure their travel to and from work is conducted safely in accordance with Government advice, and that adequate sanitization facilities are in place for workers upon attending the work site and when returning to the work site during work.
56. Workers should ensure that for transport to and from work that they adhere to the hygiene and cleaning guidance, and the physical distancing
57. Work vehicles that are shared should be regularly cleaned to ensure adequate hygiene and protection.

## L. 3.12 General Communication

58. Ensuring everyone is informed is fundamental to managing this pandemic and ensuring the safe operations of construction sites.
59. These recommendations have been developed to be communicated to all employers, workers and stakeholders. Everyone is urged to regularly promote and adhere to this document.

60. Site inductions should be updated as required to include information on coronavirus (COVID-19) potential risks and workplace specific controls that have been implemented such as daily screening, health checks and symptoms of coronavirus (COVID-19), staggered start, finish and meal times, good hygiene practices and cleaning regimes and PPE requirements.
61. Toolbox talks should be regularly conducted, and workers are to be encouraged to put forward practical ideas for changing work practices to avoid the spread of coronavirus (COVID-19). Toolbox talks should also provide clarity to workers on leave arrangements for those that cannot work, and to encourage self-reporting and minimize the spread of risk.
62. Toolbox talks should also include updates from the responsible Health Officer as they occur and additional information on the severity of the pandemic and the importance of physical distancing at toolbox meetings.

### M. 3.14 Other measures

63. Construction sites are diverse and vary in complexity, employers must apply a risk-based approach and implement reasonably practical controls based on the environment and specific hazards at each construction site. In addition to the aforementioned measures and controls mentioned in this section, employers should consider other measures for implementation such as:
    - using alternatives to face to face meetings where practicable,
    - reducing the length and size of meetings, especially for critical employees, by requiring some or all to dial in,
    - consider off-site fabrication,
    - ensuring working from home arrangements are enabled where feasible,
    - Structuring management teams to ensure contingency in the event of team members needing to be isolated or quarantined at home.

### N. 3.15 Vulnerable workers

64. Has been identified the following groups of people as vulnerable workers in relation to coronavirus (COVID-19):
    - people over the age of 70,
    - people with chronic diseases (cardiovascular disease, diabetes, bronchial asthma and other respiratory diseases)
65. Where practical, reasonable action should be taken to minimize vulnerable workers from conducting higher risk roles

## IV. 4. SUMMARY OF RECOMMENDATIONS AND RESPONSIBILITY

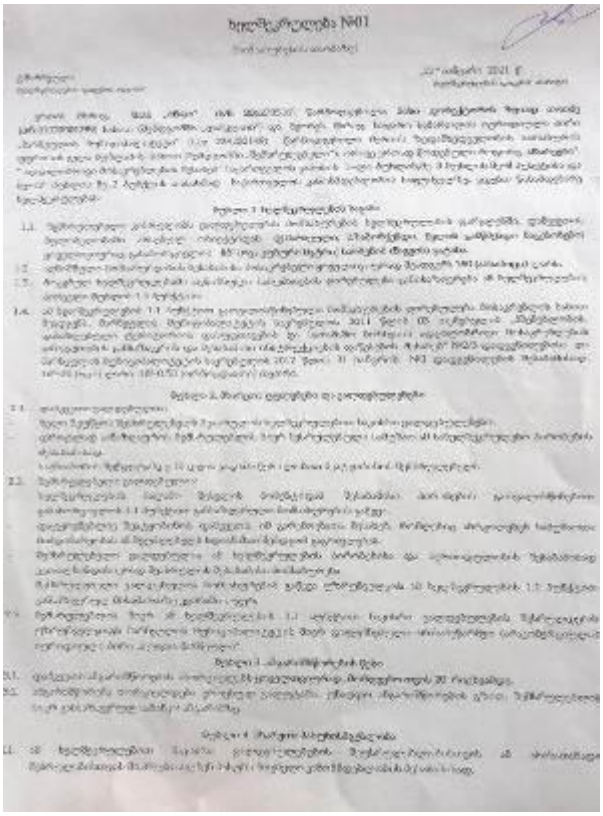
*Table of Summary of recommendations and responsibility*

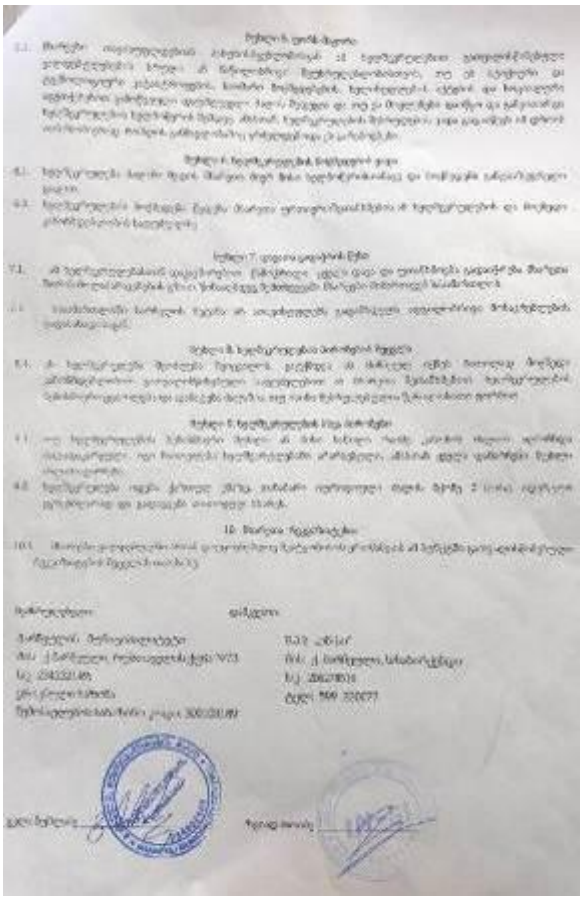
| Activity | Responsible for implementation |
|---|---|
| To provide employees with the information about the work safety procedures and prevention of virus spread (guided by the recommendations of the Ministry of Internally Displaced Persons from the Occupied Territories, Labor, Health and Social Affairs of Georgia and LEPL L. Sakvarelidze National Center for Disease Control and Public Health); | Employer |
| To KCH: Information is updated only for MAR-02 sub-project. please see para 135-140Annex Hplace ads in the workspace about the COVID-19 and its preventive measures defined by the LEPL l. Sakvarelidze National Center for Disease Control and Public Health; | Employer |
| To ensure maximum use of remote work in relation to those employees who can perform work remotely (administrative personnel); | Employer |

| | |
|---|---|
| To put mattings at the entrance of the lounge room / dining room, with the relevant sign of indication; | Employer |
| To ensure hand washing at the workspace with appropriate soap and other hygiene products. In case of inability to wash hands, to provide with at least 70% alcohol-based hand cleaning liquids; | Employer |
| To place hand sanitizers and the instruction for their proper use in a prominent place; | Employer |
| To ensure that employees have access to hand sanitizers and know how to use them in accordance with the relevant instructions; | Employer |
| To provide information to all staff and contractors, as well as cleaning staff, on appropriate preventive measures to avoid the spread of coronavirus in the work environment; | Employer |
| To train the employees on the proper use of personal protective equipment and its subsequent storage / disposal; | Employer |
| To provide employees with the necessary personal protective equipment (overalls, special shoes, helmet, gloves, medical mask) based on the specifics of their job and establish control over their use; | Employer |
| Periodically, several times a day ensure natural ventilation of indoor spaces / closets; | Employer |
| Periodically ensure disinfection of workplaces and frequently used equipment; | Employer |
| To keep ergonomics in order at the construction site. To ensure the prompt cleaning of workspace and removal of construction waste. | Employer |
| To ensure placement of closed containers for the disposable napkins and other hygiene waste used by both employees and visitors. | Employer |
| Follow the rules of hygiene at your workplace; | Employee |
| Carry out the work process in accordance with the Emergency Action Plan defined by the employer / work safety manager; | Employee |
| Avoid shaking hands and direct contact with others (touch, etc.) while saluting; | Employee |
| Avoid gathering, the work of more than 10 people on one work platform at a safe distance (less than 2 m) is not recommended; | Employee |
| When performing the work, make full use of the personal protective equipment provided by the employer; | Employee |
| Clean the workplaces and the tools and equipment used during the work process with disinfectants; | Employee |
| Thoroughly wash your hands with soap and water before and after eating, as well as before and the bathroom. Dry your hands thoroughly after washing; | Employee |
| Use alcohol-based hand sanitizers in case if you are unable to wash and dry your hands; | Employee |
| Keep a safe distance (not less than 2 m); | Employee |
| Cover your mouth with clean napkin or elbow when coughing and sneezing and then throw the used disposable napkin in the trash; | Employee |
| Avoid touching your eyes, nose, or mouth with your hands. | Employee |

## V. 5. COVID-19 INFORMATIONAL BANNERS

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





## DISPOSAL OF THE INERT WASTE/SOILS DISPOSAL

შპს საქართველოში მყარი ნარჩენების მართვის კომპანია
SOLID WASTE MANAGEMENT COMPANY OF GEORGIA LTD