

Semi-annual Environmental Monitoring Report

Project Number GEO 51257-001

Reporting period: July – December 2024

#11 Semi-annual Report

January 2025

Georgia: North-South Corridors (Kvesheti – Kobi) Road Project

Loan No GEO 3803

(Financed by the Asian Development Bank (ADB) and European Bank for Reconstruction and Development (EBRD))

Prepared by Roads Department (RD) of the Ministry of Regional Development and Infrastructure of Georgia (MRDI) of Georgia for the Asian Development Bank (ADB)

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CURRENCY EQUIVALENTS

(As of December 2024)

Currency unit	–	United State Dollars (USD)
{GEL}1.00	=	\$ 0.358 USD
\$1.00	=	2.79 GEL

Abbreviations

ADB	Asian Development Bank
CAP	Corrective Action Plan
CC	Construction Contractor
CH	Cultural Heritage
EBRD	European Bank for Reconstruction and Development
ECoW	Ecological Clerk of Works
FIDIC	The International Federation of Consulting Engineers
EIA	Environmental Impact Assessment
EDDR	Environment Due Diligence Report
CHDDR	Cultural Heritage Due Diligence
EG	Emergency Gallery
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
ESP	Environmental and Social Policy
ERP	Emergency Response Plan
GOGC	Georgian Oil and Gas Corporation
GARP	Gudauri Access Road Project
GRM	Grievance Redress Mechanism
GRCE	Grievance Redress Committee
H&S	Health & Safety
HSE	Health, Safety and Environment
HSMP	Health and Safety Management Plan
IFC	International Finance Corporation
MAC	Maximum Allowable Concentration
MoEPA	Ministry of Environmental Protection and Agriculture
MoESD	Ministry of Economy and Sustainable Development
MoRDI	Ministry of Regional Development and Infrastructure
MSs	Method Statements
m S/cm	Milli Siemens/ centimeter
N/A	Not Applicable, Not Available
NACHP	National Agency for Cultural Heritage preservation
NCN	Non-Conformance Notice
NCR	Non-Conformance Report
NFA	National Forest Agency
NOC	No Objection Certificate
PMSCS	“Project Management and Construction Supervision Contract
PPE	Personnel Protective Equipment’
PR	Performance Requirements of EBRD
PS	Performance Standards of IFC
PIU	Project Implementation Unit
QC	Quality Control
RD	Road Department
RoW	Right of Way
SAEMR	Semi Annual Environmental Monitoring Report
SC	Supervision Consultant
SDA	Spoil Disposal Area
SSEMP	Site Specific Environmental Management Plan
SFF	State Forest Fund
SPS	Safeguard Policy Statement
TBM	Tunnel Boring Machine
TBN	To Be Nominated

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1. INTRODUCTION

1.1 Preamble

1. This report presents the Semi-annual Environmental Monitoring review of North-South Corridor (Kvesheti – Kobi section) Road Project for the period of July to December 2024.
2. This report is the 11th Semi-Annual EMR for the North-South Corridors (Kvesheti – Kobi section) Road Project.

1.2 Headline Information

3. The length of the new alignment is 22.7 km and is divided into two construction packages, or 'Lots' as follows:
 - Lot 1: Tskere – Kobi: Chainage KM 12.7 – KM 22.7 (10 km)
 - Lot 2: Kvesheti – Tskere: Chainage KM 0.0 – KM 12.7 (12.7 km)
4. The project involves construction of 6 bridges and 5 tunnels, 6 grade junctions (1 for Lot 1 and 5 for Lot 2).
5. The Contract for "Project Management and Construction Supervision Contract (PMSCS) was awarded to UBM on June 24, 2019 by Road Department (RD) of Ministry of Regional Development and Infrastructure (MoRDI).
6. There are two separate contractors for each Lot1 and Lot2 as given below:
 - Lot 1: China Railway Tunnel Group Co. Ltd. (CRTG), contract signed on 05-09-2019;
 - Lot 2: China Railway 23rd Bureau Group CO. Ltd (CRCC), contract signed on 15-08-2019.
7. The Kvesheti-Kobi Road Project is the part of the program launched by the Government of Georgia and the road department to upgrade the major roads of the country. This will cover around 23 km of the highway and will replace the existing Kvesheti to Kobi Road section which is around 35 km long and crosses the Jvari Pass at an altitude of around 2,400 m with poor driving safety conditions. Thus, saving the travelling cost, time delay by reducing the travelling distance of 12 km through very difficult mountainous terrain, especially, during the winter and less fuel consumptions resulting in emissions savings.
8. The major benefits of the new Kvesheti-Kobi Road Project include: guaranteeing operational continuity during wintertime when transportation is hindered historically; locals having year-round access to the healthcare, education institutions; promoting trade and commerce, Improving quality of life in Kazbegi and Dusheti municipalities; Improvement of road safety by reduction in fatalities, injuries and accident rates; travel time savings for passengers and freight transport; Increase of tourist's flow in the region and less air pollution in Gudauri Resort.
9. The Project outline (km 0+000 – 22+700) from Kvesheti to Kobi:

Classification of road:	International highway
Design speed:	80 km/ hr.
Road length:	22.75 km (Lot1 10.03 km: Lot 12.72 km)
Road width:	15 m
Numbers of lanes:	2 ~ 3 lane

10. Based on Employer's letter # N2-05/10497 dated: 23-09-2020, PMCSC notified the Contractors through letter # 2020-09-UBM-CRTG-160 dated: 23-09-2020 that according to the subclause of 8.1 of the General Conditions of Contract (GCC), PMCSC hereby gives the CC notice to commencement of work and October 01, 2020 has been set up the date for the commencement.
11. Based on ADB Environmental Safeguards Policy (2009), this Project falls under ADB's project Category A as the project is considered to have significant diverse impacts over a wide area during construction and operation, such as noise and vibration on local residents and potentially on cultural heritage, significant quantities of spoil disposal, road safety impacts, impact on biodiversity and landscape. Road Department of Georgia submitted Environmental Impact Assessment (EIA) of the Project to the Ministry of Environment Protection and Agriculture in November 2018 in accordance to Georgian legislation, and that was approved by MoEPA on April 25, 2019 by order # N 2-354. The Project was also approved by the lenders, ADB approved the Project on August 1st and EBRD on October 2nd 2019.
12. Conditions of Approval from MoEPA include the implementation of EMPs, shall not disturb the water supply network of the communities, vibration monitoring, washing of vehicles tyres before coming on the road, submission of technical report on the Inventory of Stationary Sources of Atmospheric Air Pollution and their Emission, noise level monitoring, protection of rivers and proper design of water structures, mitigation measures to protect critical habitats and floral and faunal species in compliance with the international conventions and Red list of Georgia, installation of avalanches fences, protection of cultural heritages and prohibition for dumping of waste in Kazbegi National Park, etc.

2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 Project Description

13. Due to its geographic location, Georgia's role as a major transit country is momentous. Transport of goods into and through Georgia has increased over the past 10-15 years. Almost two-thirds of goods in Georgia are transported by road, and haulage by domestic and international truck companies is very evident on the country's highways. Many of the roads are, however, poorly equipped to cope with the volume of traffic and the proportion of heavy vehicles, and factors such as insufficient dual carriageways, routing through inhabited areas and inadequate maintenance and repair, hinder throughputs and increase transit times. This creates difficulties for haulage companies and their clients, truck drivers, Georgian motorists and local residents.
14. The Government of Georgia (GoG) has launched a program to upgrade the major roads of the country. The program is being managed by the Roads Department (RD) of the Ministry of Regional Development and Infrastructure (MoRDI). As a part of the program, upgrading of Kvesheti-Kobi section of the E117 is planned. This section includes the construction of 9 km long main tunnel that will cross the Caucasus ridge bypassing the existing road that connects Kvesheti to Kobi through Gudauri area and the Jivari pass. The project is located in Dusheti and Kazbegi municipalities, Mtskheta-Mtianeti region in the central northern part of Georgia (see Figure 1).
15. As for the residents of the Khadistskali gorge – the villages are poorly accessible in winter. According to official statistics (ref census 2002 and 2014) the decrease in community is significant. The decisive factor of decrease in population is the poor accessibility in winter especially for the localities at the higher altitude. The residents have to walk a long distance (for Tskere – around 7km) for basic food and medication. No first aid facilities are available in the area and no opportunity for children from the

valley to remain in the villages and attend school. The road will improve access to the settlements in particular those located higher in the gorge. Better access together with other benefits, ensured for permanent residents of the mountainous settlements under the national legislation, can be considered as one of the ways for reversing migration from the area.

16. Kvesheti Kobi road section with six junctions and three service roads will play an important role in the development of Kazbegi and Dusheti municipalities by facilitating the communities of Kvesheti, Bedoni, Tskere and Kobi by providing year-round access to markets, educational institution, health facilities of capital Tbilisi and increase the tourist attraction in Khada valley.

Figure 1: Location of Project Area



17. The length of the new alignment is 22.7 km is divided into two construction packages, or 'Lots' as follows
 - Lot 1: Tskere – Kobi: Chainage KM 12.7 – KM 22.7 (10 km);
 - Lot 2: Kvesheti – Tskere: Chainage KM 0.0 – KM 12.7 (12.7 km).

Lot 1 Summary

18. The Tskere-Kobi portion of the Project Road, also referred to as 'Lot 1', includes 8.86 km long tunnel with two cut and cover sections and a junction connecting to the existing road near Kobi. More specifically Lot 1 includes:
 - 178 m long section of road from Tskere to the south portal of Tunnel 5;
 - Tunnel 5: 8.86 km long bidirectional, 2 lane tunnels (max. gradient 2.35%);
 - Two cut and cover (C&C) sections of Tunnel 5 (200m –south portal and 8m – north portal) to protect from avalanches and move entrance portal farther from the Tskere;
 - 9.062 km emergency gallery parallel to Tunnel 5 and 17 connections to the main tunnel (6.4 meters wide);
 - Technical buildings next to the north and south portals – the buildings include facilities building, pumping station and ventilation room;
 - 0.8 km long section of road connecting the north portal of the tunnel with existing road. The alignment has been adapted to the current road with a maximum gradient of 4.2 % to keep on using the existing bridge (bridge length 42m, height 6m); and
 - 214 m long local road diversion.

Lot 2 Summary

19. The Kvesheti – Tskere section, or 'Lot 2' includes 2.5 km of tunnels and 1.5 km of bridges. The main elements of this section are:
- Kvesheti bypass road (length 3.2 km),
 - Bridge 1 (length 27.8m, height 14m, 2 lane)
 - Bridge 2 over the Aragvi river (length 435.28m, height 62m, 3 lanes)
 - Tunnel 1 (length 1540.64m, 2 lanes) with gallery (1092m) (New Austrian tunneling method- NATM)
 - Bridge 3 – Arch bridge over the river Khadistskali (length 426m, height 164m, 3 lane)
 - Tunnel 2 (length 193.42m, C&C, 3 lane)
 - Bridge 4 over the left tributary of river Khadistskali (length 147.80m, height 26m, 3 lane)
 - Tunnel 3 (length 388.38m)
 - Bridge 5 (length 322m, height 55m, 3 lane)
 - Tunnel 4 (length 299m, C&C, 3 lane)
 - Bridge 6 (length 218m, height 48m, 3 lane)
 - Five grade junctions are planned (KM0.3, KM1.7, KM3.1, KM7.7, KM10,5) and 3 service roads.
20. Technical features of the alignment considered during detail design include:

Lot 1

Road class	International
Design speed	80 km/hr.
Outside Total width (paved)	12 m
Lane width	3.5 m
Min shoulder	2.5 m
Min road side	1 m
Structures Total width	15 m
Lane width	3.5 m
Min clearance	2.5 m
Min way side	1.5 m
Tunnel Total width	12.5 m
Lane width	3.5 m
Min shoulder	1.5 + 1m median
Min sidewalk	0.75 m
Number of Junction	01

Lot 2

Road class	International
Design speed	80 km/hr.
Outside Total width (paved)	12 m
Lane width	3.5 m
Min shoulder	2.5 m
Min road side	1m
Structures total width	15m
Lane width	3.5 m
Min clearance	2.5 m
Min wayside	1.5 m
Tunnel Total width	12.5 m
Lane width	3.5 m
Min shoulder	1.5 + 1m median
Number of Junctions	05
Min sidewalk	0.75 m

21. The Gudauri Access Road Project (ARP) comprises a short section of new road, approximately 5 km in length, connecting the KK Project Road at Zakatkari interchange with an existing road just south of Gudauri. The road will comprise two lanes, 3.5m in width with a design speed of 60 km per hour. The road is intended to serve as a link between the new KK Project Road and the existing road to Gudauri from Tbilisi, thereby avoiding a dangerous set of hairpin turns which currently provide access to Gudauri immediately after Arakhveti, adjacent to the Aragvi river. ARP is funded by ADB.

2.2 Project Contracts and Management

22. Information related to the project execution is given in Table 1:

Table 1: Project Information

Employer	Road Department of Georgia, Ministry of Regional Development and Infrastructure of Georgia
Funding Source	Lot 1: Asian Development Bank (ADB) & European Bank for Reconstruction and Development (EBRD) Lot 2: Asian Development Bank (ADB)
“Project Management and Construction Supervision Contractor (PMCSC) (Engineer)”	UBM
Contractor	Lot 1: CRTG (China Railway Tunnel Group Co. Ltd.) Lot 2: CRCC (China Railway 23rd Bureau Group CO. Ltd)
Contract Number	KKRP/CW/CP-01R, 02R
Contract date	Lot 1: 05.09.2019 Lot 2: 15.08.2019
Commencement Date of Works	October 01, 2020.
Contract Period	Lot 1: 48 months (1460 days) Lot 2: 36 months (1080 days)
Project Completion date	Lot 1 30-09-2024 Lot 2 16-09-2025
Expired time	51 months
Remaining time	Lot 1: 3 months Delay Lot 2: 8.5 months
Defects Notification Period	2 years
Contract Price (GEL)	Lot 1: 909,024,280.61 GEL Lot 2: 316,370,802.91 GEL

23. The Terms of Reference (TOR) for the “Project Management and Construction Supervision Contract” (PMCSC) contains the following tasks for the environmental safeguard team:
- Ensure that the provisions of the approved Environmental Management Plan are reflected in the Contractor’s specific environmental management plan(s) (SEMPs) prior to its acceptance by the PMCSC, the Employer and ADB and EBRD, and thereafter ensure that the Contractor complies in every respect with the provisions of the SEMP;

- Preparation and implementation of Biodiversity Monitoring and Evaluation Program (BMEP) and contract with the organizations such as universities and NGOs in order to commission surveys to be completed as a part of implementation of BAP;
 - Protection of critical habitats to ensure that there is no net conservation loss or net conservation gain during the project implementation;
 - Conduct environmental trainings and briefings to provide awareness to ADB SPS 2009 and EBRD performance requirements (PRs elaborated in EBRD ESP 2014) and national environmental requirements;
 - Protection of cultural heritages in accordance with ADB SPS 2009, EBRD PR 8 and Georgian Law on cultural heritage 2007 updated in 2018, especially, Article 36 regarding buffer zones, perimeter of physical security of cultural heritage;
 - Develop an environmental auditing protocol for the construction period, regularly supervise the environmental monitoring, and submit the Monthly Environmental Monitoring Report (EMR) and Semiannual EMR based on the monitoring data and laboratory analysis reports. Monthly EMR will be included as an annex to the Consultant's Monthly Progress Report;
 - Develop a program for hands-on training of Contractor's staff in implementing the SEMP;
 - Ensure the safe work practices at the site, monitor the contractor is complying with all applicable safety regulations and safety of all persons entitled to be onsite;
 - Conduct post-construction environmental audit and prepare post-construction environmental audit report.
24. Obligation of the contractor, to safeguard, mitigate adverse impacts and rehabilitate the environment is addressed through environmental provisions in the FIDIC conditions of contract for construction, MDB harmonized addition – June 2010 and special clauses included in the contract related to environment, especially FIDIC clause 4.18 (protection of environment), 4.8 (safety procedures), 6.4 (labour laws), 16.3 (cessation of work/ remedial work), 2.3 b (employer's personnel), 4.21 (progress report) are important in this regard.
25. The PMCSC was awarded to UBM on June 24, 2019 for three phases of the project:
- Phase 1: Design review, to be completed in a period of three months and submitted to RD.
- Phase 2: Construction supervision and contract administration. The construction period is 36 months for Lot 1 and 48 months for Lot 2.
- Phase 3: Defects Notification Period, two years.
26. Summary of civil works contracts and works' progress is provided in Table 2. All awarded contracts included EMPs cleared by ADB and any conditions of applicable national EIA clearance by MoEPA. Subclause 4.18 in the contract KGRP/CW/CP-01R and KGRP/CW/CP-02 R contains all the information related to protection of environment and inclusion of the EIA and EMP in the contract.

Table 2. Summary of Civil Works Contracts and Works' Progress

Package	Contractor	Scope	Signed	Approval Date			Environmental Personnel		Civil Work		Progress as of	
				SSEMP	COVID-19 HSMP	ERP	Environmental officer	Health and Safety Manager	Start	End	June 2024	Dec 2024
Lot 1	CRTG	Tskere – Kobi: Chainage KM 12.7 – KM 22.7 (10 km) including 178 m long section of road from Tskere to the south portal of Tunnel 5; Tunnel 5: 8.86 km long bidirectional, 2 lane tunnels (max. gradient 2.35%); Two cut and cover (C&C) sections of Tunnel 5 (200m – south portal and 8m – north portal) to protect from avalanches and move entrance portal farther from the Tskere; 9.062 km emergency gallery parallel to Tunnel 5 and 17 connections to the main tunnel (6.4 meters wide); 0.8 km long section of road connecting the north portal of the tunnel with existing road.	05.09.2019	12-06-202	26-11-2020	26-11-2020	Paata Chankotadze	Vladimer Melia	October 01, 2020.	30-09-2024 (Planned)* 30-09-2025 After extension	95 % (EG Excavation) 60% (EG total) 100 % main Tunnel Boring 70% (Main Tunnel Total)	100% (EG Excavation) 70% (EG total) 100 % Main Tunnel Boring 80% (Main Tunnel Total)
Lot 2	CRCC	Kvesheti – Tskere: Chainage KM 0.0 – KM 12.7 (12.7 km) Including construction of 6 bridges, 4 tunnels and 5 grade junctions	15.08.2019	12-06-202	27-11-2020	27-11-202	Tamta Kapanadze	Koba Gvalia	October 01, 2020.	16-09-2023 (planned)* 16-09-2025 After extension	40.38 %	58.45%

*Note: The Month/Years in brackets are planned schedule.

COVID-19 HSMP = COVID-19 Health and Safety Management Plan, ERP = Emergency Response Plan, SSEMP = Site-specific Environmental Management Plan

27. Information of ADB, EBRD, Construction Contractor (CC), “Project Management and Construction Supervision Contractor (PMSCS) and RD representatives involved in the project is given in Table 3; however, the contact details can be available on request.

Table 3: Main Environmental Staff of ADB, EBRD, RD, PMSCS and CC

Organization	Position	Name
ADB	Senior Environmental Specialist Environmental focal	Ninette Pajarillaga
	Associate Safeguards Officer Georgia Resident Mission	Nino Nadashvili
	Environment and Social Monitor	Tamar Lazarashvili
	Community Liaison Officer (CLO)	Tato Karelidze
EBRD	Principal Social Advisor Environment and Sustainability Department	Nurzhan Dzhumabaev
	Advisor, Environmental and Social - EBRD	Louis Collet
Client/ Borrower	Environmental Safeguard Consultant of RD	Luiza Bubashvili
	Environmental Specialist - RD	Rusudan Ghelijashvili
	Head of Environmental and Social Division of RD	Mikheil Ujmajuridze
	Health and Safety consultant of RD	Mikheil Bagauri
Project Management and Construction Supervision Contractor (PMSCS) (Engineer)	International Environmental Specialist	Kashif Bashir
	Local Environmental Experts	Nikoloz Sopadze
	International Occupational Health and Safety Specialist	Kemal Karaduman
	National Occupational Health and Safety Specialist	Paata Tavdgiridze
Contractors	Project Manager	Lot 1 Cen Daoyong
		Lot 2 Yuan Yi
	Environmental Specialist	Lot 1 Paata Chankotadze Lela Bachiashvili

		Lot 2 Tamta Kapanadze Olga Tsikoridze
	H&S Manager	Lot 1 Vladimer Melia
		Lot 2 Zhang Xu
	CH Specialist	Lot 1 Zviad Kvitsiani (part time)
		Lot 2 David Sul Khanishvili (part time) Nikoloz chaduneli (part time)

*Note: The above Table only includes the main environmental staff. The PMCS also has in place Cultural Heritage Monitors. PMCS also has in place the H&S specialists.

28. Under the Contract, the Contractor shall comply with all applicable national and local environmental laws and regulations as well as applicable respective standards under the Contract. The Contractor shall:
- Establish an operational system for managing environmental impacts;
 - Develop the Specific EMPs as well as other site specific and topic specific EMPs by identifying environmental risks arising from the Works, the mitigation measures to be applied, and monitoring to be carried out;
 - Implement the required mitigation measures and monitoring;
 - Take any corrective or preventative actions set out in safeguards monitoring reports that the Employer will prepare from time to time to monitor implementation of the EMP/SEMP; and
 - Submit quarterly monitoring reports to the PMCS/RD as set in the EIA.
29. The Contractors, CRTG for Lot 1 and CRCC for Lot 2, are responsible for implementation of EMP/SEMP throughout the project during construction phase. The "Project Management and Construction Supervision Contractor" (PMCS) UBM (Engineer) is responsible to monitor the implementation of EMP/SEMP by the Contractor at all its active construction sites and project associated facilities.
30. Responsibility of daily management for environmental monitoring and implementation of the SEMP is given to the Environmental Protection Managers of the contractors CRTG and CRCC. The Environmental Managers have direct authority from the Project Manager to give instruction to all site staff regarding environmental issues.
31. Both contractors hired H&S Specialists fulfilling the requirement of Article 7 "Organizing and Managing H&S" of Organic Law of Georgia on Labour Safety which states that "The employer having less than 20 employees can personally fulfil professional duties of an occupational safety specialist provided that s/he has completed the programme

accredited according to paragraph 6 of this article. In case of 20-100 employees, the employer is obliged to appoint at least one OSH specialist. In case the number of employees is over 100 the special OSH unit needs to be set up, but with no less than two OSH specialist". HS specialists are available onsite on daily basis and responsible for the maintenance of working environment, accident preventive measures and implementation of developed H&S requirements and procedures. Both contractors have established and are maintaining the medical facilities, and appointed medical staff practitioners.

32. At Lot 1, there are five National H&S Specialists: Vladimer Melia (Health and Safety Manager), Akaki Malania (Safety Specialist), Mikheil Donadze (Safety Specialist) and Givi Gujaraidze (Safety Specialist for night shift at Kobi) at Kobi side, and Giorgi Tandilashvili (Safety Specialist) at Tskere side. In addition to that, three Chinese H&S Specialists: Li Yangie (Safety Specialist), Zhang Wenzhao (HSE Specialist) and Tian Yiming (Safety Engineer) are available at Kobi side. In total, there are 8 safety employees at Lot 1 Project.
33. At Lot 2, there are three National H&S Specialists: Koba Gvalia (H&S Manager), Achiko Otkavani (H&S Specialist/Certified Scaffolder), Gia Chitauri (H&S Specialist) and two Chinese H&S Specialists: Liu Jiang and Zhang Xu. In total, there are 5 safety employees at Lot 2 Project.
34. Contractor for Lot 1 has one Environmental Manager, Paata Chankotadze whose contract was not extended from October 2024 as the contractor believes that the volume of works has been reduced at this stage and one Ecological Clerk of Works (ECoW), Lela Bachashvili and Field Officer Giga Ghudushauri who was hired during the reporting period. Contractor for Lot 2 has an Environmental Manager, Tamta Kapanadze who is also responsible for the duties of ECoW. Ecological Clerk of Works (ECoW) of each contractor are responsible for the implementation of the Biodiversity Action Plan (BAP) and ensure that all the workers are aware of the sensitivity of the site in ecological perspective, carry out pre-construction/pre-work surveys for identification of critical habitats and key species and conduct regular biodiversity monitoring of Project area. Lot 2 has one field office Olga Tsikoridze. She is responsible for the site supervision and preparation of environment documents.
35. Both the Contractors for Lot 1 & Lot 2 have Cultural Heritage Specialists involved in the Project: Zviad Kviciani for Lot 1 and Davit Sul Khanishvili and Nikoloz Chaduneli for Lot 2.
36. The organizational charts for key management staff of CRTG and CRCC are given below in figures 2A & 2B respectively:

Figure 2A: Contractor (CRTG) Project Management Staff for Lot 1

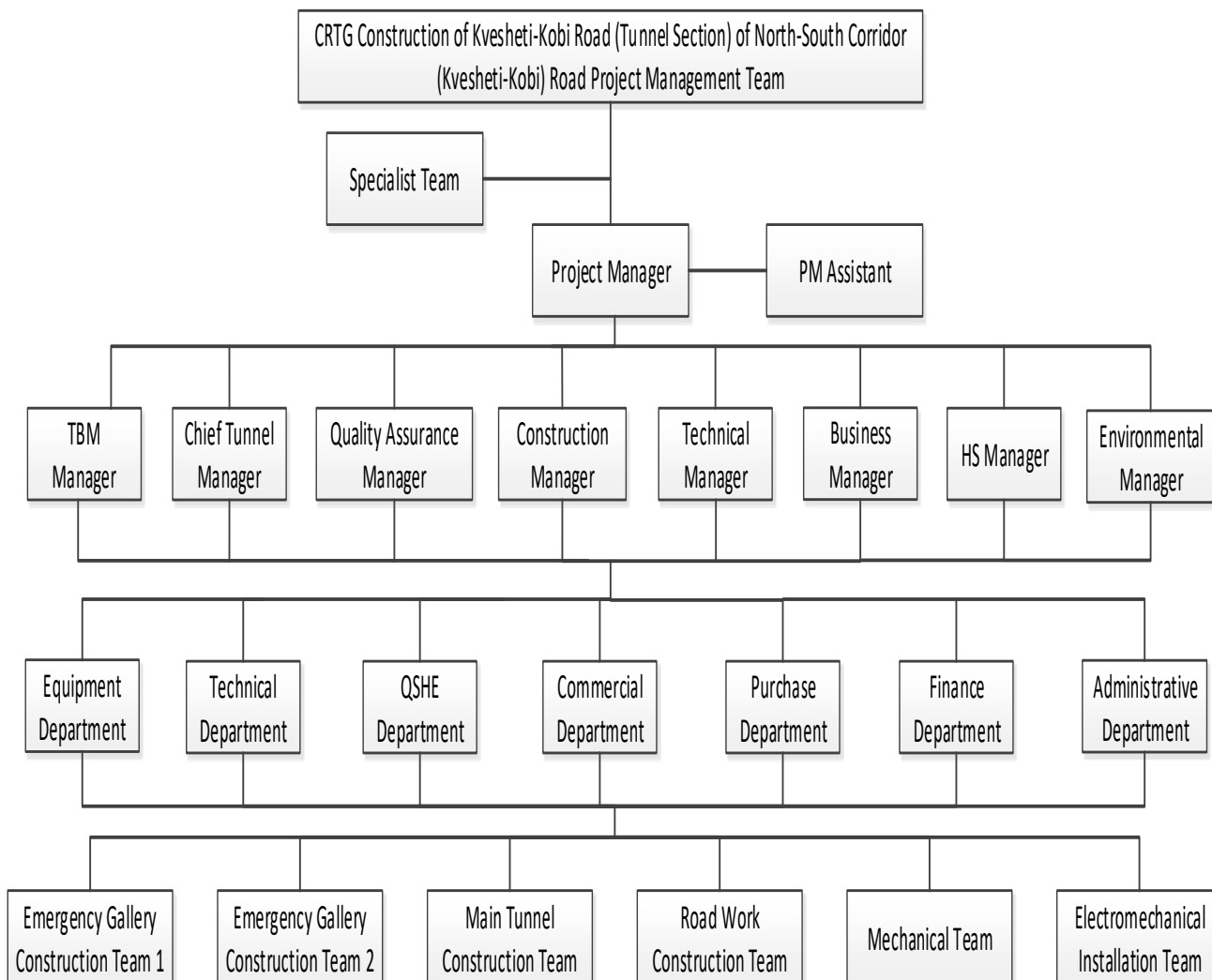
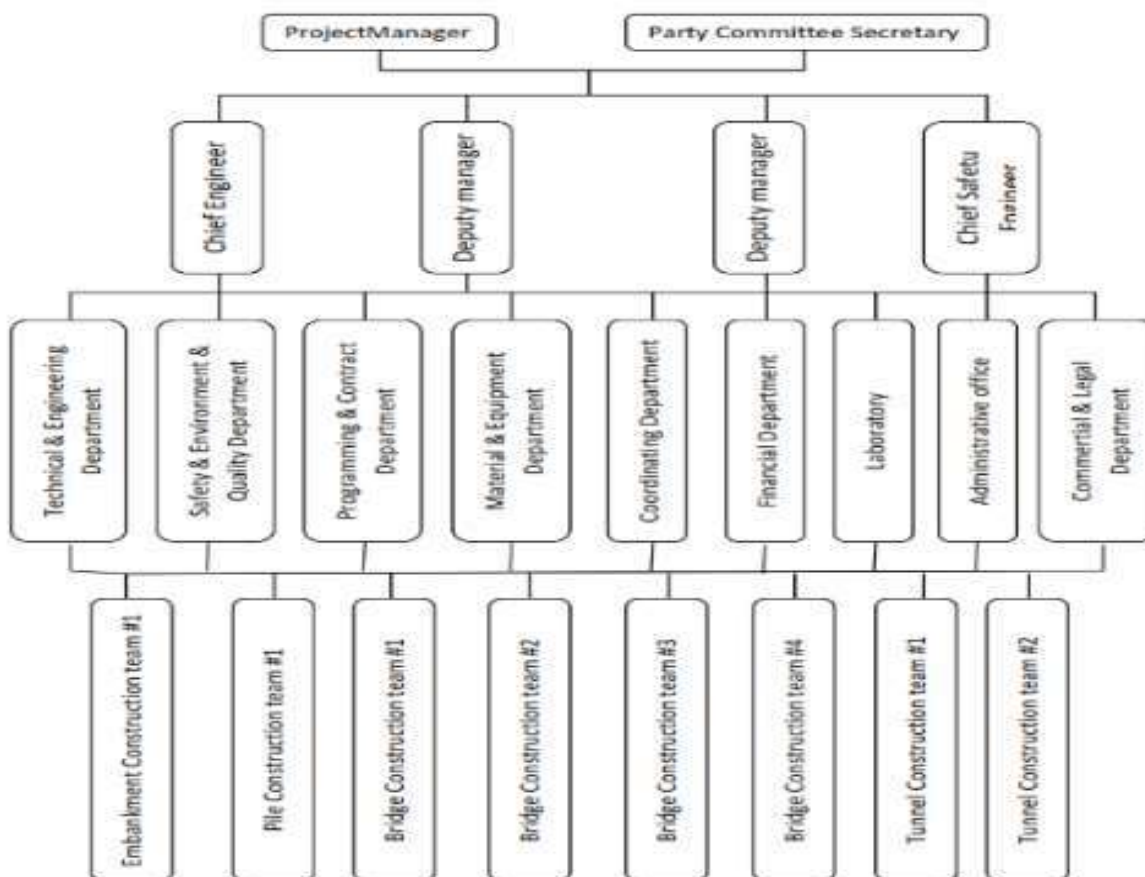


Figure 2B: Contractor (CRCC) Project Management Staff for Lot # 2



2.3 Project Activities in the Current Reporting Period

Lot 1 Progress of Works up to Dec 2024:

- **General Items:**
 - Contractor's equipment mobilization – 200 sets (unit of machinery / equipment), 100 %.
 - TBM design and manufacturing – 100%.
 - TBM installation 100%. (The TBM operation of excavation started in October 2021).
 - Gas pipeline relocation design and approval – 100%.
 - Plans and MSs preparation and approval – 100 %.
- **Tunnelling:**
 - Excavation of the main tunnel – 8845m.
 - Pre-Tunnel and Post-Tunnel excavation and support – 15 m.
 - Main Tunnel north portal C&C excavation and support – 8860 m.
 - Main Tunnel south portal C&C excavation and support – 0m.
 - Main Tunnel north portal borehole drilling and grouting for fore poling – 100%.
 - Main Tunnel south portal borehole drilling and grouting for fore poling 1 – 0m.

- Emergency Gallery- D&B excavation and preliminary support – From June 30th 2024 to December 31st 2024, 349.3 m is excavated, until December 31st 2024 100% is excavated.
- Emergency Gallery- D&B excavation and preliminary support – 8860 m.
- Emergency Gallery-lining support – From June 30th 2024 to December 31st 2024, 4126.4 m is lining, until December 31st 2024 55.2% is lining.
- Emergency Gallery north portal C&C excavation and support – 7457.2 m.
- Emergency Gallery south portal C&C excavation and support – 811.8 m
- Emergency Gallery north portal borehole drilling and grouting for fore poling – 100%.
- Emergency Gallery south portal borehole drilling and grouting for fore poling – 100%.
- **Bridge:**
 - BRI-7 rehabilitation 0%.
- **Roads:**
 - K12+720-K12+900 Road slop excavation – 0m³.
 - K12+720-K12+900 Road subgrade construction – 0m³.
 - K12+720-K12+900 Road pavement construction – 0m³.
 - K21+968-K22+751 Road embankment construction – 0m³.
 - K21+968-K22+751 Road pavement construction – 0m³.
 - Local Road LRD-12.7 construction – 0m.
 - Local Road LRD-12.9 subgrade and pavement construction – 0m.
 - Local Road LRD-13.1 construction – 0m.
 - Local Road GJ-22.3 subgrade and pavement construction – 0m.
 - Local Road EAO-12.7 construction – 0m.
 - Local Road EAO-22.5 construction – 0m.
- **Operation Area:**
 - OPA-12.8 slope excavation and support – 0m³.
 - OPA-22.0 slope excavation and support – 0m³.
 - OPA-12.8 Facility Building construction – 0%.
 - OPA-12.8 Pump Station construction – 0%.
 - OPA-22.0 Facility Building construction – 90%.
 - OPA-22.0 Pump Station construction – 30%.
- **Retaining Wall:**
 - RWL-12.6 Rockery Wall construction – 0 m³.
 - AWL-12.7 Anchored Concrete Wall construction – 0 m³.
 - CWL-12.7 Cantilever Concrete Wall construction – 0 m³.
 - RWR-12.9 Rockery Wall construction – 0 m³.
 - RWR-21.9 Rockery Wall construction – 0 m³.
- **Construction of Batching Plant, Segment Plant, Crusher and other Construction Facilities at Kobi and Tskere site.**
 - Kobi Batching Plant #1: 100%
 - Kobi Segment Plant: 100%
 - Kobi Crusher Plant: 100%
 - Kobi Explosive Storage Area: 100%
 - Kobi Campsite #1: 100%
 - Tskere Explosive Storage Area: 100%
 - Tskere Campsite #2: 100%

- Tskere Batching Plant #2: 100%
- Quarries: Kobi near Tergi River, % completed $(303534 \text{ m}^3/412470\text{m}^3 \times 100) = 73.6 \%$
- Quarries: Kobi upstream Tergi River, 100% completed $(113714 \text{ m}^3/113714\text{m}^3 \times 100) = 100 \%$ (License expired)

37. Progress of works carried out by Contractor for Lot 1 during the reporting period is summarized in Table 4A below:

Table 4A: Construction Progress during Reporting Period for Lot 1 (July- Dec 2024)

WORK DESCRIPTION	DIMENSION	DESIGN	PROGRESS DURING JULY – DEC 2024	CUMULATIVE PROGRESS FROM START	OVERALL PERCENTAGE %
Bill No.2 Preparatory Works					
A) Demolish					
Demolition of building and bridges	m ²	351	0	0	0
Demolition of reinforced or mass concrete	m ³	350	0	350	100
B) Site Preparation					
General setting out (Repetitive survey by CC for setting out reference points and to confirm the bench marking of the project site for works)	set	1	0	1	100
Site clearance	m ²	55000	0	55000	100
Cutting trees of more than 0.1 m diameter (No red list species uprooted)	set	1	0	1	100
C) Utilities Relocation					
Gas pipeline D700 mm	m	834	0	834	100
Gas pipeline D1200 mm	m	797	0	797	100
D100 cast pipe	m	116	0	116	100
Temporary division of fiber cable	m	920	0	920	100
Division of single mode fiber cable	m	920	0	920	100
Trench excavation and filling for pipes	m	540	0	540	100
D) Surveys					
Additional geotechnical investigation	m	360	0	360	100
Bill No.3 Earthworks					
A) Excavation					
Mechanical excavation	m ³	61900.34	0	61900.34	100

Blasting (<20%) and ripper excavation	m ³	135785.20	0	127136	95
Excavation by blasting	m ³	12876.36	0	12876.36	100
Excavation by pre-splitting blasting	m ³	850	0	850	100
B) Filling					
Embankment construction with material from excavations on site	m ³	276,226.12	0	0	0
Embankment construction with material from borrow pits	m ³	4500	0	0	0
Filling in spoil area, distance <2km	m ³	2135532.76	326404.8	1757945.25	82.3
Filling in spoil area, distance 2km~10km	m ³	548192.76	548192.76	548192.76	100
Riprap protection	m ³	43576.10	0	0	0
Filling on C&C structure	m ³	144672.77	0	0	0
B) Slope support and protection					
Spray concrete on slopes	m ³	91.58	0	91.58	100
Slope protection with wire mesh	m ³	915.84	0	915.84	100
Passive bolts for slope protection	M	465	0	465	100
Bill No.4 Road Pavements					
Asphalte surface course	t	26740.68	0	0	0
Asphalte base course	t	7168.59	0	0	0
Tack coat	m ²	142587.77	0	0	0
Prime Coat	m ²	46296.97	0	0	0
Crushed rock base course	m ³	5303.27	0	0	0
Frost blanket course	m ³	17506.74	0	0	0
Concrete pavement	m ³	9938.7	0	0	0
Bill No.5 Drainage					
A) Longitudinal Drainage					
Triangular ditch, 0.4m width	m	1400.7	0	0	0
Trapezoidal ditch, 2m width	m	585	0	0	0
Trapezoidal ditch, 1m width	m	730	0	0	0
Precast channel for drainage of spills from the tunnel	m	18136	0	0	0
Plain pvc pipe ø 350 mm	m	18196	0	0	0
Sewer manhole	set	353	0	0	0

				0	
B) Cross-drainage					
Reinforced concrete pipe on concrete bed ø 400 mm	m	134	0	0	0
Precast siphon manhole	set	302	0	0	0
Reinforced concrete pipe on concrete bed ø 1800 mm	m	190	0	0	0
C) Spoil Area Drainage					
Drainage for existing water courses	m	1723.66	0	0	0
Bill No.6 Tunnel 5					
A) South Portal Tskere					
French drain construction	m	2099.76	0	500	25
Passive bolt for slope protection	m	9,866.88	0	8200	95
Steel mesh for support	m ²	5776	0	5000	87
Cable anchor for slope protection	m	7038	0	0	0
Reinforced concrete	m ³	1010.8	0	500	50
Sprayed concrete	m ³	685.2	0	600	88
Umbrella micro pile ø 101 mm	m	705	0	705	100
Reinforced concrete in C&C section	m ³	13375.17	0	0	0
Corrugated steel bars in passive reinforcement	kg	1832374.35	0	0	0
PVC waterproofing	m ²	15,269.07	0	0	0
B) North Portal Kobi					
Passive bolt for slope protection	m	1976	0	1976	100
Cable anchor	m	475.8	0	475.8	100
Sprayed concrete	m ³	132.47	0	132.47	100
Umbrella micro pile ø 101 mm	m	1020	0	1020	100
Reinforced concrete in C&C section	m ³	642.33	0	642.33	100
Corrugated steel bars in passive reinforcement	kg	99561.03	0	99561.03	100
C) Underground Tunnel 5					
Main Tunnel excavation and support by TBM	m	8860	1501	8860	100
Pre-Tunnel and Post-Tunnel excavation and support	m	30	0	30	100
Emergency Gallery excavation and preliminary support	m	8854.59	349.3	8854.59	100
Emergency Gallery invert construction	m	5913.6	2586.6	5213.6	88

Emergency Gallery Leveling concrete construction	m	8854.59	5527.6	8154.59	92
Emergency Gallery lining construction	m	8854.59	4023.6	4888.6	55
Cross Passages excavation and support	set	18	4	16	89
Traffic substructure construction	m	8860	7020	8660	98
Ventilation structure construction	m	8860	208	350	4
Bill No.7 Bridge 7- Rehabilitation					
Bridge 7 rehabilitation	set	1	0	0	0
Bill No.8 Retaining Walls and Other Structures					
Rockery Wall RWL-12.6	set	1	0	0	0
Rockery Wall RWR-12.9	set	1	0	0	0
Rockery Wall RWR-21.9	set	1	0	0	0
Anchored Concrete Wall AWL-12.7	set	1	0	0	0
Cantilever Concrete Wall CWL-12.7	set	1	0	0	0
Bill No.9 Road Signaling, Marking and Safety Barriers					
Main roads	m	10031.16	0	0	0
Emergency Gallery	m	9068	0	0	0
Local roads	m	390	0	0	0
Bill No.10 Tunnel Facilities					
Power supply	set	1	0	0	0
Lighting	set	1	0	0	0
Ventilation	set	1	0	0	0
Fire fighting	set	1	0	0	0
Security, monitoring and control	set	1	0	0	0
Operation control center	set	1	0	0	0
Infrastructures	set	1	0	0	0
Bill No.11 Technical Buildings					
Facilities Building Tskere	set	1	0	0	0
Pumping Building Tskere	set	1	0	0	0
Facilities Building Kobi	set	1	0.9	0.9	90
Pumping Building Kobi	set	1	0.3	0.3	30
Facilities	set	1	0	0	0
Bill No.12 Road Equipment					
A) Infrastructure (Ducts)					
Duck bank	m	1350	0	0	0
Cast iron manhole	set	44	0	0	0
B) Medium Voltage					
Switching center	set	6	0	0	0
Three-phase line	m	9500	0	0	0
C) Road Lighting					
Main roads	m	963.16	0	0	0

Local roads	m	390	0	0	0
D) Telecom					
Fiber optic network	set	1	0	0	0
Lan multiservice network	set	1	0	0	0
Bill No.13 Environmental Measures					
Top soil excavation	m ³	51004.09	3152	64012.09	125.5
Distribution of top soil	m ³	50000	0	0	0
Manual seeding	m ²	150000	0	0	0
Planting of trees, shrubs and plants	lump-sum	1	0	0	0
Hydro-seeding of green slopes	lump-sum	1	0	0	0
Special measures and treatments during construction	lump-sum	1	0.09	0.66	66
Noise barriers	PS	1	0	0	
Soil stabilization treatments	lump-sum	1	0.14	0.67	67
Inspection, monitoring, control and reports	lump-sum	1	0.1	0.67	67
Fencing H=2.0 m	m	120	0	0	0
Asbestos PPE According to EMP	lump-sum	1	0	0	0
Bill No.14 Temporary Works and Diversions					
TD-13.1	SET	1	0	0	0
TD-22.3	SET	1	0	0	0
Bill No.15 Local Road Diversions, Service Roads and Emergency Access to OPAs					
LRD-12.9 (TSEKERE AXIS)	SET	1	0	0	0
LRD-13.1	SET	1	0	0	0
EAO-12.7	SET	1	0	0	0
EAO-22.5	SET	1	0	0	0

Lot 2 Progress of Works up to Dec 2024

- **General Items**

- Contractor's equipment mobilization – 180 sets (unit of machinery / equipment), 80 %
- Plans and MSs preparation and approval – 100 %.

- **Tunnel 1**

T1:

- Top guide 1:1391.7m. (TOP Headings I, II)
 - Top guide 2: 1391.7m.
 - Bottom guide 3:1391.7m (Bench III, IV, V)
 - Bottom guide 4: 1391.7m
 - Bottom guide 5: 1391.7m
 - Elevation arch 6: 451.2m
 - Final lining : 1391.1m
- (Note: Tunnel 1 completed)

- **Tunnel 2:** Excavation 0 m³

- **Tunnel 3:**

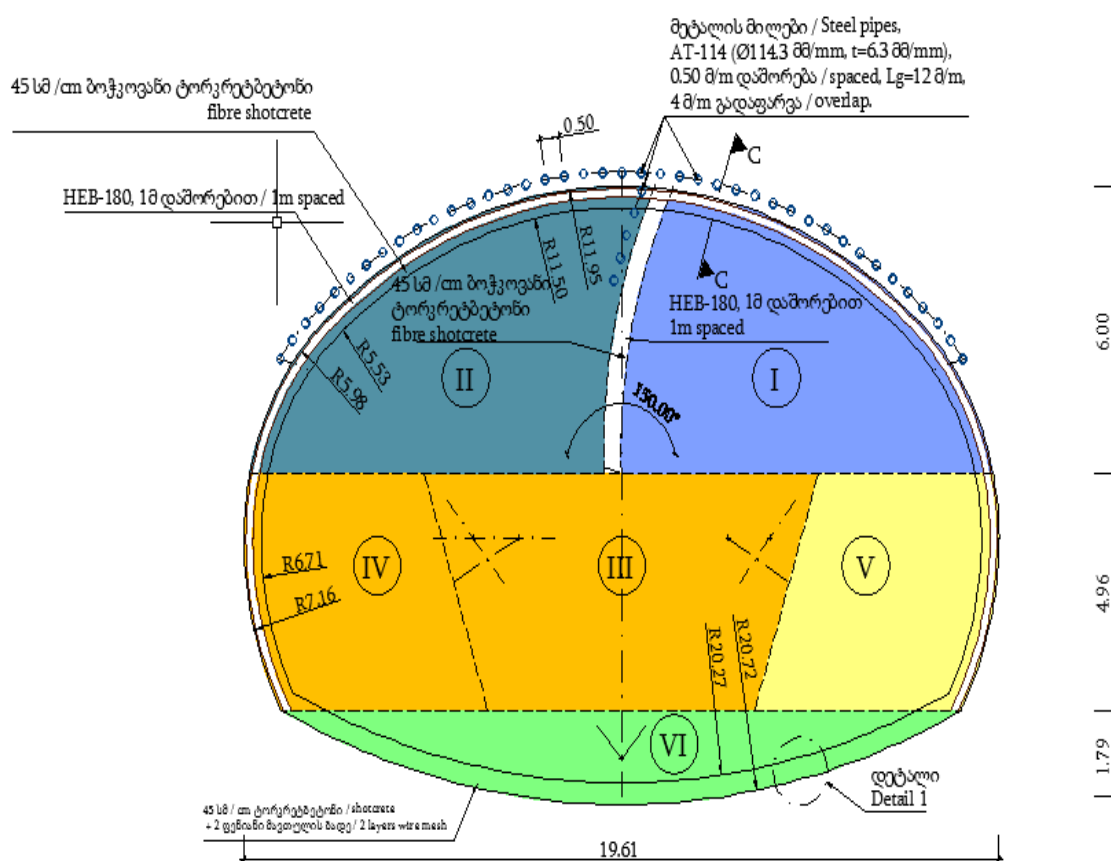
T3 exit:

- Top guide 1: 434m. (TOP Headings I, II)
 - Top guide 2: 434m.
 - Bottom guide 3: 434m (Bench III, IV, V)
 - Bottom guide 4: 434m
 - Bottom guide 5: 434m
 - Final lining: 310m
- (Note: Tunnel 3 completed)

- **Tunnel 4:** Excavation 61000m³

38. In the monitoring period the contractor for LOT 2 (CRCC) continued earthworks along the Gudauri access road and construction of embankments and relocating the utilities. This phase of the project involved the removal of topsoil, a process closely scrutinized by the Engineers' Cultural Heritage team.
39. The details about the working face of tunnel excavation inside the tunnel including top and bottom guide of the tunnel is given in Figure 3.

Figure 3: Working face for tunnel excavation



- **Bridges:**

- B2 (Bridge N2): Beam has been completed 434m.

- B3: P1、 P2、 P21、 P22、 P19 pile foundations completed. P19 pile cap has been finished and pier of 0-13.5m has been finished.
- B4: A1、 P1、 P2 、 P3 pile foundations completed. A1、 P1and P2 pile cap has been finished, A1Abutment、 P1 pier and P2 pier has been finished.
- B5: All pile foundations has been completed, A2、 P6 、 P5 and P3 pile cap has been finished, A2 Abutment、 P6 pier and P5 pier has been finished.
- B6: All pile foundations has been completed ,A1、 P1、 A2 and P4 pile cap has been finished, A2、 A1 Abutment and P4、 P1 pier has been completed .
- **Roads:**
 - KM0+200-400 - 50000 m³.
Filling 50000m³, Filling- 100%.
 - KM0+400-800 220000 m³.
Filling 220000 m³, Filling- 100%,
 - KM0+800-1+100 190000 m³.,
Filling 190000 m³, Filling- 100%,
 - KM1+100-km1+260 80000 m³
Filling 80000 m³ -100%.
 - KM5+920-KM6+180 26000m³
Filling 26000 m³ -100%
 - KM6+180-KM6+300 25000m³
Filling 25000- 100%
 - KM6+300-KM6+400 14000m³
Filling 14000- 100%
 - KM6+400-km6+770 32000 m³
Filling 32000 -100%
 - KM6+870-KM7+545 40000 m³
Excavation completed 40000-100%
 - KM9+020-KM9+140 40000
40000m³ of excavation, excavation completed-100%
 - KM9+980-12+300 1102151 m³
348000m³ of excavation, excavation completed-31.58%
- **0.7 culvert:**
Has been finished
- **1.0 culvert:**
Has been finished
- **2.2 culvert:**
Has been finished
- **2.6 culvert:**
Has been finished
- **5.9 culvert:**
Has been finished
- **7.6 culvert**
Has been finished
- **7.9 culvert**
Has been finished
- **CWR1.3**
Has been finished
- **CWR2.3:**

- Has been completed 20%
- **CWL2.7:**
Has been finished
- **CWL9.2:**
Has been completed 70%
- **CWR10.1:**
Has been completed 30%
- **Temporary Facilities:**
 - Camp # 1 100 %
 - Camp# 2 100 %
 - Camp # 3 100 %
 - Batching Plant 1 100 %
 - Batching Plant 2 100 %
 - Batching Plant 3 100%
 - Parking and maintenance area 100%
 - Explosive Storage Area: 100 %
- **Quarry Area:**
 - Mleta Quarry – 90%
 - Quarry Near Parking area – 90%

40. Progress of works carried out by Contractor for Lot 2 during the reporting period is summarized in Table 4B below:

Table 4B: Construction Progress During Reporting Period for Lot 2 (July-Dec 2024)

Work description	Dimension	Design	Actual during reporting period	Cumulative	%
Bill No.2 Setting Out and Site Clearance					
Site clearance, average depth=20 cm	m ²	200000	0	358906.88	100
Tree felling, trunk diameter	each	350	0	350	100
BILL No. 3. Earthworks					
Excavation of soil mechanically	m ³	624751.30	171000	389985.37	62.42
Excavation of soil by means of blasting	m ³	1100470.8	0	167744	15
Construction of embankment	m ³	1138441.2	91800	919092.92	80.73
Slope protection	m ³	2651.02	0	289.81	10.93
BILL No. 4. Road Pavements					
Frost blanket course (fbc)	m ³	63663.16	0	0	0
Crushed rock base course (crbc)	m ³	33352.92	0	0	0
Asphalt base course (abc)	t	64940.45	0	0	0
Asphalt surface course (asc)	t	54012.21	0	0	0
BILL No. 5. Drainage					
Longitudinal ditches	m	27710	0	1334.63	4.8
Cross-drainage	m	1742	0	500	28.7
BILL No. 6. Tunnels 4 sets					
Tunnel 1	set	1	0.12	0.94	94
Tunnel 2 (C&C 9.0)	set	1	0	0	0
Tunnel 3	Set	1	0.24	0.98	98
Tunnel 4 (C&C 12.0)	set	1	0	0	0
BILL No. 7. Bridges 5 sets					

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Bridge-2	set	1	0.03	0.56	56
Bridge-3	set	1	0.01	0.03	3
Bridge-4	set	1	0	0.26	26
Bridge-5	set	1	0.02	0.12	12
Bridge-6	set	1	0.012	0.19	19
BILL No. 8. Retaining walls and other structures					
Retaining walls	piece	10	2	4.2	42
Box culvert – 15m X 5.5m	Linear meter	45	0	45	100
Box culvert – 13m X 6.65m	Linear meter	14.6	0	14.6	100
Box culvert – 15.82m X 3.8m	Linear meter	15.82	15.82	15.82	100
Box culvert – 4m X 5.5m	Linear meter	18	0	18	100
Box culvert – 2.5m X3m	Linear meter	20.38	0	20.38	100
BILL No. 9. Road signaling, marking and safety barriers					
Main roads	Km	12.72	0	0	0
Secondary roads	Km	4.96	0	0	0
BILL No. 10. Tunnel facilities					
Tunnel 1	set	1	0	0	0
Tunnel 2 (C&C 9.0)	set	1	0	0	0
Tunnel 3	set	1	0	0	0
Tunnel 4 (C&C 12.0)	set	1	0	0	0
BILL No. 11. Technical buildings					
Technical buildings	set	4	0	0	0

4 Information of Personnel Working on Construction Site

41. Overall staff hired by the Contractors CRTG and CRCC up to December 2024 and working at site are given below in Table 5A & 5B respectively:

Lot 1 (CRTG Contractor) – December 2024

Total number of employees – 599

Foreign Staff – 271

Georgian Staff (total) – 328

Table 5A: Information of Personnel Working at Site during Reporting Period (Lot 1)

#	Position	Contractor		Subcontractor		Sum
		Foreigner	National	Foreigner	National	
1	Project Manager	1	-			1
2	PM Assistant	1	-			1
3	Chief Tunnel Manager	1	-			1
4	TBM Manager	0	-			0
5	Deputy TBM Manager	1	-			1
6	Technical Manager	1	-			1
7	Construction Manager	2	-			2
8	QA/QC Manager	1	-			1
9	H&S Manager	-	1			1

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10	H&S Specialist	3	4			6
11	Environmental Manager	-	1			1
12	ECoW	-	1			1
13	Environment Assistant		1			1
14	Technical Department	20	1			21
15	Finance & Administration	2	0			2
16	Commercial Engineer	3	0			3
17	Foreman	31	-			31
18	Repairman	7	8			15
19	Mechanical Department	7	-			7
20	Driver	20	52			72
21	Skilled Labour	123	31			154
22	Unskilled Labour	42	207			249
23	Community Liaison Officer	0	1			1
24	CH specialist	0	1			1
25	Security Guards	0	12			12
26	Medical Staff	0	3			3
27	Kitchen Staff	5	3			8
28	Cleaners	0	2			2
	Total	271	329			600

Lot 2 (CRCC Contractor) up to December 2024

Total number of employees – 408

Foreign staff – 273

Georgian staff (total) – 135

Table 5B: Information of Personnel Working at Site During Reporting Period (Lot2)

#	Position	CRCC		SUBS		SUM
		Foreign	National	Foreign	National	
1	Project Manager	1	0			1
2	Deputy Manager	3	0			3
3	Deputy chief engineer	2	0			2
4	Engineer staff	6	1			7
5	Office workers (Administration)	3	0			3
6	Technicians	6	1			7
7	Skilled labor	6	4			10
8	Unskilled labor	5	5			10
9	Drivers	1	1	7	3	12
10	Operator	0	0	25	46	71
11	Bridge and culvert team	0	0	108	10	118
12	Finance and administration	2	1			3

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13	Environmental Manager – EcoW	0	1			1
14	Environmental field assistant	0	1			1
15	Health and Safety Manager	0	1			1
16	Health and Safety Specialist	2	2			4
17	Foreman	6	0			6
18	Repairman	7	4			11
19	Pile works crew	0	0	46	9	55
20	Security Guards	0	6			6
21	Mechanical department	4	1			5
22	Tunnel works crew	0	0	25	21	46
23	Cultural heritage officers(part time)	0	1			1
24	Community Liaison Officer	0	2			2
25	Geological survey staff	0	2			2
26	Cook	4	4	4		12
27	Cleaner	0	2			2
28	Medical staff	0	6			6
	Total	58	46	215	89	408

42. The graphical presentation of number of foreign and local staff hired by the contractor CRTG and CRCC and working at site is shown in the figures 4A & 4B respectively.

Figure 4A: CRTG Personal at Site as of December 2024 (Lot 1)

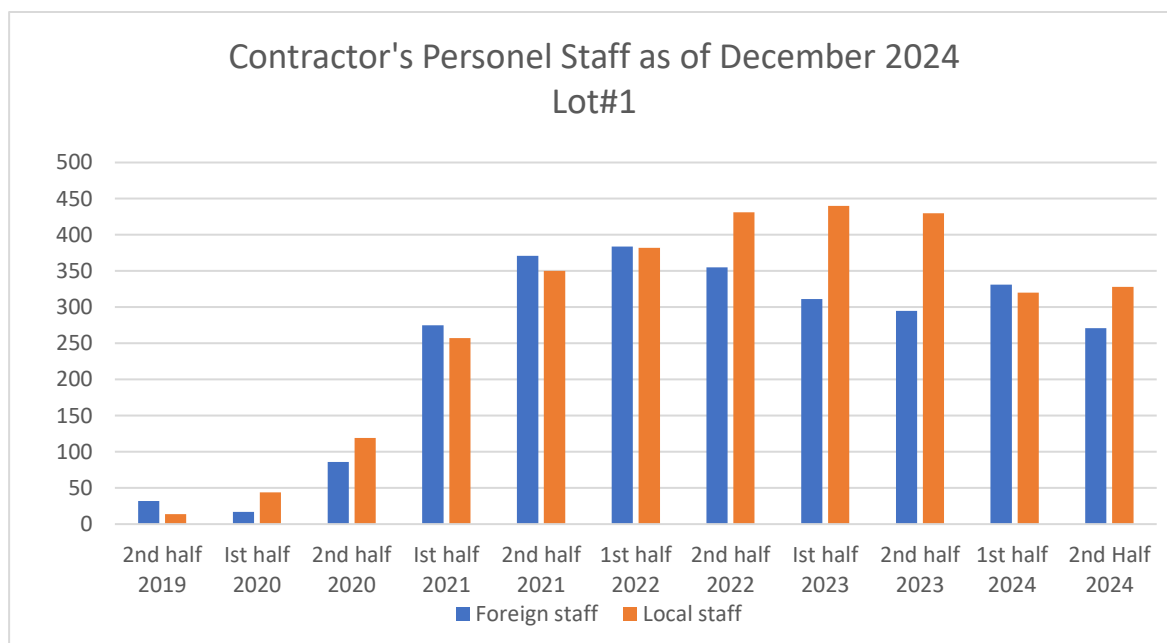
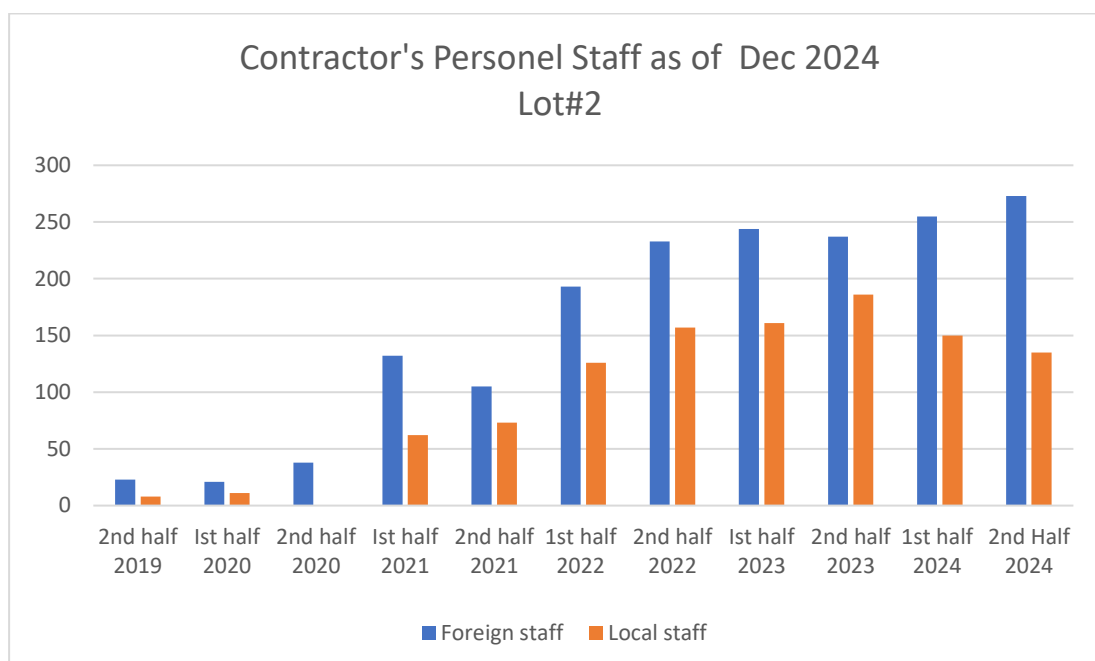


Figure 4B: CRCC Personal at Site as of December 2024 (Lot 2)



43. During the reporting period, there was a decrease in the total number of staff for Lot 1, with a reduction of 52 workers due to a decrease in work activities. In contrast, Lot 2 experienced no significant change in staff numbers, with only 3 workers increased during the same period.
44. The ratio of local to foreign workers is 54.8% local and 45.2% foreign for Lot 1, while Lot 2 has 33.1% local and 66.9% foreign workers. The decrease in foreign staff for Lot 1 can be attributed to reduced construction activities and the completion of TBM and EG excavation.
45. Information regarding the mobilization of “Project Management and Construction Supervision Contractor” (PMSCS) staff is given in the Table 6.

Table 6: Information of PMSCS (Engineer) Staff Status (December 2024)

NO	Name of Team Member	Position held	Mobilization Status
International Staff			
1	Kemal Karaduman (CP01, CP02)	Senior Occupational Health and Safety Specialist	Mobilized
2	Abdul Hameed (CP01, CP02)	Senior Resettlement/ Social Development Specialist	Mobilized
3	Kashif Bashir (CP01, CP02)	Senior Environmental Specialist	Mobilized
National Staff			
1	Nikoloz Sophadze (CP01, CP02)	Environment Specialist	Mobilized
2	Tamar Javakhi (CP01, CP02)	Resettlement/ Social Development Specialist	Mobilized
3	Paata Tavdgiridze (CP01, CP02)	Occupational Health and Safety Specialist	Mobilized
4	Zaza Devdariani (CP01, CP02)	Road Safety Engineer	Mobilized

5	Emir Ibrahimov (CP 02)	Occupational Health and Safety Specialist	Mobilized
6	Lado Gorsiridze	Occupational Health and Safety Specialist	Mobilized
Non-Key Staff			
1	Nikoloz Tskvitinidze (CP01, CP02)	Cultural Heritage Expert	Mobilized
2	Amiran Nadirashvili (CP01, CP02)	Cultural Heritage Expert	Mobilized
3	Simon Chachanidze (CP01)	Environment Field Officer	Mobilized
4	Giorgi Lagidze (CP02)	Environment Field Officer	Mobilized

2.5 Description of Any Changes to Project Design

46. No change in the project design was approved during the reporting period.

2.6 Description of Any Changes to Agreed Construction Methods

47. No changes to the agreed construction methods were approved during the reporting period.

3. ENVIRONMENT SAFEGUARD ACTIVITIES

3.1 Description of Environment Safeguards Activities

48. **General** - During the daily monitoring, the PMSCS's environmental specialists check the environmental impacts caused by the construction activities and the compliance with the requirements of EIA, EMP, with national and international standards and conditions of contracts.
49. **Biodiversity** – The Project Management and Construction Supervision's international environmental expert prepared Biodiversity Monitoring and Evaluation Program (BEMP) and monitors the implementation of Biodiversity Action Plan (BAP) along with the Contractors' Ecological Clerk of Works (ECoW).
50. A standalone document "Biodiversity Action Plan (BAP)" for those specific species or habitats of greater note has been prepared. The BAP will help ensure no net loss, or if required, net gain of natural habitats and support notable species of conservation importance. The responsibility for the implementation of the BAP is both with the PMSCS and Contractor who will outsource specific components of the BAP to external organizations, such as conservation societies, NGOs or universities.
51. The personnel hired as Ecological Clerk of Works (ECoWs) for Lot 1 and Lot 2 are actively involved in the project and continue to work on it. The ECoWs have conducted a pre-construction biodiversity survey for the entire project, as well as for each site before the commencement of any construction activities. During the reporting period, a pre-construction biodiversity survey was also conducted to assess the potential construction impacts on the lake located at the plateau for the excavation of the material on the request of the private landowner to use for tunnel 1. Additionally, the contractor for Lot 2 carried out fish monitoring during the summer season in August

- 2024 and the autumn season in November 2024 for the Khadistskali River and Aragvi River, hiring an independent ichthyologist (a sample report is included as Annex 10).
52. For Lot 2, three photo traps have been installed at various locations within the project area, and the camera locations are being changed periodically. For Lot 1, three camera traps were installed in Kobi and two in the Tskere site. The ECoWs from each contractor are monitoring species movement within the Project Area of Influence (for further details, see Section 4.1.1 on Biodiversity Monitoring).
 53. **Cultural Heritage** - Cultural Heritage (CH) Monitors of PMCSC and Contractors are responsible for ensuring the protection of cultural heritage in the Project Area of Influence (Aol) in accordance with the Georgian Law on Cultural Heritage and coordinating with the Ministry of Culture and Monument Protection of Georgia.
 54. The cultural heritage specialists of PMCSC maintain an online map dedicated to CH sites. This innovative tool, developed by the PMCSC CH Specialists, serves as a dynamic and accessible resource for project stakeholders, construction teams, and the IFIs. The online map includes all cultural heritage assets identified by the National Agency for Cultural Heritage Preservation (NACHP) during their thorough survey. This encompasses archaeological sites, historical structures, cultural landscapes, and other significant elements. One of the primary advantages of this online map is its ability to provide real-time updates. Cultural Heritage Specialists can input data about chance finds as they occur, ensuring that the map remains current and accurate. The map also serves as a vital tool for risk mitigation. It highlights construction zones in relation to known cultural heritage sites, enabling construction teams to take proactive measures to avoid or minimize potential impacts.
 55. Detailed information about cultural heritage and archaeological activities carried out in the reporting period is presented in section 4.1.2 Cultural Heritage Monitoring.
 56. **Occupational and Community Health and Safety** – Health and Safety Specialists of PMCSC and Contractors are responsible for ensuring an effective health and safety management system is maintained during implementation of the Project. Detailed information about HS related activities carried out in the reporting period is presented in section 4.1.3 Health and Safety.
 57. **Non-compliance** - identification and reporting of non-compliance at site, finding solutions to improve non-compliance issues with PMSCS and the Contractors relevant personnel and setting deadlines for corrective actions. PMSCS is following up on corrective actions and deadlines. The non-compliances are recorded, and in case of corrective actions delay, the Contractor is informed in written by issuing the letter and Non-Compliance Report (NCR) to take corrective actions. Contractor is required to take the corrective action during the time period additionally mentioned in the NCR. PMCSC follow up for the corrective action and inspect the site. If during the inspection the Contractor fails to implement properly the corrective actions, another NCR will be issued. Before issuing NCR, the issues are being highlighted through HSE weekly reports, with official letters, verbally and based on these CC is providing Corrective Action Reports to close these issues and if not resolved, PMCSC is issuing the NCR to CC.
 58. During the reporting period, PMCSC issued several letters to the contractors for Lot 1 and Lot 2, requesting corrections for the observed non-compliance issues and urging a quicker response from the contractors. The contractors are taking corrective action to address these non-compliance issues; however, their responses to PMCSC's letters

have been slow. Details of the important correspondence can be found in Table 8D. No non-compliance reports (NCRs) related to environmental safeguards were issued during the reporting period.

59. **Reporting** - The PMCSC's international and national environmental specialists prepare the monthly and semi-annual reports that are submitted to the RD. These reports depict the ongoing construction activities, environmental safeguard issues and the status of compliance. Contractors are submitting the monthly and quarterly Environmental Monitoring Reports as set in the EIA.
60. **Site Visits** - Environmental specialists of the contractor and the PMCSC conduct weekly joint site visits to monitor the compliance with EMP. Besides that, PMCSC conducts daily inspections of active and passive sites. Topsoil striping, waste management at camps and construction sites, and wastewater proper management is supervised by PMCSC on a daily basis. In addition to that, the Contractor's and PMCSC's H&S specialists monitor the compliance of the Project activities with the health and safety requirements and procedures through daily worksite visits and inspections. These visits include daily inspection of all tunnels works, bridge construction activities, scaffolding systems, elevated platforms and behavior of workforce. During worksite inspections, attention is always paid to community health and safety to ensure proactive identification of the problems. Worksite fencing and signages are permanently checked and if necessary, replaced/fixed to alert locals about hazards associated with the construction process and prevent unauthorized access to worksites. Health, Safety and Environmental (HSE) report is being prepared by PMCSC specialists regularly. CH experts of PMCSC and the Contractors are available at sites for visual monitoring of the CH Sites. They are responsible for continuous monitoring of earth moving works, especially, close to the CH Sites and daily monitoring of preservation works of CH Site.
61. Activities carried out by PMCSC during the reporting period (international and national, respectively) are provided in Table 7A below.

Table 7A: Environmental Safeguards Activities Carried out During Reporting Period (July - December 2024)

Environmental Safeguard Activities	
The International Environmental Expert (Kashif Bashir) of PMCSC	
-	Field activities: Frequent site visits were carried out during the reporting period from July-December 2024 by the environmental experts of the PMCSC at the Lot 1 active construction site at TUN5 North Portal and Emergency Gallery (EG) and South Portal at Tskere, spoil disposal areas and temporary facilities, and Lot 2 worksites, temporary facilities and access roads and Gudauri Access road to monitor the compliance of mitigation measures suggested in the EMP. The methods adopted for inspection include visual inspection, interviews with workers and the community, and checking the accident records, permits obtained, and daily and weekly quality control reports.
-	From August to October 2024, several visits were carried out to monitor the drainage issues at Lot 1 SDA 3 in Kobi, tunnel water discharge from the TUN5 specifically in Tskere, drainage issues for the batching plants in Kobi and Tskere, hazardous material storage area in crushing plant related to oil spill and hazardous material storage, slope stability issues at Tskere, and access road 4 for Lot 2, drainage issues for batching plants on plateau, flooding of private land and fencing of batching plant 2 for Lot 2, and housekeeping and drainage issues at campsite 1,2 &3 for Lot 2.

- During the month of September 2024, joined the ADB country resident mission for the site visits and gave a briefing about the project environment safeguard.
- Conducted several meetings with contractors for Lot 1 and Lot 2 during September 2024 to eliminate the non-compliances at the site and improve the housekeeping at Lot 1 and Lot 2. Specifically, to remove the hazardous waste behind the segment plant in Kobi. Supervised the cleaning of the sedimentation ponds to treat the tunnel water in Kobi, and Tskere as the turbidity levels increased due to washing of the TBM tunnel.
- During December 2024 prepared the Semi-annual report covering the period of July - December 2024 based on the monitoring, letters issued during the reporting period, corrective actions taken by the contractor and further recommendations made by PMCSC for the upcoming quarters. Additionally, involved to find a suitable place for spoil disposal in Kvesheti.
- Conducted training for Contractors' Management on environmental safeguard requirements at pre-construction, construction, and decommissioning stages.
- Monitor the corrective actions are implemented by the deadline. Followed up with the CC for the corrective action during the weekly progress meeting and by writing letters for compliance.
- Coordinated with RD and the lenders, and attended meetings with clients, lenders, and Contractors and prepared the minutes of meetings.

The National Environmental Expert (Nikoloz Sofadze) and Field Officers (Simon Chachanidze, Giorgi Lagidze) of PMCSC (UBM)

- Field Activities: Prepared the Checklists for monitoring compliance during site visits and pre-construction requirements to be fulfilled before starting the new construction activity by Contractor for Lot 2 at Bridge 3, Bridge 4, Bridge 5 & Bridge 6, GARP and signed by PMCSC. During the reporting period from July - December 2024 monitored the campsites and active construction sites on a daily basis and with CC environmental officer on weekly basis, gave instruction for the non-compliances observed in the field, uploaded the pictures on WhatsApp group, issued official letters along with instructions. Discussed sensitive issues at HSE meetings. Monitored the instrumental monitoring is being carried out by the certified laboratory for air, noise, ground water, surface water and vibration on a monthly basis.
- Monthly EMR: Coordinated with International Expert for preparation of monthly EMR and reviewed the CCs EMR and Environmental Instrumental Monitoring Reports.
- Monitored the corrective actions are implemented, followed up with the CC in weekly progress meetings to take corrective actions and replied to the letters from RD and CCs. Reviewed and approved updated plans submitted by the Contractors.
- Provided guidance to the Contractors and coordinated with the Lenders and RD.
- Coordinated site inspections with the field officers: Simon Chachanidze, responsible for site inspection at Lot 1 and Giorgi Lagidze, responsible for site inspection at Lot 2. They were trained by PMCSC environment specialist to prepare the weekly monitoring reports.

CH Expert Duties Performed: Nikoloz Tskvitinidze and Amiran Nadirashvili of PMCSC (UBM)

- Attended all earth-moving activities to ensure protection and proper treatment of the chance finds.
- Daily monitoring of CH Sites during the monitoring period from July – December 2024, including monitoring of CH Sites under conservation such as CH Site #10, on Didveli Plateau and relocation of CH#26.
- Ensured the corrective actions were implemented, followed up with the CC in weekly progress meetings to take corrective actions, and replied to the letters from RD and CCs. Provided advice to the Project Engineers and other staff to fulfil the requirements of the SEMP and CHMP;
- Preservation of known and unknown (archaeological) cultural heritage sites, the presence and nature of which could not be established (or established with sufficient accuracy) in advance of development.
- Ensured the Contractor follows his Cultural Heritage Management Plan and follows the Chance Find Procedure; remained present during site clearance (i.e. clearing, Topsoil stripping, grading, etc.) and

earthworks to assist with the initial evaluation of archaeological chance finds, helping to distinguish archaeological finds from non-archaeological anomalies.

- Visual inspection of above ground cultural heritage that could be affected by vibration impacts as outlined in the EIA.
- Prepared monthly EMR and reviewed the CCs EMR and vibration monitoring reports.
- Permanently monitored vibration on certain CH Sites with a vibration monitoring device
- Managed GIS online map/database system prepared within the project.

Activities Performed by H&S Team of PMCSC (UBM) & RD

- Conducted regular worksite inspections during the reporting period. These inspections were carried out separately by the Contractor and the PMCSC and as well as together. The inspections were documented on the inspection check list and signed by all parties.
- Attended the ADB mission in September and gave a briefing on HSE situation at the site,
- Supervised arrangement of a medical facility at worksite which were equipped with necessary medical equipment.
- Provided trainings related to working at height, welding works, safety training for drivers, safety trainings for tunnel lining works, organized and attended weekly meetings, and conducted Toolbox Talks.
- Ensured that First Aid Boxes are present at all the active construction sites, workers are provided with the PPEs according to the nature of the job.
- Provided several trainings on H&S requirements for both Contractors.
- Participated in permanent inspection of all scaffolding systems at Lot 2 section. Certified scaffolder specialist is responsible for inspection of scaffoldings and application of Scaff-tags. Also, the scaffolding erection process is carried out under the supervision of certified scaffolder.
- Conducted regular inspection of atmospheric hazards in tunnels at both Lots. The PMCSC takes a gas test at different, predetermined locations along the tunnels.

3.2 Site Audits and Inspections

62. Frequent site visits were carried out by the safeguard team of the PMCSC, RD and Lender's representatives of the following sites:

- Construction Campsites of the Contractors
- Segment Plant and waste yard behind segment plant
- Access roads
- Spoil Disposal Areas
- Topsoil storage areas
- Tunnels
- TBM
- Bridges
- Under Passes
- Culverts
- Batching Plants
- Workshops
- Explosive Storage Areas
- Crushing Plant
- Quarries
- Road Sections

63. The method adopted for inspection by PMCSC and RD include visual inspection (helping with relevant devices, JPS, drone and etc.), interview with workers and community, checking Contractors' documentation, conducting daily and weekly progress meeting with the Contractors' safeguard team as well as ad-hoc meetings to discuss the sensitive environmental safeguard issues with Contractors.

64. On 26/08/24 National Environment Supervision Company carried out site inspection to inspect soil dumping from bridge 3.
65. In September 2024, an environmental safeguard review mission was conducted by the ADB and EBRD, which included specialists and consultants in safeguards. Representatives from ADB, RD, PMCSC, and the Contractors participated in a one-day field visit. The findings from the field observations were discussed, and actions were agreed upon with each Contractor at their respective campsites. For details refer to section 7.3 ADB Mission Corrective Action Plan.
66. Based on the safeguard policy requirements of ADB, to conduct an external independent monitoring and assessment of the projects' environmental compliance and reporting, the qualified External Environmental Monitoring Firm was engaged for all Environment Category A Road projects in Georgia, including KGRP. The objectives of external environmental monitoring are to provide an independent review and assessment of (i) the achievements of Georgian Transport Sector projects in environmental safeguards objectives and principles, (ii) the effectiveness, impact and sustainability of taken measures to minimize, mitigate and/or compensate environmental impacts, (iii) the necessity of further mitigation measures if any, (iv) to identify strategic lessons for future policy formulation and planning, and (v) capacity building in environmental safeguards.
67. The external environmental monitoring firm (EEMF) "Ecospectri" Ltd conducted the site inspection at KGRP on 20.06.24. The representatives of the EEMF "Ecospectri" Ltd on behalf of RD conducted the site inspection to verify compliance with the Lot 1 and Lot 2 Contractors Environmental Management Plans (EMPs) and progress toward the expected outcomes. The EEMF documented the monitoring results, with identified necessary corrective actions, and reflected them in a corrective action plan. The report concluded the following in respect of ADB's policy:
68. As of June 2024, the project is being implemented in accordance with conditions of the ADB loan agreement, specifically with regards to the following:
 - Inclusion of the environmental clauses, EMP and EMoP in the conditions of contract.
 - Securing of EIA approval and relevant permits and licenses required for implementation.
 - Issuance of written notices and reminders by the RD-PIU to the contractor related to the management of environmental risks and impacts and implementation of corrective action plans.
 - Safeguards monitoring and regular submission of the SAEMRs which are disclosed at the ADB and RD websites.
 - Conduct of meetings with communities to inform them about the project implementation and the GRM.

Lot 1

69. For Lot 1, report appreciate the management of good housekeeping practices at the construction site and in camps, cleaning of the concrete washout pits, cleaning of TBM conveyer belt, cleaning of sedimentation ponds to treat tunnel water, installation of STP and repair of effluent pipes and maintenance of septic tanks, cleaning of the

batching plants, development and maintenance of car washing facility in Kobi, regular dust suppression and water sprinkling on E-117, fencing of the CH sites, installation of warning signs, and necessary arrangements made by the contractor to avoid flooding in SDA 3.

70. On the other hand, report emphasize, remove the used tires, used oil, used plastic containers and scrap from the site, regular cleaning of sedimentation ponds in Tskere, illumination and traffic signs at E-117, needs to implement storage, moving, receipt and dispensing of high-pressure cylinders in accordance with the established operating rules at camp #2 in Tskere, protection of the electric cables in Tskere, tier washing facilities at the batching plants, proper handling of hazardous material to avoid from precipitation, arrangement of hazardous material storage area, removal of construction waste from the site and improvement of drainage conditions at the crushing plant. Most of these issues are already resolved and few of them are in progress. The contractor for Lot-1 has been informed by Email to rectify all the remaining issues and the status of the compliance is presented in the Table 7 B.

Lot 2

71. For Lot 2, report appreciate the cleaning of the camps and good housekeeping practices at the site, obtaining of the tree felling permits for GARP from forest agency, approval of topsoil management plans, maintaining of STPs and repair works, washout pits were cleaned out and maintained by the contractor at BP #1 and BP #2 of Lot 2, chemical container was removed and area cleaned out at Tunnel #1 exit and started slope protection works. For dust suppression the contractor mobilized 3 water trucks during dry and windy season, namely 1 for Khada Valley, 1 for plateau, and one for access road 2, training was provided for workers stripping the topsoil at Gudauri Access road, contractor improved the improper storage of topsoil in the RoW and drainage system in Khada Velley, the contractor cleaned whole territory at camp 3 including drains, toilets, floor and collection of the waste, concrete blocks and waste on the private land near the camp site #2 were removed and territory cleaned by the contractor, vibration monitoring near CH 28, Contractor mobilized CH Monitor to ensure full-time presence of CH Monitor on site during earthmoving activities for Gudauri Access Road project, conducted cultural training to workers assigned to Gudauri Access Road project, used machines with the toothless bucket at the area close to Sameba Complex - potential Physical Cultural Resource (PCR) site; and mobilized adequate number of vibration monitoring devices to ensure continuous vibration monitoring at the required CH Sites during construction works at Gudauri Access Road, contractor fenced off the CH Site #27 in the village Benian-Begoni, and the Contractor fenced off properly the mud pits located at the worksite in the village Benian-Begoni to prevent any accidental fall of a human or animal into them.
72. On the other hand, the report recommend for Lot 2 to remove the used tiers and construction waste from the parking area, wastewater monitoring at camp 2, upgrading of the fence at certain locations of the BP #2, improper management of timber resources at Gudauri AR, health and safety arrangements at workshops, at BP 1 entrance and exit points, bridge 2, unsafe material storage and staking in parking area, installation of Jersey barriers and reflective lights at access road 1 entrance to camp 1, housekeeping at bridge 2, tire washing facility at BP 2 required, drainage improvements, hazardous material to be stored in secondary containments, repair of the damaged pipe carrying tunnel water in to the river, and removal of construction

waste. The contractor for Lot-2 has been informed by Email to rectify all the remaining issues and the summary of the status of the compliance is presented in Table 7B.

Table 7 B: Implimentation Status of the Oservation in External Monitoring Report



Issue	Status
Lot-1	
Rremove the used tires, used oil, used plastic containers and scrap from the site	In progress. The contractor has arranged all the waste behind segment plant and covered it. However, it would be handed over to the licensed contractor after winter.
Regular cleaning of sedimentation ponds in Tskere,	On going- Contractor cleaning the ponds on regular basis. However, need to be maintained and turbidity is still a challenge due to unavailability of space for additional ponds.
Illumination and traffic signs at E-117,	In progress.
Needs to implement storage, moving, receipt and dispensing of high-pressure cylinders in accordance with the established operating rules at camp #2 in Tskere,	In progress. The contractor has built the cylinder storage area at Batching plant in Tskere; however, enforcement of the safety rules for safe handling to be followed by the workforce all the time.
Protection of the electric cables in Tskere,	Ongoing. The contractor has been informed in this regard.
Tier washing facilities at the batching plants,	Ongoing. It is available in Kobi. The Contractor will be asked to build one in Tskere.
Proper handling of hazardous material to avoid from precipitation, arrangement of hazardous material storage area,	Closed. The Contractor has built the new hazardous waste storage area in Kobi and managing it near the concrete factory.
Removal of construction waste from the site	Pending. The contractor promised to remove all the waste after the winter.
Improvement of drainage conditions at the crushing plant. Most of these issues are already	Closed. The contractor has added two more ponds at crushing plant and cleaning them on regular basis.
Lot-2	



Tire washing facility at BP 2 required, drainage improvements, hazardous material to be stored in secondary containments.	Open. The contractor can start work after the winter.
Wastewater monitoring at camp 2,	Ongoing. Will be carried out in the next reporting period.
Upgrading of the fence at certain locations of the BP #2	Closed. Fence completed in August 2024.
Improper management of timber resources at Gudauri AR	Closed. Woodlogs have been handed over to NFA in October 2024.
Health and safety arrangements at workshops, at BP 1 entrance and exit points, bridge 2	Ongoing. Contractor improved the signangae, lighting and flag man on duty.
Unsafe material storage and staking in parking area, Remove the used tiers and construction waste from the parking area.	Closed. CC handedover 29 Cubic meters of waste including used tyres to medical Technology in Novmer 2024.
Installation of Jersey barriers and reflective lights at access road and entrance to camp 1.	Closed. Safety barriers installed at the required places.
Housekeeping at bridge 2.	Closed. CC cleaned out the whole area
Repair of the damaged pipe carrying tunnel water in to the river, and removal of construction waste.	Pending. Pipe need to be repaired.

73. ADB Environmental and Social Monitor (ESM) conducts regular field visits, which include inspection of Contractors worksites and facilities, interviews with project personnel (RD, PMCSC, Contractors) and discussion of environmental safeguard issues, including findings from the field observations, with the relevant staff of RD, PMCSC and Contractors. The field observations with the agreed corrective actions and timeline are included in E&S Action Tracker as an annex to the Weekly Environmental and Social Monitoring Report prepared by ADB ESM. RD forwards the mentioned report to PMCSC for their follow up on a weekly basis.
74. Table 8A displays the non-conformances with the EMP and SEMP identified by PMCSC during the reporting period, while Table 8C outlines pending non-conformances from the previous reporting period (January- June 2024), including the necessary corrective actions and their current status. Table 8B presents a summary of the issues identified by the ADB Social and Environment Monitor during the weekly field visits throughout the reporting period. Some issues identified by PMCSC and ADB ESM refer to the same issue of concern. The non-conformance issues are prioritized as Low, Medium and High as follows: (i) High risk – environmental, health and safety and CH related issues which require immediate action, risk to potential non-compliance with loan covenants, lack of readiness by Contractors to implement the agreed




corrective actions or low progress which may result in potential safeguards non-compliance, systematic issues observed on specific safeguards areas. (ii) Medium risk – environmental, health and safety and CH related concerns requiring attention, moderate potential for non-compliance with loan covenants, some readiness by Contractors to implement corrective actions, gradual progress towards compliance with safeguards regulations, and occasional systematic issues noted in specific safeguards areas. (iii) Low risk – minimal environmental, health and safety and CH related challenges, low potential for non-compliance with loan covenants, adequate readiness by Contractors to implement corrective measures, steady progress towards compliance with safeguards regulations, and rare systematic issues observed in specific safeguards areas.


Table 8A: Non-Conformances Identified by PMCSC (July- December 2024)


#	Locations	Date	Issue	Priority	Mitigation	Target Date	Action Taken	Status
Lot 1 Responsibility								
1	Kobi	July 2024	Poor housekeeping at Kobi Camp site, waste overflowing from the containers.	Medium	CC to clean out the area and call the municipality truck to take the waste.	July 2024	CC cleaned out the area in July 2024 	Closed July 2024
2	Khadistskali River Tskere	July 2024	River bed cleaning required to collect the rocks and sediments	Medium	CC to clean out the river bed to control turbidity in the river.	July 2024	CC cleaned out the river bed near Tskere bridge on the river. 	Closed July 2024
3	Kobi	July 2024	Dust on Access Road and E-117	Low	CC to sprinkle water on regular basis on access	July 2024	CC sprinkling water on regular basis in Kobi	Closed July 2024

					road from the tunnel, SDA3, and E-117			
4	Kobi Batching Plant	July 2024	Sedimentations Pit need to be cleaned out at BP Kobi	Low	CC to clean out sedimentation ponds	July 2024	<p>Sedimentation Pits and drainage channel cleaned out completely.</p> 	Closed July 2024



								
5	Kobi Crushing Plant	July 2024	Sedimentations Pit need to be cleaned out at crusher plant Kobi	Low	CC to clean out sedimentation ponds	July2024	<p>Sedimentation Pits and drainage channel cleaned out completely.</p>  	Closed July 2024



								
7	SDA 3, Kobi	August 2024	Plastic container thrown in SDA 3 	Low	CC to remove the container from the SDA 3	August 2024	CC removed the container from SDA 3. 	Closed August 2024




8	Kobi	August 2024	Dust on Access Road and E-117	Low	CC to sprinkle water on regular basis on access road from the tunnel, SDA3, and E-117	August 2024	<p>CC sprinkling water on regular basis in Kobi and need to be maintained all the time.</p> 	Closed August 2024
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<p>9</p>	<p>Kobi and Tskere worksites</p>	<p>August 2024</p>	<p>Signage required at project facilities.</p>	<p>Low</p>	<p>Contractor to provide the signage at project facilities</p>	<p>Contractor provided the signage for hazardous waste storage area, and sedimentation ponds.</p> 	<p>Closed August 2024</p>
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10	Tskere	August 2024	Fencing of the topsoil	Low	Topsoil fenced and posted signs	August 2024	<p>Topsoil fenced and sign posted</p> 	Closed August 2024




11	Tskere	August 2024	Scrap material spread at the site	Low	Collect the spread material and place in scrap yard	August 2024	Scrap material placed in container and signs installed.	Closed August 2024
								
12	Kobi Behind Segment Plant	August 2024	Used containers placed in an inappropriate manner	Low	Placed the container in upright position with closed lids and cover it with tarpaulin until delivery to third party.	August 2024	Contractor arranged the plastic containers and covered it with plastic sheet to avoid water entry	Closed August 2024
								
13	Kobi Behind Segment Plant	August 2024	Used tires need to be covered to avoid stagnant water in the tires	Low	CC to cover the used tires or handover to the third party	August 2024	Used Tyres covered behind segment plant to restrict the water entry	Closed August 2024





								
15	Tskere	August 2024	Sedimentations Pit need to be cleaned out.	Low	CC to clean out sedimentation ponds	August 2024	Sedimentation pits cleaned out completely.	Closed August 2024
								




								
16	Kobi Crushing Plant	August 2024	Dirty water coming from the crusher's sedimentation ponds 	Medium	CC to stop the crusher water flowing in to the river	August 2024	Contractor stopped discharging water from crushing plant sedimentation ponds and flowing water quality improved. 	Closed August 2024
18	Tskere	August 2024	Scrap material spread around the TBM	Low	CC to clean out the area	August 2024	CC cleaned out the area and collected the scrap material.	Closed September 2024


								
19	Campsite Kobi	August 2024	Waste containers required as the old one damaged	Low	CC to add the waste bins at the campsite	August 2024	CC added the waste bins and collecting the waste twice per day. 	Closed August 2024



								
20	Kobi	August 2024	Remove the damaged waste containers from the site. 	Medium	CC to clean out the area	August 2024 - 2024	Contractor removed the damaged containers from Kobi camp.	Closed September 2024



								
21	Kobi Sedimentation ponds	August 2024	Slush near sedimentation ponds and batching plant 	Low	CC to clean out the area	August 2024	Contractor cleaned out the area near sedimentation ponds and vehicle washing facility.	Closed September 2024
23	Campsite Kobi	September 2024	Dirty water flowing in to the river Tergi from crushing plant.	Low	CC to remove the pipe from the crushing plant	September 2024	CC removed the Pipe discharging the water into the River and cleaned the sedimentation ponds. 	Closed Sept 2024



					discharging in to the river.	   	
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<p>24</p>	<p>KobiBehind Segment Plant</p>	<p>September 2024</p>	<p>Placement of container in appropriate manner.</p>	<p>Low</p>	<p>Contractor for Lot-1 to place the containers in upright position with closed lids and cover it with non-permeable sheets.</p>	<p>September 2024</p>	<p>Contractor arranged the containers in appropriate manner and covered it.</p> 	<p>Closed September 2024</p>
<p>25</p>	<p>Kobi Behind Segment Plant</p>	<p>September 2024</p>	<p>Machine not in use need to be covered.</p> 	<p>Low</p>	<p>Contractor to cover the machine with tarpaulin.</p>	<p>September 2024</p>	<p>Machine was covered by tarpaulin by UBM</p> 	<p>Closed Sept 2024</p>



26	Lot-1 Behind segment Plant	September 2024	Slush/ sludge in the batching plant area in Kobi	Medium	Contractor to washout the area of batching plant	September 2024	<p>Contractor washed out the area of batching plant in the supervision of UBM safeguard staff.</p> 	Closed September 2024
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27	Kobi Campsite Engineer Residences	September 2024	Maintenance of water pipes for heating.	Low	Contractor to replace the sheet used for covering of heating pipes.	September 2024	Contractor removed the old sheets and wrapped the new sheet.	Closed September 2024
								

								
28	Kobi site	September 2024	Requirement of Hazardous waste material storage area	Medium	Contractor to provide hazardous material storage area in Kobi	September 2024	Contractor provided the hazardous material storage area in Kobi in the warehouse used for sub structures. 	Closed September 2024.
29	Tunnel #5 South Portal	September 2024	Slope failure near Cemetery in Tskere Village	High	Contractor to stabilize the slope	September 2024	Contractor stabilized the slope to avoid further failure of slopes and build the fence along the cemetery	Closed September 2024



								
30	Kobi	September 2024	Dust along the E-117 Highway	Low	Regular water of sprinkling by the water truck	September 2024	Contractor moved the water truck and sprinkling water on daily basis. Need to maintain it.	Closed September 2024



								
31	Sedimentation Ponds Tskere	September 2024	Cleaning of the sedimentation ponds	Medium	Regular cleaning of the sedimentation ponds	September 2024	CC cleaned out the sedimentation ponds. Fenced the ponds and posted new signs.	Closed September
								
32	Kobi Crushing Plant	October 2024	Cleaning of the Crushing Plant sedimentation ponds	Medium	CC to clean out the sedimentation ponds of the crushing pants	October 2024	CC cleaned out the crushing Plant sediementnation ponds	Closed October 2024
								



								
33	Batching plant Kobi	October 2024	Cleaning of the concrete washout facility.	Medium	Regular cleaning of the washout facility for the batching plant.	October 2024	<p>CC cleaned out the Concrete washout facility and batching plant area.</p> 	Closed October 2024

								
34	Sedimentation Ponds Kobi	October 2024	Cleaning of the sedimentation ponds	Medium	Regular cleaning of the sedimentation ponds	October 2024	CC cleaned out the sedimentation ponds	Closed October 2024
								
								


								
35	Sedimentation Ponds Tskere	October 2024	Cleaning of the sedimentation ponds	Medium	Regular cleaning of the sedimentation ponds	October 2024	CC cleaned out the sedimentation ponds 	Closed October 2024
36	Kobi Crushing Plant	November 2024	Cleaning of the Crushing Plant sedimentation ponds	Medium	CC to clean out the sedimentation ponds of the crushing plants	November 2024	CC cleaned out the crushing Plant sediementnation ponds	Closed November 2024


									
									


								
37	Batching Plant Kobi	November 2024	Cleaning of the batching plant area	Medium	Regular cleaning of the sedimentation pits.	November 2024	CC cleaned out the area. 	Closed November 2024
38	Sedimentation Ponds Kobi	November 2024	Cleaning of the sedimentation ponds	Medium	Regular cleaning of the	November 2024	CC cleaned out the sedimentation ponds	Closed November 2024


					sedimentation ponds		 	
39	Kobi Camp	November 2024	Collection of domestic waste	Medium	Waste must be delivered to municipality	November 2024	CC for Lot-1 delivered the waste to municipality	Closed November 2024



								
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40	Kobi Campsite	November 2024	Covering of the Heating Pipe	Medium	Heating Pipes need to be covered with new sheet	November 2024	Pipes covered with the new sheet 	Closed November 2024
41	Kobi Campsite	December 2024	Waste overflowing from the containers in the camp.	Low	Collect the waste from the waste bins and throw in the municipality containers.	December 2024	Area cleaned out and waste collected in the wastee bins.	Closed December 2024
41	Tskere Topsoil Storage Area.	December 2024	Contractor stored the subsoil on the	Medium	Collect the waste from the waste bins and	December 2024	Contractor removed the subsoil from the topsoil and but due to snow it is not possible to inspect that all the subsoil	In progress



			heap of topsoil. Potential chances of mixing subsoil with topsoil and damaging the topsoil.		throw in the municipality containers.		has been removed. After snow contractor will remove all the subsoil from topsoil.	
								
42	Kobi Behind Segment Plant	December	Contractor to remove all the used tyres, waste containers, scrap material from the scrap yard.	Medium	Find and call the licensed contractor to handover the waste.	March 2025	Contractor covered the used tyres and containers with tarpuline for temporary storage. However, after winter will call the licensed contractor to collect all the waste.	In progress.
43	SDA 3 Kobi	December 2024	Marking of the boundaries of SDA to control spoil is not being dumped away from the	Medium	Contractor to check the survey control points.	December 2024	Contractor with the UBM survey team checked the control points and concluded that all the spoil dumped is within the boundary of the allocated area of SDA 3. Contractor will start reshaping SDA 3 after winter.	Closed

			boundaries of SDA 3.					
44	TBM Tunnel Kobi	November/December 20024	Private vehicles trying to approach the tunnel during the road closure in winter.	High	Contractor to provide security arrangement to restrict the public cars entrance in the tunnel during road closures	Immediately	Contractor provided security arrangements that no private vehicle to be allowed to enter in the TBM tunnel.	Closed.
Lot 2 Responsibility								
1	Camp 2	July 2024	Kitchen water flowing towards batching plant	High	Clean the area and connect the pipe to STP behind camp 2	July 2024	Cc cleaned out the area and connected the pipe to STP 	Closed July 2024



								
2	Batching Plant 2	July 2024	Treatment of Concrete water in the concrete washout pit	Low	Contractor to change the grass filter in the sedimentation pit.	July 2024	<p>Contractor changed the grass filter in the sedimentation pit to enhance the treatment process.</p> 	Closed July 2024



								
3	Camp 2	July 2024	Effluent Pipe to be repaired at STP Camp 2	Medium	Contractor to repair the pipe at STP 2	July 2024	Contractor repaired the pipe	Closed July 2024
								




								
4	Camp 3	July 2024	Sewage to be collected from the septic tank	Medium	Contractor to collect the sewage sludge by calling the licensed company.	July 2024	CC collecting the sewage by calling cesspool truck.	Closed July 2024
								
5	Camp 2 & Camp 3	July 2024	Poor housekeeping at the site	Medium	Contract to clean out all the areas at Camp 2 and Camp 3	July 2024	Contractor cleaned out the campsites.	Closed July 2024



								
6	Near Camp 3	July 2024	Warning signs are missing for	Medium	CC to install the signs showing	July 2024	Signs installed the signage for hazardous material storage area	Closed July 2024




			the hazardous material storage areas.		the Hazardous Material storage Area.			
7	Camp 1 and Camp 2	July 2024	Waste containers full of waste	Medium	Contractor to call the municipality truck to collect the waste	July 2024	Waste collected by municipality truck.	Closed




							 	
8	Access roads	July 2024	Dust on access road to Camp 2	Medium	Contractor to sprinkle water on access roads.	July 2024	Contractor started water sprinkling on access roads and need to maintain it.	Closed July 2024




								
9	Camp 2	July 2024	Drainage channel choked behind the camp	Medium	Contractor to clean out the channel	July 2024	<p>Contractor cleaned out the channel</p> 	Closed July 2024







								
10	Batching Plant 2	July 2024	Storm water mngement at BP 2 	Medium	Contractor to connect the water pipe to connect the sediment ponds to concrete washout pit to manage storm water.	July 2024	Contractor arranged and connected the pipe from sediment pond to concrete washout pit. 	Closed July 2024
11	Tunnel 1 Exit	July 2024	Plastic waste at the tunnel 1 exit	Medium	Contractor to collect the	July 2024	Contractor collected the plastic waste covered it and posted the sign.	Closed July 2024



					plastic waste and cover it before handling to the Licensed Contractor.			
12	Khadistskali River and Aragvi River	August 2024	Fish monitoring in Khada River and Aragvi River.	High	Contractor to carry out fish monitoring in Khada River and Aragvi River for summer period.	August 2024	Contractor carried out fish monitoring in Khadistskali river and Aragvi river by hiring an Ichthyologist.	Closed August 2024
13	Bridge 2	August 2024	Poor housekeeping at Bridge 2	Medium	Contractor to clean the area at bridge 2	August 2024	Contractor cleaned out the whole area at bridge 2	Closed September 2024

							 	
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14	Didveli Plateau	August 2024	<p>Damaged water truck at plateau</p> 	Low	Repair the water truck and start watering	August 2024	<p>Contractor repaired the truck and started watering</p> 	Closed August 2024



15	BP 3 and BP 2	August 2024	Cleaning of concrete washout pit 	Low	Clean out the concrete washout pits for the effective treatment of concrete water.	August 2024	Concrete washout pit cleaned out 	Closed August 2024
16	Batching Plant 2	August 2024	Fencing of BP 2 to restrict drainage water entering in the private land.	Medium	CC to provide the fence for BP 2 in such a way that the water should not be flowing in to private land.	August 2024	CC build the wall at the bottom to restrict water flowing towards private land and fenced the BP 2. 	Closed August 2024
17	Tunnel 1 Exit	August 2024	Oil spill near Tunnel 1 exit	Low	CC to clean out the spill and treat it as	August 2024	Oil spill cleaned out and contaminated soil collected.	Closed August 2024



					hazardous material.			
18	Tunnel 1 Entrance.	August 2024	Oil spill near Tunnel 1 entrance 	Low	CC to clean out the spill and treat it as hazardous material	August 2024	Oil spill cleaned out 	Closed August 2024
19	Camp 3 STP 3	August 2024	Broken Effluent pipe of STP 3 	Low	Repair the effluent pipe of STP 3	August	Contractor repaired the Pipe at Camp 3 STP. 	Closed September 2024



20	Camp 3 and BP 2	September 2024	Cleaning of concrete washout pit 	Low	Clean out the concrete washout pit	August 2024	Concrete washout pits cleaned out 	Closed September 2024
21	Near Camp 2	September 2024	Oil spill at various places. Oil leaked from broken excavator	Medium	CC to clean out the spill and treat it as hazardous material	October 2024	Oil spill cleaned out from the various places and contaminated soil stored in a hazardous material storage area.	Closed September 2024.





									
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22	Construction site Plateau	September 2024	Used tires stored in the private land	Medium	CC to remove the tires from the private land and store in a designated land.	September 2024	CC collected the used tires from private land and stored these in a designated area at the tunnel 1 exit.	Closed October 2024
								

								
23	Above the Tunnel 1 Exit	September 2024	Poor housekeeping waste thrown on the ground near Electrical room.	Low	CC to clean the area above tunnel 1 exit.	September 2024	CC cleaned out the area and collected the waste.	Closed September 2024
								

								
24	Gudaure Access Road	September 2024	Wooden branches leftover at the GARP from tree cuttings	Low	CC to collect all the leftover wooden branches from the GARP and store it in a designated area near Parking Lot to handover to NFA.	September 2024	CC removed all the wooden branches and stored it in a designated area.	Closed October 2024
								

								
25	Bridge 2	September 2024	Poor housekeeping under the bridge 2 	Low	CC to clean out the area under the Bridge 2	September 2024	CC cleaned out under the bridge 2 	Closed September 2024
26	Didveli Plateau	September 2024	Waste spread on the private land	Low	CC to clean out the area	September 2024	Contractor cleaned out the area	Closed September 2024

								
27	Didveli Plateau	September 2024	Oil filters on the ground 	Low	CC to collect the filters. and store in hazardous material storage area.	September 2024	Contractor collected the filters from the access road and stored in Hazardous material storage area. 	Closed September 2024
28	BP 2	September 2024	Drain clogged due to waste in the drain	Low	CC to clean out the drain and restore the drainage	September 2024	Contractor cleaned out the storm water channel at the batching plant 2 area.	Closed September 2024

								
29	Construction site, Kvesheti, Plateau.	September 2024	Necessary safety and environment signs required at site	Med	CC to install all the necessary sign at the site for safety and environment	September	<p>CC installed the signs at the site</p> 	Closed September 2024




							
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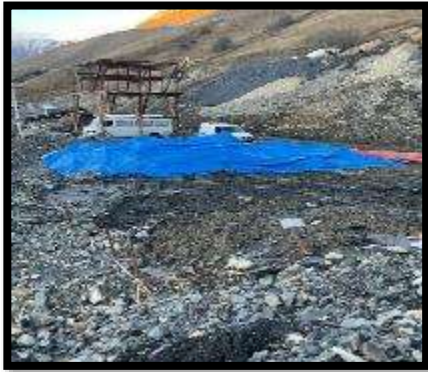
INTERNAL. This information is accessible to ADB Management and staff. It may be shared outside ADB with appropriate permission.



								
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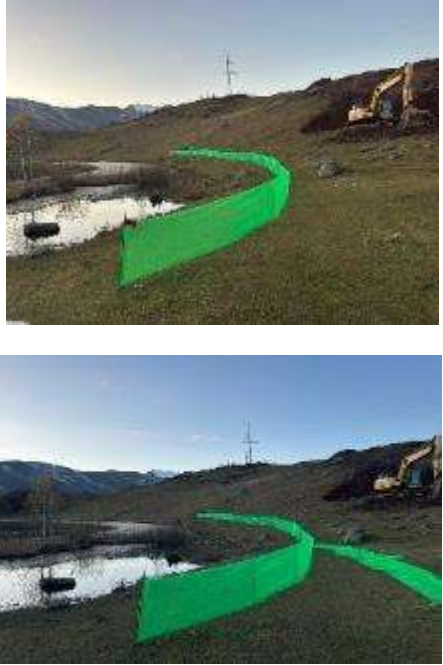
							 	
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30	Sedimentation pits at Batching Plants	October 2024	Cleaning of concrete washout pit	Low	Clean out the concrete washout pits and maintain it.	October 2024	Concrete washout pit cleaned out 	Closed October 2024
31	Near Camp 2	October 2024	Oil spill at various places. Oil leaked from broken excavator	Medium	CC to clean out the spill and treat it as hazardous material.	October 2024	Oil spill cleaned out from the various places and contaminated soil stored in a hazardous material storage area.	Closed October 2024

								
32	Construction site Plateau	September 2024	Used tires stored in the private land near access road 3.	Medium	CC to remove the tires from the private land and store in a designated area for delivery to the licensed Contractor.	September 2024	Contractor will remove broken crushers after winter. CC collected the used tires from private land, stored these in a designated area at the tunnel 1 exit.	Closed October 2024
								



33	Construction site Plateau	October 2024	Used tires , hazardous material, oil need to be handover to the third party contractor	Medium	CC to remove the tires, used oil and hazardous material from the site	October 2024	<p>CC collected the used tires, oil and hazardous waste and handed over to the third-party contractor. 29 cubic meters of waste handed over to third party.</p>  	Closed October 2024
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34	SDA in Kvesheti	October 2024	Wall nut trees prone to be damaged by dumping spoil in SDA in Kvesheti	Medium	CC to protect the trees by providing fence.	October 2024	CC to provide the fence around the wall nut trees.	Closed October 2024
								
								



35	Plateau Lake	October 2024	Protect the lake from sedimentations and flowing spoil in to the lake	Medium	CC to protect the lake by providing fence.	October 2024	<p>CC provided the fence around the lake.</p> 	Closed October 2024
36	Gudaori Access Road	October 2024	Wooden branches leftover at the GARP from tree cuttings	Low	CC to collect all the leftover wooden branches from the GARP and store it in a designated area near parking Lot.	October 2024	CC removed all the branches and stored it in a designated area.	Closed October 2024




								
37	Camp 3	September 2024	Poor housekeeping camp 3 	Low	CC to clean out the area of the Camp 3	September 2024	CC cleaned out the camp 3 	Closed October 2024



38	Camps	October 2024	Waste spread on the private land	Low	CC to clean out the area and call the municipality to collect the waste	October 2024	<p>Contractor cleaned out the area and municipality collected the waste.</p> 	Closed October 2024
39	Sedimentation pits at Batching Plants	November 2024	Cleaning of concrete washout pit	Low	Clean out the concrete washout pit	Nov 2024	Concrete washout pit cleaned out	Closed November 2024




								
40	River Khadistskali and Aragvi	November 2024	Fish Monitoring for Autumn season.	Medium	CC to carryout fish monitoring by hiring third party	November 2024	CC canaried out fish monitoring for Autumn season. Report annexed as Annex-10	Closed November 2024
								



								
41	Plateau Lake	November 2024	Extend the fence of the lake to protect the lake from flowing rock mass	Medium	CC to protect the lake by providing fence.	Nov 2024	CC improved the fence around the lake and posted signs to protect the lake.	Closed November 2024
								


								
42	Handing over the wood logs to NFA	November 2024	CC to collect all the woods and hand over to NFA	Low	CC to collect all the leftover wooden branches from the GARP and handover to NFA	November 2024	CC removed all the wood logs and handed over to NFA 	Closed November 2024


							 	
43	Construction site, Plateau	November 2024	Inert waste at the site	Low	CC to clean out the area and remove the concrete waste and asphalt waste	November 2024	CC cleaned out the inert waste	Closed November 2024
								

								
44	Campsites	November 2024	Waste containers filled with the waste	Low	CC to clean out the area and call the municipality to collect the waste	November 2024	<p>Contractor cleaned out the area and municipality collected the waste.</p> 	Closed November 2024


								
45	Bridge 3	November 2024	Rockflow mass need to be removed near bridge 3	Low	CC to collect the subsoil	November 2024	<p>CC removed the subsoil</p>  	Closed November 2024


46	Plateau near the lake	November 2024	Littering near lake	Low	CC to collect the waste to avoid waste flowing in to the lake.	November 2024	CC collected the waste. 	Closed November 2024
47	Plateua Construction site	November 2024	Chemical Boxes and filters on the ground	Low	CC to collect the chemical boxes and store in a designated area	November 2024	CC collected the waste and removed the chemical boxes from bridge 3 	Closed November 2024



								
48	Parking Area	November 2024	Additional waste constiners required to collect the waste from camp 3.	Medium	CC to write the municipality for additional waste containers	November 2024	CC has written the letter to municipality for addition of the waste. Containers. Municipality added waste bins near parking are to collect the waste from camp 3.	Closed November 2024



								
49	E-117 Highway Kavesheti	November 2024	Additional safety signs required	Medium	CC to install the additional signs as recommended by the engineer	November 2024	CC installed additional signs at the site.	Closed Nov 2024



								
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50	CH Site #10	December 2024	Waste left at CH # 10	Medium	Contractor for Lot-2 will remove the waste immediately from the CH 10 site and complete the fence.	December 2024	Conservation works completed. Contractor to remove the construction waste from the site, and complete the fence.	In progress
51	Tunnel1 Entrance	December 2024	Water coming out of the tunnel 1	Medium	Contractor for Loot-2 added trash to capture the waste	December 2024	Contractor for Loot-2 added trash to capture the waste material and water coming from the tunnel is clear now. However, contractor required to	In progress

			Entrance and flowing in to the river without pretreatment		material and water coming from the tunnel is clear now.		complete the length of the pipe up to river.	
								
52	Didveli Plateau	December 2024	Excavation of Material Near Lake	Medium	<p>Contractor to clear the lake and avoid boulders flowing in to the lake during this week. Avoid the lake protection zone about 30 meters from the edge of the lake.</p> <p>Dedicated environment staff should be present all the time there in coordination with UBM field</p>	December 2024	<p>Contractor improved the fenced of the lake to completely protect it.</p> 	Closed December 2024

					officer to monitor the activity.			
53	Camp 2	December 2024	Brokken Excavator parked on private land 	Medium	Contractor to remove broken excavator from private land.	December 2024	Contractor has collected the oil spill; however, should remove broken excavator and made arrangements to shift from private land up to December 31, 2024	Inprogress
54	Camp 2	December 2024	Waste containers filled with the waste	Medium	Container to call munciplaity to take the waste	December 2024	Municipality truck collected the waste 	Closed December 2024
55	Camp 2	December 2024	Waste containers filled with the waste	Medium	Container to call munciplaity to take the waste	December 2024	Municipality truck collected the waste	Closed Dec 2024

									
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75. Out of 99 issues (44 issues for Lot 1 and 55 issues for Lot 2) highlighted during the reporting period by PMCS, Contractors for Lot 1 and Lot 2 closed 94 issues and 5 issues (2 issues for Lot 1 and 3 issues for Lot 2) remain outstanding.

Table 8B: Summary of Issues from ADB ESM's Weekly Monitoring Reports for the Reporting Period (July- December 2024)

#	AT ID*	Date	Location	Issue description	Priority	Category	Action Required	Target Date	Status	Close out Date	Corrective Action Taken/Agreed
Lot 1 Responsibility											
1	163	7/4/2024	Tunnel #5 SP	During the site visit, it was observed that a section of the Tunnel #5 SP worksite was not fenced off from the Tskere cemetery side. Community safety measures should be enhanced in the village Tskere to prevent any project-related health and safety issues, particularly now, when people have arrived for summer holidays.	Medium	H&S	The Lot 1 Contractor is recommended to install a mesh fence from the Tskere cemetery side to prevent fall hazards from the slope into the worksite.	7/10/2024	Closed	7/18/2024	The fence was provided.
2	164	9/5/2024	SDA #3	The Lot 1 Contractor has completed the excavation of the main tunnel and emergency gallery (Tunnel #5), along with the associated dumping of spoil at SDA #3. The contractor is required to submit an updated mass balance calculation for the spoil to ensure that the existing SDAs have sufficient capacity. Additionally, UBM should verify that the spoil is currently being dumped within the approved footprint of SDA #3 in accordance with the layout plan.	Medium	Env.	The Lot 1 Contractor is recommended to submit an updated mass balance calculation for the spoil. The UBM is recommended to verify that the spoil is currently being dumped within the approved footprint of SDA #3.	9/15/2024	In progress		Mass balance calculation was provided. The spoil management action plan needs to be submitted and the footprint verified.
3	165	9/12/2024	Rock Crusher	During the site visit, it was observed that, despite last week's warning, the Lot 1	High	Env.	The Lot 1 Contractor is recommended to: (i) stop immediately	9/15/2024	Closed	9/19/2024	CC removed the discharge pipe and cleaned the

				<p>Contractor continued to discharge untreated wastewater from the rock crusher sedimentation tanks directly into the Tergi River.</p> <p>This unauthorized discharge of muddy wastewater is polluting the river and negatively impacting aquatic life.</p> <p>The Contractor is in violation of legal requirements, ADB SPS, and the conditions of the rock crusher operation permit.</p>			<p>discharge of the muddy wastewater into the Tergi river from the sedimentation tanks of the rock crusher;</p> <p>(ii) clean the sedimentation tanks from sludge on a regular basis.</p> <p>(iii) reuse the treated wastewater for the rock crusher operation purposes as stipulated by the rock crusher operation plan.</p>				sedimentation tanks.
4	166	10/24/2024	General	<p>The Lot 1 Contractor's Ecological Clerk of Work (ECoW) has been absent since August 2024, resulting in insufficient environmental and biodiversity management. Despite multiple discussions on this issue, the Lot 1 Contractor's management has been unable to ensure the presence of an ECoW on site during the reporting period.</p>	High	Env.	<p>The Lot 1 Contractor is recommended to:</p> <p>(i) ensure Lela Bachiashvili, the current ECoW, returns to her role, or</p> <p>(ii) ensure recruitment of a new employee - a suitably qualified ECoW.</p>	11/1/2024	In progress		CC hired the environmental field officer and the ECoW will return to work by December 2024
5	167	10/31/2024	SDA #3	<p>According to the UBM Environmental Specialist, the Lot 1 Contractor continued constructing the riverbank protection wall at SDA #3 without the necessary construction design approvals from both UBM and the Kazbegi Municipality. This action continues despite repeated reminders to stop the work until all required design documentation is in place.</p>	Medium	Env.	<p>The Lot 1 Contractor is recommended to develop the construction design for the riverbed protection wall at SDA #3 and obtain approval from both UBM and the Kazbegi Municipality.</p>	11/15/2024	Closed	11/7/2024	CC provided the design to UBM. Approval from the Kazbegi Municipality is pending.

6	168	11/15/2024	Village Tskere	<p>It was observed that the Lot 1 Contractor had dumped spoil onto a topsoil stockpile located near the Batching Plant area in the village Tskere. Despite the stockpile being fenced off and clearly signposted, spoil was still deposited on it.</p> <p>This action risks damaging the topsoil, which is needed for the reinstatement of areas temporarily used by the project. The Lot 1 Contractor is disregarding both legal and project requirements for topsoil management.</p>	Medium	Env.	The Lot 1 Contractor is recommended to remove the spoil from the topsoil stockpile under the supervision of UBM Environmental Field Officer.	11/30/2024	On hold		CC will sort out the issue in spring 2025.
Lot 2 Responsibility											
#	AT ID	Date	Location	Issue description	Priority	Category	Action Required	Target Date	Status	Close out Date	Corrective Action Taken/Agreed
7	184	8/1/2024	AR #4	Black water was observed flowing into the waterfall, causing high turbidity in both the Khadistskali River and the Aragvi River, into which the Khadistskali River flows at the village Bedoni. construction area.	High	Env.	The Lot 2 Contractor is required to: <ul style="list-style-type: none"> • fill the gap in the berm along the AR #4; • Provide the drainage channel along the AR #4 connected to the drainage water collection tank; • test the surface water in the rivers Khadistskali and Aragvi. 	8/10/2024	Closed	9/19/2024	CC changed configuration of the road, installed the drainage pipes to avoid contamination of the area off the RoW.
8	185	8/1/2024	BR #3	Despite recommendations for the Lot 2 Contractor to implement sediment run-off measures at the BR #3 worksite to prevent pollution of the	Medium	Env.	The Lot 2 Contractor is recommended to install the sediment run-off measures, such as sand bags	8/7/2024	Closed	9/12/2024	CC removed spoil.

				Khadistskali River from spoil pushed down the slope near the left bank during excavation, no corrective actions were taken during the reporting period.			or remove the spoil from the site urgently.				
9	186	8/1/2024	Gudauri AR	The Lot 2 Contractor is conducting construction activities within the RoW, approximately 25 meters from residential houses at the Gudauri AR. During the site visit, kids were observed playing nearby. The worksite is not signposted or fenced off, posing a risk of children or cattle falling from the slope. The Lot 2 Contractor should ensure community safety by fencing off the worksite.	Medium	H&S	The Lot 2 Contractor is recommended to fence-off the area and install safety warning signs along the slope of the RoW in the village Jaghmiani.	8/7/2024	Closed		Fence was installed.
10	187	8/1/2024	Tunnel #1 Exit Portal	The Lot 2 Contractor is required to upgrade the damaged section of the fence around the slope at the Tunnel #1 Exit Portal.	Medium	H&S	The Lot 2 Contractor is recommended to upgrade the damaged section of the fence around the slope at the Tunnel #1 Exit Portal.	8/7/2024	Closed	8/22/2024	Fence was upgraded.
11	188	8/15/2024	BR #3	The Lot 2 Contractor dumped rocks into the Khadistskali River to create a crossing and remove spoil from the BR #3 worksite. This action blocked the river's flow, leading to flooding along the banks.	Medium	Env.	The Lot 2 Contractor is required to: <ul style="list-style-type: none"> Remove the dumped rocks from the riverbed. Install flume pipes or a culvert to allow unrestricted water flow during the river crossing. Construct a bridge over the Khadistskali River in accordance with the approved method statement. 	8/20/2024	Closed	11/28/2024	CC removed the flume pipes/bridge.

12	189	8/22/2024	CH #23	Although the Lot 2 Contractor was recommended last week to remove the spoil which was pushed to the edge of the CH Site #13 during Khada road upgrading works, the issue has not been addressed.	Low	CH	The Lot 2 Contractor is recommended to remove the spoil manually from the edge of the CH Site #23 to prevent any damage to the site, which is fenced-off and under visual monitoring by the UBM CH Monitors.	8/26/2024	Closed	9/19/2024	CC removed the spoil from the CH Site #23.
13	190	8/22/2024	Didveli Plateau	Despite multiple recommendations to remove used tires and lunch remains from the area outside the project footprint on Didveli Plateau, the Lot 2 Contractor has not addressed the issue during the reporting period.	Low	Env.	The Lot 2 Contractor is recommended to remove the waste: discarded tires and lunch remains from the land outside of the project footprint.	8/27/2024	Closed	9/19/2024	CC cleaned the area.
14	191	9/5/2024	SDA #3	Despite several reminders, the Lot 2 Contractor continues to dump spoil on vegetation without properly clearing the site or removing the topsoil at SDA #3 in the village Kvesheti. This area consists of private land plots that, according to land lease agreements, are to be restored with topsoil and returned to the landowners after project completion.	High	Env.	The Lot 2 Contractor is recommended to stop spoil dumping on the SDA #3 until proper site clearing and topsoil removal have been completed.		On hold		CC will sort out the issue in Spring 2025.
15	192	9/5/2024	BR #3	The vegetation and soil on the slope were completely destroyed due to the dumping of excavated spoil from the BR #3 piling area onto the left bank of the Khadistskali River. The affected sections are now exposed bare rock, lacking soil or vegetation cover, which increases the risk of erosion to nearby areas if immediate	Medium	Env.	The Lot 2 Contractor is recommended to: 1. provide the erosion control measures on the impacted slope, e.g. provide the drainage water diversion channel on the upper part and on both sides of the impacted	9/15/2024	On hold		The issue will be addressed in Spring 2025.

				erosion control measures are not taken.			slope, to avoid erosion of the adjacent parts of the slope; 2. reinstate the impacted area during the final reinstatement works.				
16	193	9/5/2024	Khadistskali River	Despite the request, the Lot 2 Contractor has not provided information on the methodology used for the ongoing fish monitoring in the Khadistskali River or the qualifications of the expert involved. As a result, it remains unclear whether the monitoring is being conducted professionally and the reliable monitoring results will be issued.	Medium	Env.	The Lot 2 Contractor is required to provide information on the qualifications of the fish monitoring expert and the methodology being used. UBM is recommended to verify that the monitoring adheres to best practices.	9/10/2024	Closed	9/12/2024	The fish monitoring report including the monitoring methodology was issued. The monitoring was conducted as per the legal requirements by the qualified expert.
17	194	9/5/2024	Khada Valley	The surface of the carriageway and guardrails on the bridge over the Khadistskali River, located just before the start of the serpentine in Khada Valley, were observed to be damaged. A broken reinforcement bar was found protruding from the surface, and the metal guardrails were damaged, with some sections having fallen into the river.	High	H&S	The Lot 2 Contractor is recommended to repair the damaged bridge as soon as possible. The UBM is highly recommended to ensure the bridge is promptly inspect for stability and safety.	9/8/2024	Closed	9/26/2024	CC repaired the guardrail and carriageway of the bridge over the river Khadistskali. However, according to the RD H&S Specialist, UBM Engineers recommended the Lot 2 Contractor to reinforce the bridge to ensure its stability.
18	195	9/5/2024	Tunnel #1	The access road to Tunnel #1 Entrance Portal lacks a roadside barrier. The concrete road, partially covered with gravel, is built on a slope, creating a risk of vehicles falling off the road in	Medium	H&S	The Lot 2 Contractor to install the adequate roadside barrier, such as jersey barrier, along the road to the	15.0.92024	Closed	10/24/2024	CC installed the metal guardrails and mesh fence. The track will not be used from November as

				case of skidding or brake failure, especially when the surface is wet.			Tunnel #1 Entrance Portal.				theBR #2 will be used for accessing the Tunnel #1.
19	196	9/12/2024	Campsite #2	During the site visit, it was observed that Lot 2 Contractor's dump trucks and heavy equipment were parked on topsoil in front of Batching Plant #2 on Didveli Plateau, causing damage to the soil.	Medium	Env.	UBM is recommended to verify land ownership and the Contractor's right to use the area. Recommendations for the Contractor: (i) If the affected area is outside the project footprint, the Contractor should immediately remove the trucks and restore the site.	9/20/2024	Closed	11/28/2024	The same issue is covered by the issue 201 below.
20	198	9/26/2024	AR #3	During the site visit, it was observed that the Lot 2 Contractor stored construction material and discarded tires on land adjacent to AR #3 on Didveli Plateau, posing a risk of topsoil damage.	Medium	Env.	The Lot 2 Contractor is recommended to remove the construction material (concrete pipes) and discarded tires to the designated area within the project footprint on Didveli Plateau.	10/2/2024	On hold		CC removed the used tires. The concrete pipes will remain on the land till Spring 2025. The land is a state land.
21	199	9/26/2024	SDA #3	The Lot 2 Contractor has not demarcated and/or fenced off the walnut trees (2 trees) located at the edge of Mr. Buchukuri's garden adjacent to the SDA #3 in the village Kvesheti, posing a risk of accidental damage during spoil dumping activities.	Low	Env.	The Lot 2 Contractor is recommended to: (i) protect the walnut trees located at the edge of Mr. Buchukuri's garden adjacent to the SDA #3 in the village Kvesheti;	10/2/2024	Closed	10/31/2024	CC fenced off the trees.
22	200	9/26/2024	BR #3	The Lot 2 Contractor has not removed the cut trees from the worksite below Bridge #3 on the left bank of the Khadistskali River, and locals were observed	Medium	Env.	The Lot 2 Contractor is recommended to transport the cut trees from the site to the Parking Area in	10/2/2024	Closed	12/5/2024	CC completed removal of trees.

				transporting some of the trees from the site.			the village Kvesheti, and transfer it to Forestry Agency from there.				
23	201	10/3/2024	BP #2	An unattended oil spill, resulting from a broken excavator, was observed on the land used for truck and equipment parking across from Batching Plant #2 on Didveli Plateau. It was evident that the Contractor was performing maintenance without implementing pollution prevention measures.	High	Env.	The Lot 2 Contractor is recommended to: (i) remove the oily contaminated soil and other hazardous waste (used filters, oily contaminated gloves, rugs), and dispose them as per the waste management plan requirements; (ii) remove the dump trucks and yellow equipment from the area.	10/10/2024	In Progress		CC removed the spill and hazardous waste. Relocation of yellow equipment is required.
24	202	10/3/2024	General	Despite several recommendations, the Lot 2 Contractor has failed to remove waste, such as cut plants, concrete and metal construction debris, and other project-related waste from areas outside the RoW, access roads, and temporary facilities (KKRP and Gudauri AR).	Medium	Env.	The Lot 2 Contractor is recommended to: (i) remove waste, such as cut plants, concrete and metal construction debris, and other project-related waste from areas outside the RoW, access roads, and temporary facilities (KKRP and Gudauri AR);	10/20/2024	In progress		CC started removal of waste.
25	203	10/3/2024	BR #3	The Lot 2 Contractor paved the access tracks to the BR #3 work areas on Didveli Plateau; however, roadside barriers have not been installed. Since the concrete tracks are on a slope, there is a risk of personnel or vehicles slipping or skidding off the track during wet weather	Medium	H&S	The Lot 2 Contractor is recommended: (i) install roadside barriers, such as berms, guardrails or jersey barriers, along the concrete tracks leading to the BR #3 work areas;	10/15/2024	Closed	10/24/2024	CC completed installation of the road-side barriers along the access tracks to the BR #3 work areas.

				conditions if barriers are not provided.			(ii) assign a certified and qualified H&S specialist to monitor the H&S performance at BR #3 full-time, as high-risk activities are being conducted at the site.				
26	204	10/3/2024	BR #4	During the site visit, it was noted that uninsulated electric cables were improperly laid on the ground at the BR #3 worksite.	Medium	H&S	The Lot 2 Contractor is recommended: (i) secure the exposed sections of the electric cables at the BR #3 worksite and ensure they are inaccessible to unauthorized individuals. (ii) conduct inspections at all worksites for electrical safety and implement corrective actions where necessary	10/10/2024	Closed	10/17/2024	CC sorted out the issue.
27	205	10/3/2024	Village Jaghmiani	During the site visit, it was observed that spoil from the excavation for the water collection tank installation in the village Jaghmiani had been dumped on land covered with topsoil. This land is privately owned, and according to the Lot 2 Contractor, it was assigned by the landowner for the tank installation.	Low	Env.	The Lot 2 Contractor is recommended to: (i) remove the spoil to the designated disposal area, and (ii) restore the affected land after the tank installation is complete.	10/10/2024	Pending		
28	206	10/24/2024	Gudaury AR	The Lot 2 Contractor started removing soil from a private land parcel located on a slope approximately 30 meters from the lake on the Didveli Plateau.	High	Env.	It is recommended that UBM ensure the Lot 2 Contractor's activities on the land parcel with cadastral code 71.62.60.856	10/30/2024	In progress		CC developed environmental and biodiversity pre-construction survey report. Other required

				<p>According to the UBM Environmental Specialist, the Contractor requires the soil for the construction of the Gudauri Access Road. An agreement was made with the landowners (there are three co-owners of the land with cadastral code 71.62.60.856) to remove the soil and return the land in a leveled condition, covered with topsoil.</p> <p>The contractor started the activity without informing engineer and RD.</p>			<p>comply with legal and project environmental requirements and that the activity is feasible; Otherwise, the activities should be stopped.</p> <p>The Lot 2 Contractor is recommended to submit the necessary documentation, including the due diligence report, a comprehensive land use agreement with the landowners, and a method statement, to UBM for approval.</p>				<p>documentations are under preparation.</p>
29	207	10/24/2024	BP #2	<p>Water leakage from the concrete washout and sedimentation tanks is causing flooding of the adjacent land plots at BP #2.</p> <p>Although the Lot 2 Contractor was recommended last week to address this issue, it has not been resolved during the reporting period.</p>	Medium	Env.	<p>The Lot 2 Contractor is recommended to fix the leaking concrete water sedimentation tank at BP #2.</p>	10/31/2024	Closed	12/12/2024	<p>CC fixed the leakage point and increased the height of the sedimentation tank wall.</p>
30	208	10/31/2024	Tunnel #1 Entrance Portal	<p>Ongoing discharge of untreated tunnel water directly onto forest land, ultimately flowing into the Aragvi River, is causing slope erosion and pollution of both the land and the Aragvi River.</p>	Medium	Env.	<p>The Lot 2 Contractor is recommended:</p> <ul style="list-style-type: none"> (i) to reinstall the tunnel water sedimentation pond to ensure treatment of tunnel water, and (ii) reinstall the water discharge pipes to avoid erosion and degradation of forest land. 	11/5/2024	Pending		

31	209	11/14/2024	General	Updated spoil mass balance calculation along with a spoil management plan that details the amount of spoil to be reused and disposed of, as well as the specific locations for reuse and disposal.	Medium	Env.	The UBM is recommended to work closely with the Lot 2 Contractor and issue an updated spoil mass balance calculation along with a spoil management plan that details the amount of spoil to be reused and disposed of, as well as the specific locations for reuse and disposal.	11/30/2024	Pending	
32	212	11/14/2024		During the site visit, residents of the village Zakatkari expressed concerns about rocks falling from the Gudauri AR RoW (about KM 1.200) onto the village road, creating a risk of damage to passing pedestrians and vehicles.	Medium	H&S	The Lot 2 Contractor is recommended: (i) conduct TBT with heavy equipment operators to ensure careful operation and reduce the risk of rockfalls from the RoW; (ii) remove large rocks deposited at the base of the road embankment; (iii) assign a watchman to manage traffic until rock removal from the project area is complete; (iv) remove any rocks that have already fallen onto the village road.	12/16/2024	In progress	CC removed the fallen stones and assigned a watchman. TBT was conducted. Removal of large rocks deposited at the base of the road embankment is required.
33	213	11/21/2024	Didveli Plateau	The Lot 2 Contractor continues spoil extraction from the private land plot without implementing necessary environmental	Medium	Env.	• Separate topsoil from spoil where feasible and transport the topsoil	11/25/2024	In progress	CC installed the silt fence; however, it needs to be

				<p>mitigation measures, specifically:</p> <ul style="list-style-type: none"> • topsoil was mixed with spoil, and it is unclear whether the topsoil was properly removed beforehand; • the spoil extraction site has not been demarcated from the lake side. • a silt fence was not installed along the lake bank, creating a risk of sediment runoff from the site and potential pollution of the lake as spoil may be washed into it during rainfall; • the area at the lakeside was littered with waste including plastic bottles, bags, and packaging. 			<p>to the designated storage area at BP #2.</p> <ul style="list-style-type: none"> • ensure the presence of personnel on-site to oversee the proper removal of topsoil. • clearly demarcate the work area on the lake side, taking into account the lake's protection zone. • restore any areas within the lake protection zone that may have been encroached upon. • install a silt fence along the lake's protection zone to prevent soil runoff from the site and protect the lake from pollution. • remove waste from the area adjacent to the lake. 				<p>installed at full length. Topsoil storage has not been confirmed yet.</p>
34	214	11/21/2024	Didveli Plateau	<p>During the site visit, it was observed that asphalt leftovers were dumped on land outside the project footprint during the road asphaltting works on Didveli Plateau.</p>	Low	Env.	<p>The Lot 2 Contractor is recommended to remove the asphalt remnants from areas outside the project footprint and dispose them on the SDA.</p>	11/25/2024	Closed	11/28/2024	<p>CC removed the asphalt leftovers</p>
35	215	11/21/2024	CH Site #10	<p>During the site visit, it was observed that the area surrounding CH Site #10 – Diveli Backed Tower required proper housekeeping, as remnants of construction materials used during the tower's conservation were</p>	Low	CH/Env.	<p>The Lot 2 Contractor is recommended to:</p> <p>(i) remove the leftovers of the construction material and ensure proper housekeeping around the CH Site</p>	11/25/2024	Pending		

				scattered around. Additionally, sections of the wire fence were found to be damaged.			#10; (ii) upgrade the damaged sections of the fence around the CH Site #10.				
36	216	12/6/2024	Spoil extraction site on Didveli Plateau	Although the steep slope at the spoil extraction site is fenced off with the wire fence, the Lot 2 Contractor is recommended to install hard barrier and safety warning signs on the slope as an additional measure to ensure adequate fall protection and enhance visibility and raise awareness of potential fall hazards, especially when the area is covered with snow.	Medium	H&S	The Lot 2 Contractor is recommended to install hard barrier and safety warning signs on the slope as an additional measure.	12/15/2024	Closed	12/26/2024	On 26.12.24, due to the urgency of issue, it was decided to use green mesh as no steel mesh was available. The wire fence has been stolen by the locals. CC installed the warning signs. The harder barrier is planned to be installed in January.2025.
37	217	12/26/2024	Village Jaghmiani	Cover the concrete water collection tank installed by the Lot 2 Contractor in the village Jaghmiani, the issue has not been addressed. According to the Contractor's deputy project manager, concrete slabs for covering the tank were cast two weeks ago but have not been delivered to the site due to lack of transport. The uncovered tank presents a safety hazard, with a risk of cattle or individuals falling into it. This issue is particularly urgent now, as snow covering the surrounding will make the tanks harder to detect.	Medium	H&S	The Lot 2 Contractor is recommended to cover the water collection tank installed in the village Jaghmiani.	12/30/2024	Pending		

*The "AT ID" refers to the issue number listed in the E&S Action Tracker, which is attached as an annex to the Weekly E&S Monitoring Report issued by the ADB ESM.

76. Out of 37 issues highlighted for both Lots (6 issues for Lot 1 Contractor and 31 issues for Lot 2 Contractor), during the reporting period by ADB ESM, 21 issues were closed and 16 issues (3 issues for Lot 1 Contractor and 13 issues for Lot 2 Contractor) are outstanding.

Table 8 C: Implementation Status of Pending Corrective Actions Proposed in the Previous Monitoring Report(s)

#	Affected Location	Date	Issue	Required Action	Responsibility	Priority	Timing (Target dates)	Description of Resolution and Timing (Actual)	Status (If not yet resolved, indicate the reason why and specify further required action and timeframe)
Issues Identified by PMCSC									
<i>Lot 1 & Lot 2</i>									
1	Lot 2 BP 2	Oct 2022	Storm water pipe from the pre-treatment sedimentation pond creating soil pollution and water pollution on the ground.	CC to repair the pipe carrying water from the sediment ponds for storm water to concrete washout pit so the water can be pumped with already installed submersible pump in to the drain going in to river.	CRCC	Low	Nov 2022	CC repaired and connected the pipe	Resolved August 2024
2	Lot 1	Sept 2021	CC stockpiled crushing material in the river protection zone of Narvani River Pending since September 2021	CC to stockpile the material 10 meters away from the edge of the river	CRTG	Low	October 2021	CC to remove the material 10 meters away from the edge of River Narvani	Resolved River changed the direction and no harms to the river was

									observed due to stockpiles.
3	BP 2 Lot 2	Feb 2023	Broken Fence along the private land at BP 2	Repair the fence	CRCC	Low	One week	Contractor builds the brick wall fence.	Resolved August 2024 CC Installed the fence.
4	Khada Valley Lot-1 & Lot-2	Oct/ Nov 2023	Fugitive dust emission in Khada Valley Ref letter: 2023-11-UBM-CRCC-1181 dated: 15-11-2023	Both the contractors to have one water sprinkler truck in Khada valley to sprinkle water on access road 1. Each truck will sprinkle water to allotted portion of each contractor for access road and to suppress the dust by their ongoing construction activities.	CRCC	High	March 2023	Contractor moved three water truck sprinkling waters on the site for Lot 2 and sharing pictures on daily basis. However, the dust emissions observed in Khada valley and plateau.	In progress
5	Lot-2 RoW near parking area and SDA 3 in Kvesheti	Dec 2023	Wooden Logs and branches of trees should be collected from the RoW near parking area and SDA 3. In Kvesheti	Contractor to collect the wood logs and handover to NFA/r community	CRCC	Medium	ASAP	CC collected the wooden branches and stored near parking area and handed over to NFA.	Resolved August 2024
6	Lot-2 Didveli plateau	Aug. 2023	Conservation of CH #10 tower	CC to complete the CH 10 conservation works.	CRCC	High	2024 May	Conservation works completed.	Resolved. October 2024
7	Lot-1 Tskere	Feb/ Mar 2024	High flow of turbid water from the tunnel directly flowing in the River	Divert the flow with high-capacity pipe to sedimentation ponds and clean the ponds on daily basis	CRTG	High	March 2024	CC diverted the water but more than half of the water coming from tunnel flowing directly in to the river However, turbidity level decreased due to break in TBM	In progress Currently, lining works for EG and drainage works for

								excavation and completion of excavation of Emergency Gallery.	TBM are going on.
8	Lot-1 Khada River	March 2024	Fish monitoring in Khada River in Tskere	CC to start fish monitoring in Khada River	CRTG/CR CC	Medium	May 2024	Contractor for Lot-2 also carried out fish monitoring for summer in September 2024 and Autumn in November 2024 for Khadistskali River. However, CC to monitor fish in Narvani and Tergi River.	Closed September 2024
9	Lot 2 Kvesheti	Feb 2024	SDA 3 Filling area	Contractor will start filling the area at SDA 3 and provide the start date for the activity	CRCC	Low	March 2024	CC shifted the spoil in SDA 3 from Benian Begoni according to the capacity of SDA 3	Resolved. October 2024.
10	Lot-2 RoW near parking area and SDA 3 in Kvesheti	Dec 2023	Wooden Logs and branches of trees should be collected from the RoW near parking area and SDA 3. In Kvesheti	Contractor to collect the wood logs and handover to NFA/r community	CRCC	Medium	March15 2024	Contractor handed over the wood to NFA	Resolved August 2024
11	Lot-2 BP 2	Mar 2024	BP 2 Storm water pipe maintenance. Connection of kitchen water to STP.	Contractor will repair storm water management pipe and make sure no water will be going to private land. Kitchen water should go to the STP and not allowed flowing towards batching plant as according to permit kitchen water should be flowing only through STP	CRCC	Medium	March 2024	CC installed the pipe and extended it up to concrete pit from where the water will be pumped to the Treated STP line.	Resolved August 2024
12	Lot-2 Khada valley and Plateau	Pending from the last	Dust in Khada Valley and plateau	Contractor will mobilize 3 water truck during dry and windy season 1 for Khada Valley, 1 for		Medium	April 2024	CC started watering of access road however, need to improve by taking additional measures.	Pending

		summer 2023		plateau, and one for access road 2				CC submitted the Dust management plan to combat the fugitive dust in Plateau and Khada valley However, need to be maintained during the summer 2025.	
13	Lot-2 Gudauri Access Road	May/June 2024	Wood logs at Gudauri Access Road from tree cuttings.	Contractor to collect the wood logs at one place to handover to NFA/ Local public.		Medium	June 2024	Contractor started collecting the wood logs to collect at one place to handover to NFA. CC handed over all the wood logs to NFA.	Resolved November 2024.
Issues Identified by ESM ADB									
<i>Lot 1</i>									
1 ID 131	SDA #2 (former)	4/13/2023	It was observed that the Contractor dumped the removed slurry (mud) close to the river Narvani bank on the proposed SDA#2 area, which has been rejected due to presence of the water boreholes owned by the "Kobi Water" Plant.	<ul style="list-style-type: none"> • Stop disposal of the slurry (mud) on the unapproved area (rejected SDA #2); • remove the dumped slurry (mud) to the SDA #3; • reinstate the impacted land within the rejected SDA #2 area. 	CRTG	high	20-04-2023	On 29.05.24 RD provided information that the CC was applied by the Kobi Factory owner requesting to keep the spoil on the area and add some more spoil to protect the area from flooding in the flooding seasons. RD committed to provide the request letter and the acceptance letter after completion of works. 12.12.24 - the issue will be resolved in spring 2025.	In progress CC to get the acceptance letter.
2 ID 147	Naraidze's Tower	9/7/2023	The residents of the village Tskere were concerned that the floor of the second floor of the tower had collapsed during conservation works at the Naraidze's Tower. The	It is recommended to investigate the issue and take the relevant corrective actions to make sure the tower is properly reinforced and	CH	High	9/15/2023	RD discussed the issue with the sub-contractor and NACHP. Response from NACHP is required. On 17.05.24 NACHP representatives and UBM CH	In progress Approval required by NACHP

			damaged part of the floor was reinforced with wooden poles by the sub-contractor. The locals have an expectation that the damaged part of the floor would be repaired and reinforced properly as they think it is not safe to enter the tower used as a shrine, currently.	safe and the locals are happy with the conservation works.				Monitor surveyed the damaged floor inside the tower. The survey report with recommendations will be issued by NACHP. NACHP issued recommendation for reinforcement of the floor inside the tower. The CH subcontractor is preparing the reinforcement design which will be approved by NACHP. 26.09.24 - the CH Contractor has submitted the project for reinforcing the inside floor of Naraidze's Tower to NACHP for approval. 30.09.24 - the reinforcement permit was issued by NACHP. 26.12.24 - 1. The CH Monitor has completed reinforcement work inside Naraidze's Tower in the village Tskere in the reporting period. According to the UBM CH Monitor, the NACHP will inspect the site to confirm that the reinforcement work has been carried out in compliance with the project approved by the NACHP. The local residents have expressed satisfaction with the completed work.	
3 ID 150	Rivers Khadistsk ali, Tergi, Narvani	10/12/2 023	Contractor is required to conduct fish monitoring in the rivers (under the project impact) as per the requirements of the Appendix 5 of the EIA "Critical Habitat Assessment (CHA) and Appropriate Assessment (AA)	CC to coordinate with PMCSC on the conduct of water quality testing and fish monitoring.	Env.	Medium	10/30/202 3	On 29.09.24 the ichthyological monitoring was conducted in the river Khadistskali.	In progress CC needs to conduct the same monitoring in the river Tergi.

			Screening" Refer to section 6.5 Potential Impacts on CH/ PBF.						
4 ID 152	Village Tskere	11/23/2023	Although the Lot 1 Contractor was recommended several times to replace the existing tunnel water discharge channel (made with metal sheets) with the discharge pipes, the recommendation was not considered. It was observed that the tunnel discharge water was leaking and overflowing from the metal discharge channel leading to erosion of the adjacent land plots.	The Lot 1 Contractor is recommended to replace the tunnel water discharge channel, made of metal sheets, with the plastic pipes to avoid leakage of discharge water and subsequent damage to the land.	Env.	Medium	11/30/2023	The final section of the discharge pipe connected to the sedimentation tank repaired. The affected area will be reinstated during the final reinstatement works.	Resolved September 2024
5 ID 153	Village Tskere	12/7/2023	The Lot 1 Contractor discharged the slurry, removed from the tunnel water sedimentation tanks, onto the adjacent steep slope. There exists a potential hazard of slurry runoff reaching the river Khadistskali.	The Lot 1 Contractor is recommended to remove the slurry from the slope and discharge it at the dedicated area within the RoW, above the Tskere Campsite.	Env.	Medium	12/12/2023	The issue will be resolved during final reinstatement works.	On hold
6 ID 155	SDA #3	2/8/2024	The Lot 1 Contractor continues dumping excess spoil on the SDA #3 in the village Kobi. Although Kazbegi Municipality has granted permission for the Contractor to expand the SDA #3, the necessary documentation for MoEPA approval of the expansion is still pending. The Lot 1 Contractor should get approval on expansion of	The Lot 1 Contractor is recommended to ensure the timely preparation and submission of the required documentation on expansion of the SDA #3 to MoEPA for approval.	Env.	Low	3/8/2024	On 30.09.24 (ADB Mission) - RD confirmed that the Contractor has sufficient space for accommodation of the spoil on SDA #1 and SDA #3, hence, expansion of the SDA #3 was not required.	Resolved September 2024

			the SDA #3 from MoEPA to adhere to regulatory requirements.						
7 ID 156	Tunnel #5 SP	3/7/2024	The Lot 1 Contractor has disregarded the tunnel water management requirements in the village Tskere. Despite ongoing discussions with RD, UBM, and the Contractor since October 2024, the Lot 1 Contractor has failed to take any corrective measures to address this issue. Specifically, tunnel water is being discharged into the Khadistskali river through two streams: one directly into the river (an illegal action), and another through sedimentation tanks that are filled with sediment and unable to effectively treat the water. As a result, the high-turbidity river water continues to flow from the village Tskere to the village Bedoni, where the Khadistskali river merges with the Aragvi river. Hence, biodiversity and aquatic life face a significant risk of being impacted.	The Lot 1 Contractor is recommended to: <ul style="list-style-type: none"> • stop direct discharge of untreated tunnel water into the river Khadistskali; The method of collecting the clean groundwater inside the emergency gallery to be applied, if possible, as it has been done in the emergency gallery from Kobi side; • clean the sedimentation tanks to ensure effective treatment of tunnel water; • ensure fish monitoring in the Khadistskali river by the ichthyologist (refer to outstanding issue WR-23-41-EV_04 in the E&S Action Tracker) and take the required actions based on fish monitoring results. 	Env.	High	3/15/2024	CC cleaned the existing sedimentation tanks and arranged two additional sedimentation ponds and installed a screen for catching waste and a sorbent curtain to catch oil in the first sedimentation pond. The discharge water turbidity visually was high. It was agreed to test water in the river Khadistskali by mid of May, 2024.	Resolved May 2024
8 ID 162	Village Kobi	5/23/2024	Although the Lot 1 Contractor was recommended several times to enhance waste management practices, particularly concerning hazardous waste, at the Kobi site, no corrective actions have been taken. During a site visit,	The Lot 1 Contractor is recommended: <ol style="list-style-type: none"> 1. To arrange a relevant hazardous waste storage area for proper storage of the hazardous waste (liquid and solid waste) until its handover to the 	Env.	Medium	6/2/2024	CC arranged the hazardous waste storage area at the Segment Area in the village Kobi.	Resolved September 2024

			<p>it was observed that hazardous waste, including used oil drums and filters, was mixing with non-hazardous waste and directly stored on land behind the Batching Plant area in the village Kobi. Additionally, the Contractor was utilizing the designated hazardous waste storage area as a workshop instead of storing hazardous waste there as required.</p> <p>Furthermore, the Lot 1 Contractor is required to revise the waste management plan, which was originally drafted and approved by MoEPA in 2021, to ensure compliance with the Waste Code of Georgia, specifically Article 14, which stipulates „A company waste management plan shall be revised every three years or when there are substantial changes in the types and quantities of waste generated, or in processes of waste treatment.“</p>	<p>authorized waste management sub-contractor;</p> <p>2. Segregate the construction waste dumped behind the Kobi Batching Plant and ensure its proper storage before handover to the relevant authorized waste management sub-contractors;</p> <p>3. Submit the updated Waste Management Plan to MoEPA as required by the Waste Code of Georgia.</p>					
<i>Lot 2</i>									
9 ID 106	Khada Valley	15-12-2022	The Lot 2 Contractor dumped spoil at several locations along the Khada Valley Road in the RoW.	The Lot 2 Contractor is recommended to: <ul style="list-style-type: none"> • draft the plan of the berm installation along the Khada Valley road, considering the environmental, H&S and 	CRCC/PMSCS		25/12/2023	Removal of excessive spoil will be completed by 17.01.2023. 04.03.2023 - CC plans to use some of dumped spoil for upgrading of the Khada Valley road. 04.05.2023 - CC will use the spoil	On hold

				<p>social requirements;</p> <ul style="list-style-type: none"> • agree the plan with PMCSC; • remove the dumped excessive spoil, if required. <p>PMCSC is recommended to ensure the Lot 2 Contractor follows the berm installation plan and removes the dumped excessive spoil, if required.</p>				<p>for road upgrading. Hence, the status of the issue was changed from "in progress" to "on hold." 29.06.2023 - the road upgrade works will be started from 30.06.2023.</p> <p>10.08.23 - CC prepared the berm design and submitted to UBM for approval.</p> <p>The issue will be discussed again during the reinstatement works.</p>	
10 ID 110	SDA #4	2/2/2023	Finalize all remaining procedures regarding spoil disposal site #4, such as paying compensation to relevant authorities for approval to dispose spoil on the SDA #4 in the village Bedoni.	The Lot 2 Contractor to finalize all remaining procedures regarding SDA #4 in the village Bedoni.	CRCC	Medium	30-03-2023	<p>The Contractor started communication with the relevant authority.</p> <p>11.05.23 - CC stated that the design of the SDA was corrected and the new one will be agreed with the Dusheti Municipality prior to applying to the Environmental Agency for approval.</p> <p>05.10.23 - CC applied to NEA for approval of the design of spoil dumping area. Spoil dumping can be considered as an area improvement (area filling) activity in the village Benian-Begoni. In January 2024 NEA rejected to review the design stating that it was under responsibility of local municipality and advised to refer to local municipality. CC plans to conduct the detailed environmental assessment (such natural disaster assessment) of</p>	In progress

								the area and apply to the local municipality.	
11 ID 131	6/22/2023	AR #4	The Lot 2 Contractor was observed dumping spoil, generated at the Tunnel #3 Exit Portal, from the AR #4 down the slope.	<ul style="list-style-type: none"> • to stop unauthorized dumping of spoil from the Tunnel #3 Exit Portal; • to store the tunnel cuttings within the RoW until getting approval from the landowners on using their land plots for spoil disposal at the SDA #3 in the village Kvesheti. 	CRCC	Medium	26-06-2023	CC stopped spoil dumping on the slope. According to the PMCSC's information, the slope reinstatement will be a part of the entire reinstatement works at the end of the project.	On hold
12 ID 142	BP #2	8/24/2023	The land plots adjacent to the BP #2 were littered and polluted with an unorganized flow of the contaminated (cement and oily contaminated) drainage water from the BP #2 area due to lack of the drainage channels. The fence was damaged at certain locations at the BP #2 and the area was easily accessible for cattle.	The Lot 2 Contractor is recommended: <ul style="list-style-type: none"> • to provide the drainage channels at all sides of the Batching Plant #2 area which will be connected to the concrete washout pit to avoid the land pollution with the contaminated drainage water flow from the Batching Plant. • to upgrade the fence to restrict access of cattle to the BP area. 	CRCC	Low	9/15/2023	CC erected the wall along the BP area to avoid water run-off the site.	Resolved August 2024
13 ID 143	Village Benian-Begoni	8/31/2023	The Lot 2 Contractor continues spoil dumping on the temporary spoil storage area within the RoW in the village Benian-Begoni. Currently, the spoil stockpile is within the project footprint (confirmed by PMCSC Environmental Specialist), but as the stockpile	The Lot 2 Contractor is recommended to: <ul style="list-style-type: none"> • find another location within the RoW in the village Benian-Begoni for spoil, especially, rocky spoil storage, if it is possible; • install the silt fence 	CRCC	Medium	9/15/2023	Some spoil is still at the temporary storage area; however, the slopes are not erosion prone anymore and the fence was provided at the private land plot.	Resolved August 2024

			<p>is located at the edge of the RoW and the slope of the stockpile is about 45 degree and there are no sediment run-off and erosion control measures in place, there is a risk of damage to the adjacent land plots and fence due to rock falling and sediment run-off in rainy weather conditions and during rock dumping.</p> <p>The issue was discussed on site two weeks ago; however, no preventive measures have been taken up to now.</p>	<p>along the spoil stockpile to avoid sediment run-off from the site.</p> <p>PMSC to discuss the issue with the Lot 2 Contractor to make sure the agreed sediment run-off and erosion control measures are in place to avoid damage to the adjacent land plots due to rock falling or sediment run-off the spoil stockpile. It is highly recommended to speed up starting installation of the avalanche protection dams in the villages Tskere and Benian-Begoni to use the spoil there and thus, avoid the issues related to spoil storage in Khada Valley.</p>					
14 ID 146	Village Benian- Begoni	9/7/2023	<p>The Lot 2 Contractor still had not resolved the construction traffic related dust issue in Khada Valley. The residents of the village Benian-Begoni were concerned due to long-standing issue and threatened to block the road in case the Lot 2 Contractor did not assign the water truck for watering the village road. The Lot 2 Contractor ignores the Project pollution</p>	<p>The Lot 2 Contractor is recommended:</p> <ul style="list-style-type: none"> • to assign a proper water truck for dust suppression in the village Benian-Begoni. 	CRCC	High	9/15/2023	<p>CC started watering of the road; however, frequency is not sufficient. Improvement is required. UBM will closely monitor the issue.</p> <p>The issue is not relevant in the winter season and was assigned the status "on hold."</p> <p>On 16.04.24 dust was an issue again. The locals started complaining. CC is required to water the roads.</p> <p>27.11.24 - status was changed to On Hold due to snow.</p>	On hold

			prevention requirements and makes impact on environment and people health by lack of dust suppression.						
15 ID 152	General	10/12/2023	Removed trees and vegetation need to be disposed properly (applicable to all sites)	Handover of removed trees/timber to Forestry Agency before Nov 2023/winter season.	CRCC	Medium	11/15/2023	CC handed over the timber to NFA	Resolved September 2024
16 ID 155	Rivers Khadistskali and Aragvi	10/12/2023	Contractor is required to conduct fish monitoring in the rivers (under the project impact) as per the requirements of the Appendix 5 of the EIA "Critical Habitat Assessment (CHA) and Appropriate Assessment (AA) Screening" Refer to section 6.5 Potential Impacts on CH/ PBF.	CC to coordinate with PMCSC on the conduct of water quality testing and fish monitoring.	CRCC	Medium	10/30/2023	CC carried out fish monitoring in August and November 2024.	Resolved September 2024
17 ID167	CH #28	11/23/2023	Although the Lot 2 Contractor was recommended to remove the large rocks placed at the edge of the CH Site #28 (Old Mill) from the side of the river Khadistskali, the corrective actions have not been implemented. The Lot 2 Contractor's Cultural Heritage Management Requirements such as "ensure implementation and effectiveness of monuments protection measures," etc. should be followed to avoid any impact on the cultural heritage monuments by the Project.	PMCSC and the Lot 2 Contractor CH Monitors are recommended: • to supervise the rock removal from the edge of the CH Site #28; • to demarcate the site with mesh fence; • to install the warning signs at the CH Site.	CRCC	Low	11/30/2023	Rocks will be removed during final reinstatement	On hold

18 ID 173	Campsite #3, Benian-Begoni	3/28/2024	The STP of the campsite #3 was not operational and the sewage discharge pipes were broken.	The Contractor is recommended to repair the STP and discharge pipes and take water samples for test.	Env.	Medium	4/10/2024	The water test results confirmed discharge water quality within discharge limits.	Resolved August 2024
19 ID 175	Gudaury Access Road	4/4/2024	During the site visit, it was noted that the Contractor was carrying out earthworks, such as topsoil removal and grading, on the Gudaury Access Road without the presence of a CH Monitor. Furthermore, construction activities had started without providing heritage training to the staff assigned to the works. Although the Lot 2 Contractor was reminded several times to ensure full-time presence of CH Monitors on site and compliance with CHMP requirements, the Contractor failed to mobilize a CH Monitor on site.	The Lot 2 Contractor is recommended to: <ul style="list-style-type: none"> • mobilize CH Monitor to ensure full-time presence of CH Monitor on site during earthmoving activities; • conduct cultural training to workers assigned to Gudaury Access Road project; • use machines with the toothless bucket at the area close to Sameba Complex - potential Physical Cultural Resource (PCR) site; • mobilize adequate number of vibration monitoring devices to ensure continuous vibration monitoring at the required CH Sites during construction works at Gudaury Access Road. 	CH	Medium	4/8/2024	CC completed topsoil stripping. CH Monitor presents on site.	Resolved September 2024
20 ID 180	Gudaury Access Road	5/2/2024	The Lot 2 Contractor continues disregarding the topsoil storage requirements at the temporary topsoil storage area on Didveli Plateau. The mentioned area has already been used for storage of the topsoil removed from KGRP	UBM and Contractor Environmental Specialists are recommended to improve oversight of construction activities and ensure the required environmental mitigation measures are	Env.	High	5/15/2024	CC carried out corrective actions, such as: fencing and signposting the topsoil stockpiles and access road, removed the timber remains and rocks, conducted TBT to the personnel involved in topsoil stripping, etc.	Resolved August 2024

		<p>RoW in 2022 and 2023. UBM approved to accommodate topsoil from the Gudauri Access Road after confirming available free space there (refer to Contractor's Topsoil Management Plan).</p> <p>However, instead of utilizing the allocated free space, dump trucks have been observed compacting and damaging the already stored topsoil stockpiles, which had naturally revegetated.</p> <p>The issue resulted from a failure to mark the space allocated for storage of topsoil from Gudauri Access Road and neglecting the need to raise awareness of relevant staff on topsoil storage requirements.</p> <p>Upon notification, the UBM Environmental Specialist together with a Contractor Environmental Officer intervened by providing training and installing signage for topsoil storage. However, the main issue of movement on topsoil stockpiles and dumping additional topsoil remained unresolved within the reporting period. The designated storage space has</p>	<p>proactively implemented.</p> <p>Contractor is recommended to:</p> <ul style="list-style-type: none"> • demarcate the space allocated for storage of topsoil from Gudauri Access Road; • shape the topsoil stockpiles properly to avoid their erosion; • demarcate the area around the trees to keep distance from them to avoid damage to them; • provide drainage channel, where required, to avoid flooding of the land. 					
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			not been demarcated. The Contractor should address the issue promptly to avoid further damage of topsoil, and follow the requirements included in Contractor's re-cultivation plan approved by UBM and MoEPA.						
21 ID 181	Gudauri Access Road	5/23/20 24	Although the construction works are ongoing at Gudauri Access Road, vibration monitoring is ongoing at one CH Site (Sameba Tower – Field ID #19) out of 5 CH Sites recommended by NACHP (refer to CH General Action Plan). As per UBM CH Monitor's information, continuous vibration monitoring is ongoing at Sameba Tower (CH Site #19) due to its significance and the necessity for ongoing vibration monitoring at other CH Sites will be evaluated on-site and the subsequent actions will be defined.	The Lot 2 Contractor and UBM CH Monitors are recommended to: 1. identify all sites within the Gudauri AR where vibration monitoring is needed and is not currently in place, and ensure vibration monitoring is conducted there; 2. to identify the sites where the recommended continuous vibration monitoring is not necessary, providing justification for this decision.	CH	Low	5/31/2024	The report was provided.	Resolved July 2024
22 ID 183	Gudauri AR	5/23/20 24	The Lot 2 Contractor is neglecting the timber management requirements. Despite numerous discussions on-site and during meetings about the necessity to remove timber from the Gudauri AR, no action has been taken. During the site visit, it was	The Lot 2 Contractor is recommended to remove the timber and handover it to the relevant authorities (forest agency).	Env.	Medium	6/2/2024	CC handed over the timber to NFA	Resolved September 2024

			observed that the Contractor was filling or raising the level of the project road, which poses a risk that the timber stored outside of the RoW may become inaccessible. This situation could make it impossible to remove the timber for handover to the forestry agency, as required by the tree felling permit.						
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77. Out of 35 issues pending from the previous reporting period identified by PMCSC and ADB ESM, 24 issues were closed and 11 issues remain outstanding; however, resolution works for the outstanding issues is in progress.
78. The corresponding details between PMCSC, RD and Contractors during the reporting period regarding resolving the non-compliances and taking corrective actions for environmental issues is given in the Table 8D.

Table 8D: Important Correspondence between PMCSC, RD and Contractors to Resolve Environmental Issue during the Reporting Period

Date	Engineer Letter	Subject	Issue/ Concern	Required Action	Target Date of completion	Progress
06/12/2024	2024-05-UBM-CRCC-1506	Requirement of new spoil disposal area for Lot-2	Spoil management	Lot-2 Contractor to find a new area	31-01-2025	In progress
18/01/2024	2024-07-UBM-CRCC-676	Acceptance of dust control management plan	Fugitive dust emissions at Lot-2	PMCSC accepted the document and need to be implemented	-	Completed
23/09/2024	2024-09-UBM-CRTG-1017	Environmental Issues during September 2024 Lot-1	Environmental issues at Lot-1	CRTG to take corrective Actions for the non-compliances	30-10-2024	In progress
28/11/2024	KKRP-202493(344)	Autumn Fish Monitoring Report	Fish Monitoring	CC for Lot-2 to carry out fish monitoring	-	Completed
26/12/2024	2024-12-UBM-CRCC-1523	Acceptance of Environmental Measurement Report	Instrumental Monitoring Report	-	-	Completed
26/12/2024	2024-12-UBM-CRCC-1523	Acceptance of Environment and ecological survey report	GARP Base line survey	CC to carry out baseline survey	-	Completed

3.3 Issue Tracking (Based on Non-Compliances Observed)

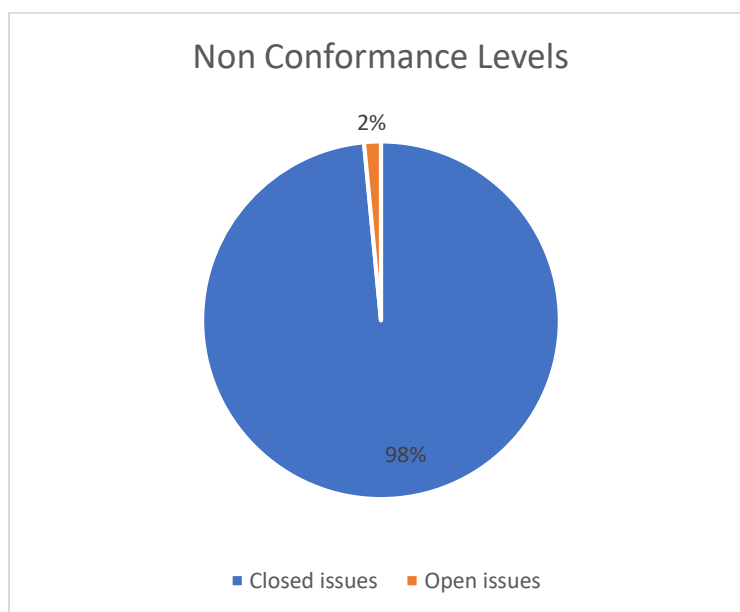
79. Description of issues tracked by PMCSC during the reporting period is given in the Table 9.

Table 9: Summary of issue tracking during the project life up to Decembre 2024

Total number of issues raised during the Project life (from start of the project)	428 + 99 = 527
Number of open issues (for next Q)	5 + 2 = 7
Number of closed issues (during project life)	413+ 94 + 11 = 518
Percentage closed	98 %
Issues opened in this reporting period	99
Issues pending from the previous reports	2
Issues closed in this reporting period including from previous report	94+11= 105

80. Data on the number of closed and open issues is presented in Figure 5. This data is based on the issues that were observed and have been closed or remained open during the Project.

Figure 5: Non-Conformance levels during the Project



81. Out of five hundred twenty-seven (527) issues during the project life, five hundred eighteen (518) issues were closed and some of them were partially mitigated or corrective action in progress requiring further improvement. Table 9 shows the number of emerged and closed issues during the reporting period.

82. There are 2 issues pending from the previous reports identified by the PMCSC as mentioned in Table 8C for which resolution is in progress.
83. Pending issues from previous reports include: (i) Lot 1 Tunnel water discharge from the southern portal with partial treatment in to Khadistskali river, and (ii) Lot 2 Dust emissions during summer in Khada Valley and Didveli Plateau due to the movement of construction vehicles and contractor negligence for the extensive watering of the access roads to suppress the dust.
84. In the reporting period from July-December 2024, totally, 99 issues (44 for Lot 1 and 55 for Lot 2) were registered by PMCSC. 94 issues (42 for Lot 1 and 52 for Lot 2) were sorted out; 5 issues (2 for Lot 1 and 3 for Lot 2). For Lot 1 two issues are pending due to (i) dumping of spoil on topsoil in Tskere, and (ii) negligence of the contractor to delivery of the waste material stored behind the segment plant including used tyres, plastic containers, scrap material, and other used parts of machinery. For Lot 2, three pending issues are: (i) parking of broken excavator parked in the private land, (ii) fencing and removal of construction material from CH 10 site after the conservation of the site, and (iii) extending the tunnel water pipe up to the river from tunnel 1 entrance. Both the contractors have promised to sort out the issues completely after winter.
85. These issues have been reported to contractor through letter and weekly inspection reports with the required Corrective Actions. Furthermore, there are regular discussions made about best practices to be adopted during progress review meetings, and minutes of meetings of such meetings are officially recorded for tracking the progress. PMCSC safeguard team is highlighting the issues at the spot by sharing the pictures in WhatsApp group for immediate response from the Contractors.

3.4 Trends

Lot 1

86. During the reporting period, Lot 1 made significant progress in addressing the safeguard issues. The CC conducted regular instrumental monitoring in Kobi and Tskere and ensured consistent water sprinkling on E-117. Additionally, the CC managed the collection of waste from the camps and delivered it to the municipality landfill. CC also removed broken waste containers from the campsite and carried out regular clean-ups at the campsites.
87. In July 2024, the contractor cleaned out the Khadistskali River and maintained regular cleaning of the batching plant floor and sedimentation pit at the Kobi Batching Plant. Additionally, the contractor routinely cleaned the tunnel water sedimentation ponds to treat water in both Kobi and Tskere. At the Crushing Plant, regular cleaning of sedimentation ponds was conducted, and additional ponds were added for more effective treatment, allowing for the reuse of water in the crushing plant operations. Signs were posted for each facility related to environment.
88. CC organized the scrap material and positioned used containers upright with their lids securely closed. CC covered used tires and machinery that were not in use and established a hazardous material storage area in the warehouse designated for substructures. In September 2024, CC washed the batching plant in Kobi. Additionally, CC checked the control points and marked the boundaries of SDA 3 to ensure all spoil was stored in the designated area for SDA 3. The Contractor stabilized the slope in Tskere

to protect the cemetery and conducted regular instrumental monitoring for noise, air quality, water, and vibration. Finally, CC formally handed over the land previously used for the blasting storage area to the landowner by signing an agreement.

89. To further enhance the safety at the site, CC delivered induction training, held daily toolbox meetings, and provided regular training sessions. CC repaired the guardrail in the TBM Tunnel, conducted daily alcohol testing for drivers, monitored hazardous gases in the tunnels, and restricted the unauthorized entry of the vehicles trying to pass from the tunnel during road closures.
90. However, Lot 1 needs to adopt a forward-thinking approach to planning activities with foresight. CC has to address the outstanding issues related to dumping of spoil on topsoil, delivery of the construction waste including used tyres and containers to the licensed contractor, illumination of TBM tunnel and repairing of the guard rail of TBM tunnel.
91. Overall, during the reporting period, Lot 1 Contractor improved response for resolving the non-compliances highlighted from the RD/PMCSC and showed improvement in addressing the safeguard issues, despite a few issues recurring due to worker behavior and unforeseen natural events

Lot 2

92. Overall, during the reporting period, the Lot 2 contractor made significant progress in addressing outstanding safeguard issues, resolving nearly all pending items from previous reports. Specifically, the long-standing issues related to Batching Plant 2 included improving stormwater management by extending the pipe from the sedimentation pit to the concrete washout pit. The contractor also repaired and built a fence to prevent water from flowing from the batching plant onto private land, which could lead to contamination of private land. Additionally, CC connected the kitchen wastewater to the sewage treatment plant (STP) to prevent it from flowing toward the batching plant. The contractor ensured the timely cleaning of concrete washout pits at all batching plants. As for Batching Plant 1, it can now serve as a model facility in terms of material conservation, housekeeping, transmixer washing, recycling of concrete washout water, and the installation of posted signage.
93. CC ensured the timely collection and transportation of municipal waste from Camp 3 to the municipality containers located in the parking area, which are easily accessible by municipality trucks. Additionally, municipality trucks regularly transport waste from Camps 1 and 2. Furthermore, the contractor cleaned the area under Bridge 2 and the exit of Tunnel 1, collecting all oil spills to maintain a clean construction site. Hazardous waste, including used tires and used oil, was collected from the site and properly handed over to "Medical Technology." Sewage from the septic tanks is collected by a cesspool truck as needed. The contractor also repaired the effluent pipe and tested the effluent from the sewage treatment plant (STP) to ensure that all tested parameters complied with the Maximum Allowable Concentrations (MAC) of Georgia and the International Finance Corporation (IFC) guidelines.
94. The transportation of spoil from Khada Valley to Kvesheti and the earthworks for GARP were the primary sources of dust emissions. To control fugitive dust emissions, the contractor increased the number of water trucks; however, dust management continued to be a challenge, particularly during the windy and dry summer days, due to inadequate management by the contractor.

95. Taking into account the ecological services, CC collected all the wooden logs and branches from the tree that was cut along the Gudauri Access Road. These materials were placed in a designated area near the parking area and subsequently handed over to the NFA. The contractor for Lot 2 hired an independent ichthyologist to conduct fish monitoring in the Khadistskali River and the Aragvi River. Additionally, the contractor completely fenced the lake on Didveli Plateau to prevent rock debris from entering the lake during construction activities.
96. The conservation works for the CH#10 site and the relocation of CH#26 have been completed and accepted by NACHP.
97. In terms of health, safety, and environmental (HSE) considerations, the contractor enhanced the safety signs along the E-117 highway. However, implementing effective safety practices at the Bridge 2 section continues to be a challenge. The contractor needs to provide sidewalks, safety barriers, proper lighting, and active flagmen to mitigate risks associated with community safety and occupational health and safety (OHS).
98. The WhatsApp group established by RD, overseen by the Deputy Chairperson of RD and including the safeguard team and management staff from PMCSC for Lot 2, is actively used for ongoing communication and the swift resolution of non-compliance issues identified by PMCSC's safeguard team. If any issues remain unresolved for an extended period, RD conducts site visits periodically. Additionally, the Deputy Chairperson of RD organizes meetings involving RD safeguard team, PMCSC, and the contractors for Lots 1 and 2, with minutes of these meetings being recorded.

3.5 Unanticipated Environment Impacts or Risk

99. No unanticipated event occurs during the reporting at both the lots. All the environment issues are the same reoccurring with the passage of time and contractors are maintaining these.

4. RESULTS OF ENVIRONMENTAL MONITORING

4.1 Overview of the Monitoring Conducted During the Reporting Period

100. The certified laboratory Gergili LLC, contracted by Contractor for Lot 1, continued carrying out monthly instrumental monitoring for noise, vibration, air quality and testing surface water and ground water quality for the reporting period. Based on the test results, Gergili LLC issued the monthly Environmental Instrumental Monitoring Reports, which were forwarded to PMSCS for review.
101. Monitoring location for air quality, noise and vibration, water quality and ground water levels were selected considering the ongoing construction activities and as per Appendix B of the EIA as shown in Figures 6,7A & 7 B (Lot 1). The objective was to evaluate the potential impacts on the environment resulting from the construction activities. The results of the instrumental monitoring are given in tabular form while, details are presented in Annex 2.

Figure 6: Location of Sampling Points for instrumental monitoring on the Northern Site of the Project Lot 1 (July – December 2024)



Figure 7A: Location of Sampling Points for air, noise and vibration monitoring in on the Southern Site of the Project Lot 1 (July – December 2024)



Figure 7B: Location of Sampling Points for surface water monitoring from Khadistskali river in Tskere Lot 1 (July – December 2024)



102. The certified laboratory Gergili LLC, contracted by Contractor for Lot 2, continued carrying out instrumental monitoring for vibration, noise, air quality and testing surface water quality for the reporting period on a monthly basis. Based on the test results Gergili LLC issues the monthly Environmental Instrumental Monitoring Reports. Sampling locations for instrumental monitoring for the reporting period are shown in Figure 7 C.

Figure 7 C: Location of Sampling Points for Lot 2 (July – December 2024)



Ground Water Quality and Level Monitoring

103. Groundwater quality testing for Lot 1 was conducted from July to November 2024. Samples were collected from a well located at the upper part of the accommodation camp (coordinates 459946.172E 4711509.980N) in Kobi Village. The results of the groundwater tests, as shown in Table 10, were compared with the Georgian Acceptable Limits outlined in Resolution #58 of the Georgian government, which approves the technical regulations for potable water. All tested chemical parameters met the National Acceptable Limits, indicating that the groundwater was not contaminated in terms of chemical contamination. However, Total Coliforms were detected in the spring water samples collected in July, August, and October 2024.
104. During the reporting periods contractor did not take any action to eliminate the Total Coliform in the water. PMSCS has advised several times in meetings to start chlorine dosing to eliminate the coliform bacteria. As it is quite probable that the presence of coliforms is due to degradation of leaf/ grass and due to animal dung (grazing in that area during summer) entering in spring with rain water.
105. In December 2024, it was not possible to collect the sample from the spring due to heavy snow as shown in Figure 7 D.

Figure 7 D: Heavy snow during December 2024 restricted ground water sampling from spring in Kobi



107. Groundwater levels were measured in Kobi and Tskere in August 2024 and again in October 2024 during the reporting period. The CC measures groundwater levels on a quarterly basis for Lot 1, and the results are documented in the Contractor's Quarterly Environmental and Social Monitoring Reports. The details of the measured groundwater levels are provided below:

August 2024:

- Kobi Site - 6.6 meters (coordinates: N470266.4; E461517), August, 2024
- Tskere Site Downhill - 7.2 meter (coordinates: N 470266.4174 E 461517.817), August 2024

October 2024:

- Kobi Site - 7.6 meters (coordinates: N470266.4; E461517), October, 2024
- Tskere Site Downhill - 8.1 meter (coordinates: N 470266.4174 E 461517.817), October 2024

108. There was no significant change in groundwater levels. Any change in groundwater level of less than 1 meter is expected to be due to weather variations.

Figure 7D: Ground Water Sampling from Kobi Spring (August 2024)**Table10: Groundwater Quality Monitoring Results Lot 1 (Spring in Kobi Village)**

Parameter	Measurement unit	Method used	July 2024	Aug 2024	Sept 2024	Oct 2024	Nov 2024	Maximum permissible limit
Organoleptic Parameters								
Color	Degrees	GOST 23268.1-91	0	0	0	0	0	<15
Physical-chemical Parameters								
pH	-	ISO10523:2008	8.47	7.63	7.63	7.94	7.95	6--9
Turbidity	NTU	ISO 7024:1:2016	2.64	0.18	1.60	0.99	1.24	N/A
TPH	mg/L	ISO 11504:2017	<0.005	<0.005	<0.005	<0.005	<0.005	0.3
TDS	Mg/L		95.6	128.1	132.9	136.9	136.1	<1000
Microbiological Parameters								
Total Coliforms	cfu/300 mL	ISO9308-1:2014	150	380	0	170	0	Not permissible

109. In September 2024, the contractor tested the water supplied to Camp 1 for Lot 2 and found all test parameters to be within the acceptable range of Maximum permissible limits.

Table10 A: Groundwater Quality Monitoring Results Lot 2 Camp 1

Parameter	Measurement unit	Method used	Sept 2024	Maximum permissible limit
Physical Parameters				
Color	Degrees	GOST 23268.1-91	0	<15
Smell	Bali		0	<2
Taste	Degree		0	<2
pH	-	ISO10523:2008	7.53	6--9
Turbidity	NTU	ISO 7024:1:2016	0.88	N/A
TPH	mg/L	ISO 11504:2017	<0.005	0.3
TDS	Mg/L		132.9	<1000
Microbiological Parameters				
Total Coliforms	cfu/300 mL	ISO9308-1:2014	0	Not Permissible
Total Coliforms	cfu/300 mL	ISO9308-1:2014	0	Not Permissible

Surface Water Quality

110. For Lot 1, during the reporting period, the surface water samples were collected from the river Tergi to see the effect of tunnel water on the water quality of the river Tergi. Surface water samples were collected from the 150-meter upstream and 150 meters downstream from the disposal of tunnel water. The objective for the sampling was to evaluate potential impact on river water quality due to construction activities. The results are presented in Table 11A.
111. The results presented in Table 11A indicate that there is no significant difference between the measurements taken upstream and downstream of the tunnel 5 water discharge point. Overall, the volume of water and turbidity decreased on the Kobi side, as most of the water flowed toward Tskere due to gravity.

Figure 8: Downstream Surface Water Sampling in Tergi River, July 2024

112. pH values around 7-8 throughout the season reveals that River Tergi water is healthy for the Aquatic microorganisms as normally aquatic organism are severely stressed below 5.5 (acidic in nature). Moreover, at this pH (7-8) certain toxic minerals such as aluminum, lead, mercury, are insoluble and relatively harmless.

Table 11A: Surface Water Results River Tergi, (July – December 2024) Lot 1

Measurement in July 2024							
Location: Upstream, Downstream Riv. Tergi							
#	Parameters	River Tergi		Baseline Result from EIA River Tergi	Unit	National Maximum allowable Concentration (MAC)	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.88	7.89	7.6	pH	6.5-8.5	6-9
2	Turbidity	62.60	77.0	50	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	1	5	<15	mg/l	30	125
5	Conductivity	0.383	0.381	0.0343 S/m	m S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	70	ND	560 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for-tunnel water
Measurement in August 2024							

Location: Upstream, Downstream Riv. Tergi							
#	Parameters	River Tergi		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.46	7.58	7.6	pH	6.5-8.5	6-9
2	Turbidity	86.6	89.30	50	NTU	N/A	-
3	TPH	0	0	<0.04	mg/l	0.3	-
4	COD	61.20	53.80	<15	mg/l	30	125
5	Conductivity	0.443	0.445	0.0343 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	150	380	560 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
Measurement in September 2024							
Location: Upstream, Downstream Riv. Tergi							
#	Parameters	River Tergi		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.67	7.65	7.6	pH	6.5-8.5	6-9
2	Turbidity	49.80	68.70	50	NTU	N/A	-
3	Conductivity	0.436	0.428	0.0343 S/m	Micro S/m	N/A	-
4	COD	20.70	29.40	<15	mg/l	30	125
5	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
<i>Microbiological</i>							
6	Total Coliform bacteria	220	350	560 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)-	400 MPN/100 ml N/A for tunnel water
Measurement in October 2024							
Location: Upstream, Downstream Riv. Tergi							
#	Parameters	River Tergi		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.52	7.42	7.6	pH	6.5-8.5	6-9

2	Turbidity	3.0	12.40	50	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	2.71	0	<15	mg/l	30	125
5	Conductivity	0.556	0.544	0.0343 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	640	430	560 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
Measurement in November 2024							
Location: Upstream, Downstream Riv. Tergi							
#	Parameters	River Tergi		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.78	7.81	7.6	pH	6.5-8.5	6-9
2	Turbidity	9.68	12.40	50	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	4.60	7.49	<15	mg/l	30	125
5	Conductivity	0635	0.674	0.0343 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	40	60	560 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
Measurement in December 2024							
Location: Upstream, Downstream Riv. Tergi							
#	Parameters	River Tergi		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	8.0	7.96	7.6	pH	6.5-8.5	6-9
2	Turbidity	42	37	50	NTU	N/A	-
3	TPH	0	0	<0.04	mg/l	0.3	-
4	COD	6.74	8.77	<15	mg/l	30	125
5	Conductivity	0.656	0.717	0.0343 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							

8	Total Coliform bacteria	240	160	560 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
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113. In December 2024, heavy snowfall in Tskere prevented access to the River Khadistskali, making it impossible to collect water samples from both upstream and downstream locations.

Figure 9: Heavy snow during December 2024 limited water sampling from River Khadistskali



114. During the reporting period contractor conducted water quality test in River Khadistskali from July to November 2024. Increase in turbidity levels were observed in downstream turbidity levels due to mixing of the tunnel water in the river. Overall, during the reporting period turbidity levels have been reduced in the range of 310 NTU due to completion of the excavation works in TBM and EG and reduced construction activities in TBM tunnel.
115. The limited capacity of the current sedimentation tanks, and the lack of regular maintenance of the sedimentation tanks, resulted in the discharge of turbid tunnel water into River Khadistskali. However, during the reporting period RD and PMSCS strictly monitored the issued and compelled the contractor to increase the frequency of cleaning the sedimentation ponds. Contractor cleaned out the sedimentation ponds in Tskere by using dry techniques (diverting water and washed out the tanks) in September 2024.
116. The presence of Total Coliforms observed in the Khadistskali River is due to discharge of Tskere community sewage water. However, Total Coliforms are below the maximum allowable concentration (MAC) in the surface water according to ordinance # 425 of Georgia.

Table 11B: Surface water results River Khadistskali (July – December 2024) Lot 1

Measurement in July 2024

Location: Upstream, Downstream River Khadistskali							
#	Parameters	River Khadistskali		Baseline Result from EIA	Unit	National MAC Ordinance # 425	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	8.13	8.50	7.72	pH	6.5-8.5	6-9
2	Turbidity	2.28	212	5.0	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	12	2.0	<15	mg/l	30	125
5	Conductivity	0.195	0.146	0.0235 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	290	340	2000 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
Measurement in August 2024							
Location: Upstream, Downstream River Khadistskali							
#	Parameters	River Khadistskali		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	8.03	9.68	7.72	pH	6.5-8.5	6-9
2	Turbidity	0.75	740	5.0	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	33.0	29.10	<15	mg/l	30	125
5	Conductivity	0.206	0.181	0.0235 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	110	0	2000 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)-	400 MPN/100 ml N/A for tunnel water
Measurement in September 2024							
Location: Upstream, Downstream River Khadistskali							
#	Parameters	River Khadistskali		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.48	7.61	7.72	pH	6.5-8.5	6-9

2	Turbidity	3.78	310	5.0	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	11	6.02	<15	mg/l	30	125
5	Conductivity	0.214	0.187	0.0235 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	300	440	2000 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
Measurement in October 2024							
Location: Upstream, Downstream River Khadistskali							
#	Parameters	River Khadistskali		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.85	7.99	7.72	pH	6.5-8.5	6-9
2	Turbidity	24.0	38.60	5.0	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	0.31	0.00	<15	mg/l	30	125
5	Conductivity	0.236	0.230	0.0235 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							
6	Total Coliform bacteria	320	260	2000 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml)	400 MPN/100 ml N/A for tunnel water
Measurement in November 2024							
Location: Upstream, Downstream River Khadistskali							
#	Parameters	River Khadistskali		Baseline Result from EIA	Unit	National MAC	IFC indicative values for treated sanitary sewage discharge
		Upstream 150 m	Downstream 150 m				
<i>Physical & Chemical Tests</i>							
1	pH	7.6	7.61	7.72	pH	6.5-8.5	6-9
2	Turbidity	0.40	310	5.0	NTU	N/A	-
3	TPH	<0.005	<0.005	<0.04	mg/l	0.3	-
4	COD	0	6.02	<15	mg/l	30	125
5	Conductivity	0.276	0.187	0.0235 S/m	Micro S/cm	N/A	-
<i>Microbiological</i>							

6	Total Coliform bacteria	20	3200	2000 (MPN in 1000 ml)	MPN in 100 ml	10000 (MPN in 1000 ml) -	400 MPN/100 ml N/A for tunnel water
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Tunnel 5 Water testing

117. Tunnel water testing conducted in July 2024 in Kobi. Tunnel water in Kobi is being treated through trash rack to collect debris and trash and series of sedimentation ponds to collect oil and trap the sediments. These sedimentation ponds are cleaned on regular basis. The water volume and turbidity levels have been decreased significantly towards Kobi side during the reporting period as high volume of water flowing towards Tskere due to gravity flow. Contractor continued the lining of the EG during the reporting period. In Tskere, the Tunnel water is being treated through the sedimentation pond. Contractor is required to start conducting tunnel water testing in the next reporting period in Tskere.
118. Test results for Tunnel water discharge after treatment through sedimentation ponds in Kobi are given below:

Table 11C: Tunnel Water Discharge Testing in Kobi (July 2024)

Parameter	Measuring Unit	Test Result in Kobi tunnel water discharge point	Maximum permissible limits for tunnel water discharge ordinance # 17
pH		9.22	6.5-8.5
TPH	Mg/l	<1.40	≤0.3
TSS	Mg/l	105	60
BOD	Mg/l	0.64	25

119. TSS levels are on the higher side than the prescribed limits of MAC. The contractor is advised to take sample at the downstream of the last treatment pond to verify the increase in TSS after treatment. Regular cleaning of all the treatment pond will eliminate the issue.
120. For Lot 2, surface water measurement details and results are given in the Table 11D. There is no significant change upstream and downstream results except turbidity level near Arakhveti Bridge and that could be due to the confluence of Khadistskali river carrying the tunnel 5 water. However, in August 2024, COD levels are higher in the Aragvi river both downstream and upstream showing that this is not due to project activities. Concentration of the all the other measured parameters is within acceptable range of Applicable Standard MAC. CC for Lot 2 is required to monitor the Total Coliform also for the next monitoring in order to fulfil the requirement of Appendix B, Table B2 of the EIA.

Table 11D: Surface water results (July – Dec 2024) Lot 2

Measurement in July 2024

Location: Upstream and downstream Riv. Aragvi							
#	Parameters	River Aragvi			Baseline Result from EIA River Aragvi	Unit	Applicable Standard MAC
		Upstream 150 m	Downstream 150 m	Near Bridge crossing on Aragvi River in Arakhveti			
<i>Physical & Chemical Tests</i>							
1	pH	8.30	8.28	8.23	8.1	-	6-9
2	Turbidity	28.70	35.30	6.25	348.0	NTU	N/A
3	TPH	<0.005	<0.005	<0.005	0	mg/L	0.1
4	COD	14	10	5	<15	mg/L	30
5	Conductivity	0.218	0.208	0.221	0.0255 (mS/m)	mS/cm	200-1000
Measurement in August 2024							
Location: Upstream, Downstream Riv. Aragvi							
#	Parameters	River Aragvi			Baseline Result from EIA	Unit	Applicable Standard MAC
		Upstream 150 m	Downstream 150 m	Near Bridge crossing on Aragvi River in Arakhveti			
<i>Physical & Chemical Tests</i>							
1	pH	7.62	7.40	7.41	8.1	-	6-9
2	Turbidity	1.21	6.17	2.90	348.0	NTU	N/A
3	TPH	<0.005	<0.005	<0.005	0	mg/L	0.1
4	COD	32.6	35.5	45.20	<15	mg/L	30
5	Conductivity	0.245	0.266	0.272	0.0255 (mS/m)	mS/cm	200-1000
Measurement in September 2024							
Location: Upstream, Downstream Riv. Aragvi							
#	Parameters	River Aragvi			Baseline Result from EIA	Unit	Applicable Standard MAC
		Upstream 150 m	Downstream 150 m	Near Bridge crossing on Aragvi River in Arakhveti			
<i>Physical & Chemical Tests</i>							
1	pH	8.57	8.48	8.66	8.1	-	6-9
2	Turbidity	38	41	50	348.0	NTU	N/A
3	TPH	<0.005	<0.005	<0.005	0	mg/L	0.1
4	COD	2	0	2.04	<15	mg/L	30

5	Conductivity	0.233	0.277	0.263	0.0255 (mS/m)	mS/cm	200-1000
Measurement in October 2024							
Location: Upstream, Downstream Riv. Aragvi							
#	Parameters	River Aragvi			Baseline Result from EIA	Unit	Applicable Standard MAC
		Upstream 150 m	Downstrea m 150 m	Near Bridge crossing on Aragvi River in Arakhveti			
<i>Physical & Chemical Tests</i>							
1	pH	7.88	8.11	7.89	8.1	-	6-9
2	Turbidity	2.96	1.96	2.65	348.0	NTU	N/A
3	TPH	<0.005	<0.005	<0.005	0	mg/L	0.1
4	COD	0	0	0	<15	mg/L	30
5	Conductivity	0.64	0.274	0.350	0.0255 (mS/m)	mS/cm	200-1000
Measurement in November 2024							
Location: Upstream, Downstream Riv. Aragvi							
#	Parameters	River Aragvi			Baseline Result from EIA	Unit	Applicable Standard MAC
		Upstream 150 m	Downstrea m 150 m	Near Bridge crossing on Aragvi River in Arakhveti			
<i>Physical & Chemical Tests</i>							
1	pH	7.45	7.62	7.6	8.1	-	6-9
2	Turbidity	2.6	2.5	149	348.0	NTU	N/A
3	TPH	<0.005	<0.005	<0.005	0	mg/L	0.1
4	COD	0	0	0	<15	mg/L	30
5	Conductivity	0.276	0.28	0.310	0.0255 (mS/m)	mS/cm	200-1000
Measurement in December 2024							
Location: Upstream, Downstream Riv. Aragvi							
#	Parameters	River Aragvi			Baseline Result from EIA	Unit	Applicable Standard MAC
		Upstream 150 m	Downstrea m 150 m	Near Bridge crossing on Aragvi River in Arkhveti			
<i>Physical & Chemical Tests</i>							
1	pH	7.78	8.03	8.78	8.1	-	6-9
2	Turbidity	1.48	7.02	1.25	348.0	NTU	N/A
3	TPH	<0.005	<0.005	<0.005	0	mg/L	0.1
4	COD	0	0	0	<15	mg/L	30
5	Conductivity	0.300	0.283	0.280	0.0255 (mS/m)	mS/cm	200-1000

Wastewater Test Results for Lot 2

121. CC for Lot 2 carried out waste water treatment results from Camp 3 STP in July 2024 to evaluate the functioning of the STP and the effect of the treated water on the receiving water body Sviana ravine. Results shows that all the test results within the prescribed range of Indicative guidelines values for treated sanitary water discharge and MAC of Georgia.

Table 11E: Water results of Saviana Ravine July 2024

Parameter	Units	Results	Max Permissible limits according to Georgian ordinance # 17
pH	pH	7.61	6.5-8.5
Turbidity	NTU	14.90	N/A
BOD5	mg/l	1.39	25
COD	mg/l	1.0	30
Conductivity	Ms/cm	0.367	200-1000
TPH	mg/l	<5	≤5

Table 11 F: Camp 3 Wastewater Results July 2024

Parameter	Units	Results STP Camp 3	Indicative Guideline Value for treated sanitary water discharge.	Max Permissible limits according to Georgian ordinance # 17
pH	pH	7.65	6-9	6.5-8.5
BOD5	mg/l	1.47	30	25
COD	mg/l	2.0	125	125
Total Nitrogen	mg/l	12	10	15
Total phosphorus	mg/l	0.025	2	2
Total suspended solids	mg/l	50	50	60

Noise

122. During the reporting period for Lot 1, sampling locations for noise levels were selected to evaluate the impact on the residential area of Kobi village due to construction activities at TUN 5 North portal, and at Tskere side South portal of TUN 5 to evaluate the impact of noise on the residential area of Tskere village. The average equivalent noise levels (LAeq) recorded are indicated in Table 12 A with location detail and compared with the day time and night time IFC limits 55 dB(A) and 45 dB(A) respectively for the residential areas.
123. For Lot 1 overall, the LAeq results vary between 54 dBA to 65 dBA. The increased levels observed in September and October 2024 in Kobi from the range of IFC standard 55 d(BA) for residential areas during the day time. The slight increased high levels in Tskere from

August to October 2024 are anticipated to be due to noise of water flowing from the tunnel to sedimentation ponds in Tskere. In Kobi the increased noise levels are due to cumulative effect of traffic on E-117 and construction activities in Kobi. Graphical presentation of the day time levels at Lot 1 is shown in the Figure 10. The difference of 3dB(A) is hardly to be detected by the human ear.

124. The night time noise levels in village Kobi and Almasiani were within the limits of the standard which is (45 dBA). In Kobi, crushing plant has been surrounded by SDA 1 and stockpile height has been increased enough and that is acting as a noise barrier especially for the village Almasiani. Night time noise levels were not conducted in Tskere as there was no construction activity in Tskere in the night time. Graphical presentation of the night time levels at Lotv1 is shown in the Figure 11.

Table 12A: Average Equivalent Noise Levels Result during the Reporting Period Lot 1

Location	Average Equivalent Noise level (LAeq) Measurement dB(A) (1 Hour Averaging Period)							IFC Standard dB(A) for Residential Area
	Baseline Results	July 2024	Aug 2024	Sept 2024	Oct 2024	Nov 2024	Dec 2024	
Day Time								
Residential Area of Kobi Village	51	59.45	55.5	65.15	65.3	61.5	54	55
Tskere settlement	47	57.7	61.3	60.4	61.9	55.8	57	
Night Time (Averaging period 30 minutes)								
Residential Area of Kobi Village	-	43.9	41.8	41.8	45.9	40.0	41	45
Village Almasiani (church)	-	42.1	39.1	39.1	41.8	38.5	42	
Village Almasiani (residential area)	-	43.6	43.2	43.2	43.4	42.0	37	

Figure 10: Average Equivalent Day Time Noise levels (LAeq) Lot-1

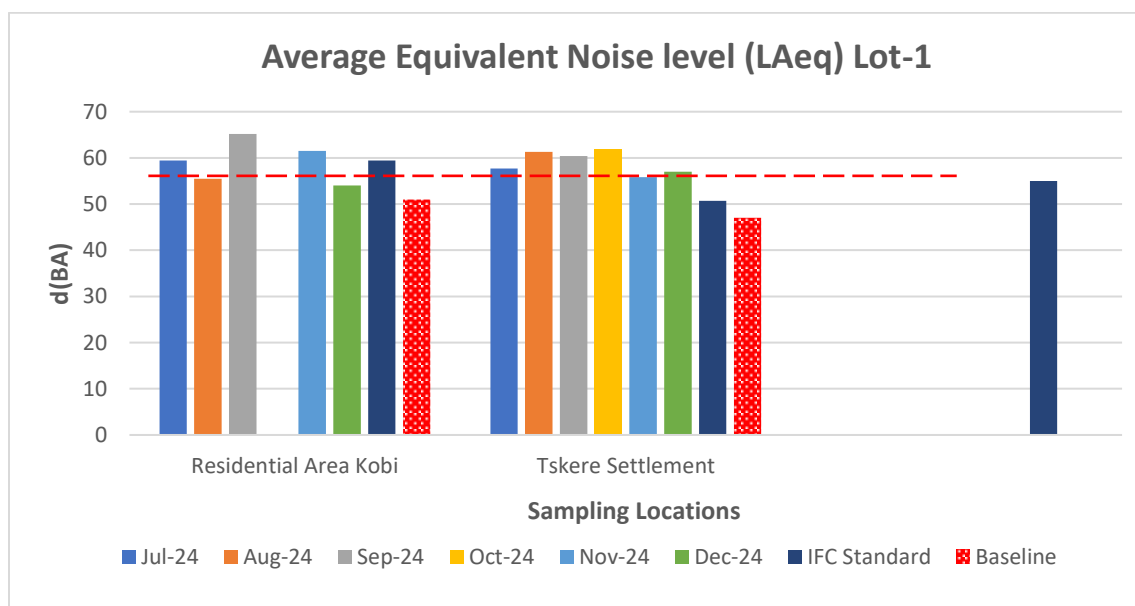
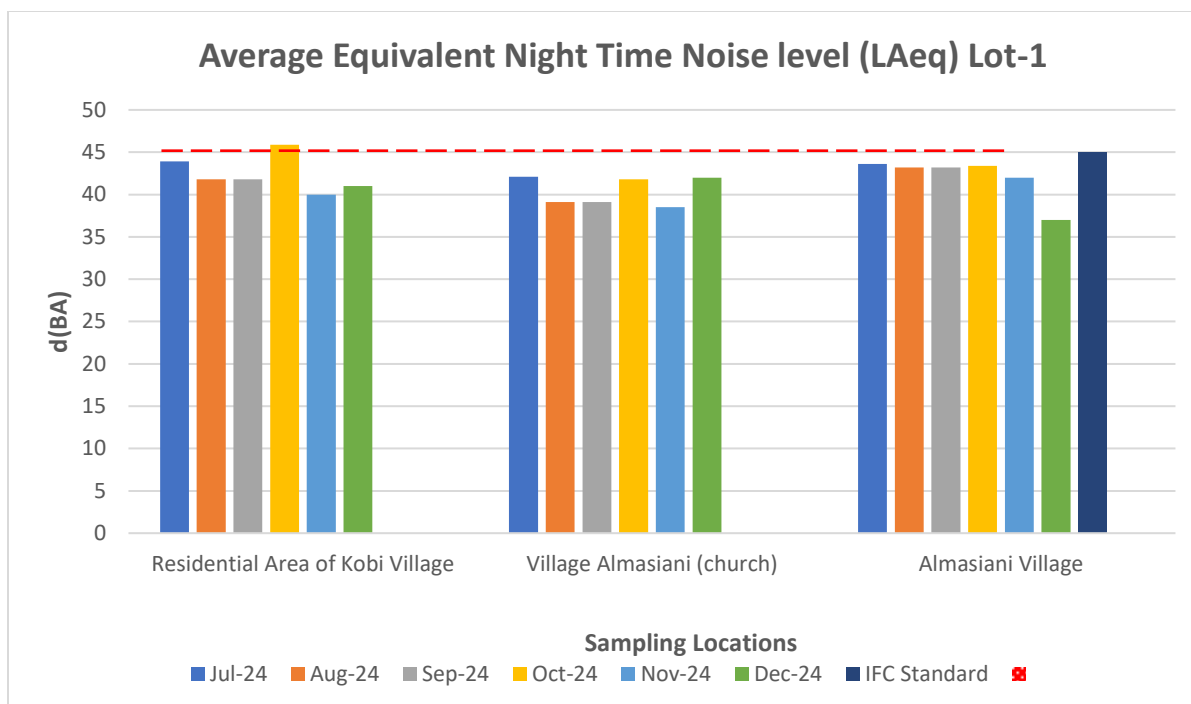


Figure 11: Average Equivalent Night Time Noise levels (LAeq) Lot-1

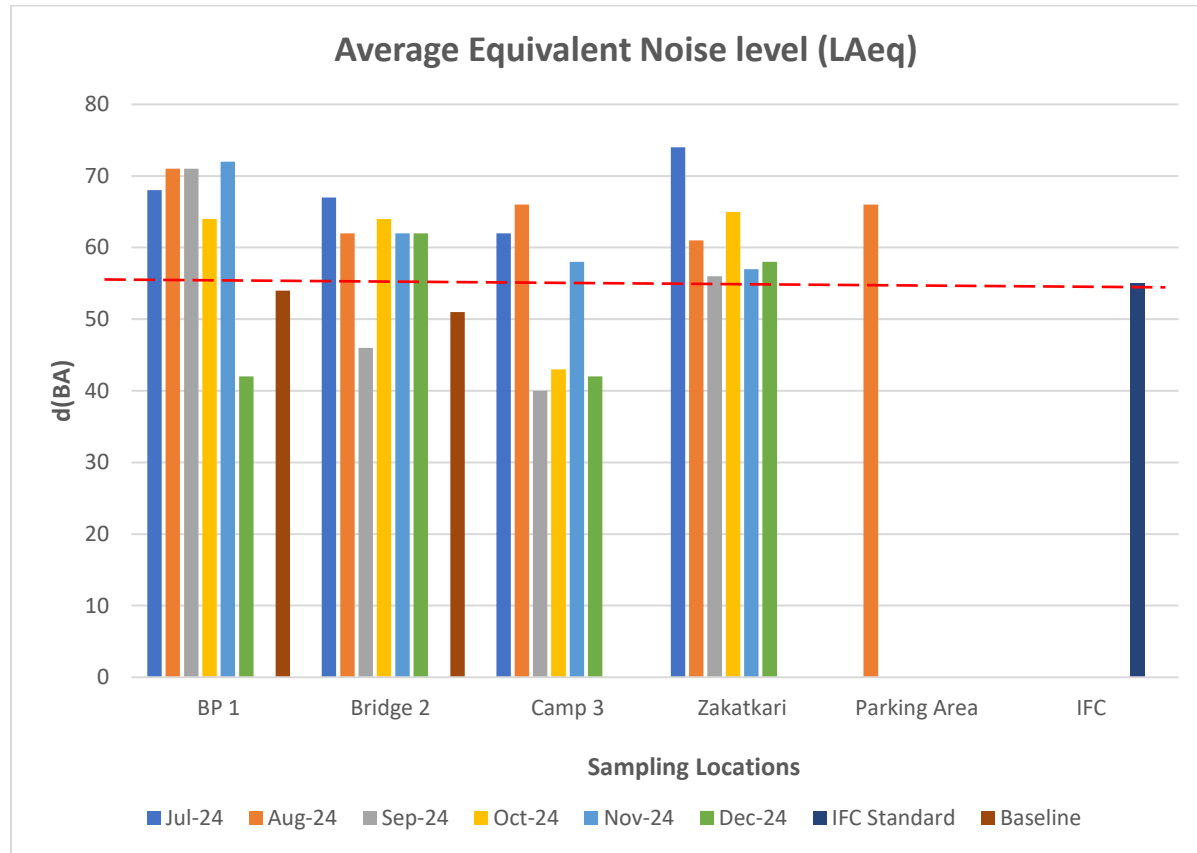


125. Noise monitoring results detail for Lot 2 is given in Table 12C. As indicated in the Table 12C and shown in Figure 12, along the E-117 noise levels are exceeding the day time IFC limits for residential area due to heavy traffic movements on the highway and construction activities; however, these are below the IFC limits of commercial noise levels 70 dB(A). Lot 2
126. High noise levels observed in village Zakatkari and Camp 3 are due to construction activities. Contractor does not conduct any construction activities at night time and there is no need for night time noise monitoring for Lot 2. The contractor should prioritize quieter equipment and machinery for the construction activities and PPEs such as ear plugs should be provided to the workforce.

Table 12C: Average Equivalent Noise Levels (LAeq) Result during the Reporting Period for Lot 2

Parameter	Unit	IFC Standard dB(A) Residential Area (Day time noise levels)	Sampling Locations				
			Parking Area	Bridge 2	Zakatkari	Camp 3	BP 1 along the road
Baseline Results							
Day time Noise Levels	dB(A)	55	54.5	50.9	-	-	54
Results July 2024							
Daytime Noise levels	dB(A)	55 Res/Commercial 70	-	67.45	74.15	62.4	68.25
Results August 2024							
Daytime Noise levels	dB(A)	55	66.25	62.15	61.5	66.1	71.1
Results September 2024							
Daytime Noise levels	dB(A)	55	-	46	56	40	71
Results October 2024							
Daytime Noise levels	dB(A)	55	-	64	65	43	64
Results November 2024							
Daytime Noise levels	dB(A)	55	-	62	57	58	72
Results December 2024							
Daytime Noise levels	dB(A)	55	-	62.35	52.05	42	42

Figure 12: Average Equivalent Day Time Noise levels (LAeq) Lot-2



Vibration

127. During the reporting period, Lot 1 conducted continuous vibration monitoring at one sampling point: Kvelatsminda Church building in Tskere Village. The device also covers Naraidze Tower, Zakaidze Tower and the old graves in Tskere. No exceedance of the reference value of DIN 4150-3 standard was observed due to construction activities in Tskere. Exceedance observed are due to change in battery, physical contact by locals.
128. For Kobi, CC for Lot 1 stopped vibration monitoring in St. George church because works on Kobi side are nearly complete and incidence of the vibration has never been detected during the tunnel activities.
129. Cultural Heritage specialists have direct access to all vibration devices. Information on vibration exceedances is immediately provided online (via email and text) to the PMCS and Contractor's CH specialists.
130. Location for installation of vibration monitoring device is shown in the map below.

Figure 13: Location for the Vibration Monitoring Point at Lot 1 in Tskere



Figure 14: Vibration monitoring in Tskere Kvelatsminda Church



Table 13 A: Continuous Vibrational Monitoring Results (July – December 2024) Lot 1

Location	Peak Particle Velocity (PPV) mm/sec			Guideline value for vibration with DIN 4150-3 Standard
	Longitudinal (X)	Transitional (Y)	Vertical (Z)	
Measurement in July 2024				3 mm/sec
Tskere, Kvelatsminda church	0.50 mm/s	0.49 mm/s	0.35 mm/s	
Measurement in February 2024				
Tskere, Kvelatsminda church	0.26 mm/s	0.45 mm/s	0.83 mm/s	
Measurement in August 2024				
Tskere, Kvelatsminda church	0.65 mm/s	0.38 mm/s	0.45 mm/s	
Measurement in September 2024				
Tskere, Kvelatsminda church	0.74 mm/s	0.25 mm/s	0.58 mm/s	
Measurement in November 2024				
Tskere, Kvelatsminda church	0.15 mm/s	0.36 mm/s	0.20 mm/s	
Measurement in December 2024				
Tskere, Kvelatsminda church	0.03 mm/s	0.08 mm/s	0.14 mm/s	

131. For Lot 2, during the reporting period continuous vibration monitoring was conducted at the locations shown in the map below and mentioned in Table C. The Contractor has 5 devices for all CH sites. Vibration monitoring devices were not installed at all locations recommended by NACHP during the reporting period, as there was no need for monitoring at sites where no construction activities were taking place nearby. For the monitoring of cultural heritage sites, those places that are close to construction areas were selected.

Figure 15: Location for the Vibration Monitoring Points at Lot 2



Figure 16: Continuous Vibrational Monitoring at CH Site 29, Mughere, Lot 2



Table 13B: Continuous Vibrational Monitoring Results (July – December 2024), Lot 2

Location	Peak Particle Velocity (PPV) mm/sec			Guideline value for vibration with DIN 4150-3 Standard
	Longitudinal (X)	Transitional (Y)	Vertical (Z)	
Measurement in July 2024				3 mm/s
CH #4, Didveli Plateau	0.44 mm/s	2.0 mm/s	1.07 mm/s	
Sviannant Tower in Svianaant old village	1.68 mm/s	0.05 mm/s	2.07 mm/s	
St. Mary church in Mughure village	1.13 mm/s	0.13 mm/s	0.88 mm/s	
Measurement in August 2024				
CH #4, Didveli Plateau	0.02 mm/s	0.17 mm/s	1.05 mm/s	
Sviannant Tower in Svianaant old village	2.33 mm/s	1.95 mm/s	0.6 mm/s	
St. Mary church in Mughure village	1.13 mm/s	1.76 mm/s	1.92 mm/s	
Measurement in September 2024				
CH #4, Didveli Plateau	2.16 mm/s	0.72 mm/s	0.54 mm/s	
Sviannant Tower in Svianaant old village	1.85 mm/s	0.74 mm/s	1.11 mm/s	
St. Mary church in Mughure village	2.03 mm/s	2.15 mm/s	2.04 mm/s	
Measurement in October 2024				
CH #19, Sameba tower	0.85 mm/s	1.47 mm/s	1.1 mm/s	
CH #28, Mill	0.12 mm/s	1.2 mm/s	0.86 mm/s	
Sviannant Tower in Svianaant old village	1.76 mm/s	0.76 mm/s	2.12 mm/s	
St. Mary church in Mughure village	0.89 mm/s	1.8 mm/s	2.28 mm/s	
Measurement in November 2024				
CH #19, Sameba tower	2.31 mm/s	2.3 mm/s	1.11 mm/s	
CH #28, Mill	0.85 mm/s	1.25 mm/s	1.54 mm/s	
Sviannant Tower in Svianaant old village	2.32 mm/s	0.91 mm/s	1.01 mm/s	
St. Mary church in Mughure village	0.39 mm/s	2.01 mm/s	1.98 mm/s	
Measurement in December 2024				
CH #19, Sameba tower	1.29 mm/s	0.64 mm/s	1.42 mm/s	
CH #28, Mill	2.26 mm/s	1.69 mm/s	1.87 mm/s	
Sviannant Tower in Svianaant old village	1.73 mm/s	1.23 mm/s	0.47 mm/s	
St. Mary church in Mughure village	2.29 mm/s	1.61 mm/s	0.78 mm/s	

132. No significant exceedance was observed due to construction activities at the locations mentioned in Table 13C.

Ambient Air Quality Monitoring

133. For Lot 1, dust levels were measured during the reporting period to determine the impact on air quality due to ongoing construction activities at TUN 5 North Portal and Tskere village. The air quality monitoring location and results are summarized in Table 14A.
134. For Lot 1 during the reporting period, the main emission source was the construction activities being carried out at the Tunnel 5 North and South Portals and movement of heavy machinery. The construction activities were ongoing for earthwork in Tskere side.
135. PM10 levels including the concentration levels of NO₂, SO₂, CO and dust levels as indicated in Table 14A are within the national limits for air quality in Georgia and IFC guidelines (for trend of PM 10 Levels during reporting period (see figure 17). CC for Lot 1 was carrying out regular water sprinkling at Kobi; however, CC for Lot 1 is not using the access road 1 as they have access for Tskere through Tunnel 5.

Table 14A: Ambient Air Quality Monitoring Results Lot 1 (July- December 2024)

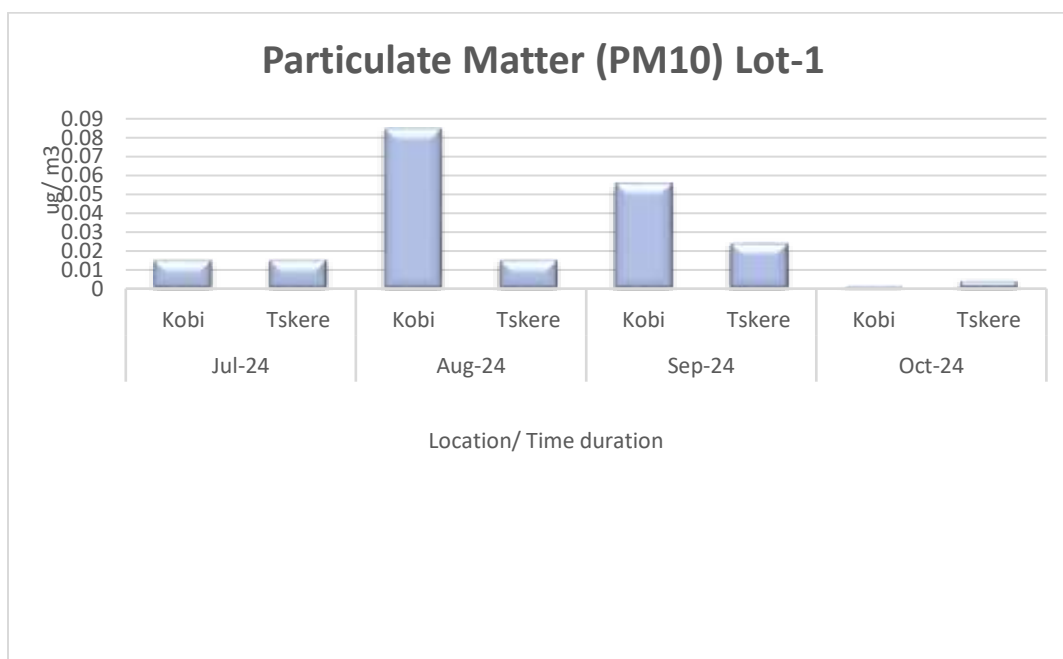
Measurement in July 2024					
Indicator	IFC Guidelines (Averaging Period)	Georgian Standards (Averaging Period)	Unit	Kobi Site	Tskere Village
Particulate Matter (PM ₁₀)	50 (24 hrs.)	50 (1 hr.)	µg/m ³	0.015	0.015
Particulate Matter (PM _{2.5})	25 (24 hrs.)	25 (1 year)	µg/m ³	0.003	0.009
Carbon Monoxide (CO)	-	10000 (Max daily or hourly mean) ^c	µg/m ³	0.0	1.5
Nitrogen Dioxide (NO ₂)	200 (1 hr.)	200 (1 hr.)	µg/m ³	0	0
Sulphur Dioxide (SO ₂)	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	µg/m ³	0	0
Measurement in August 2024					
Indicator	IFC Guidelines (Averaging Period)	Georgian Standards (Averaging Period)	Unit	Kobi Site	Tskere Village
Particulate Matter (PM ₁₀)	50 (24 hrs.)	50 (1 hr.)	µg/m ³	0.085	0.015
Particulate Matter (PM _{2.5})	25 (24 hrs.)	25 (1 year)	µg/m ³	0.014	0.005
Carbon Monoxide (CO)	-	10000 (Max daily or hourly mean) ^c	µg/m ³	0	0
Nitrogen Dioxide (NO ₂)	200 (1 hr.)	200 (1 hr.)	µg/m ³	0	0
Sulphur Dioxide (SO ₂)	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	µg/m ³	0	0
Measurement in September 2024					
Indicator	IFC Guidelines (Averaging Period)	Georgian Standards (Averaging Period)	Unit	Segment Plant Kobi	Tskere Village

Particulate Matter (PM ₁₀)	50 (24 hrs.)	50 (1 hr.)	µg/m ³	0.056	0.024
Particulate Matter (PM _{2.5})	25 (24 hrs.)	25 (1 year)	µg/m ³	0.011	0.014
Carbon Monoxide (CO)	-	10000 (Max daily or hourly mean) ^c	µg/m ³	0	0
Nitrogen Dioxide (NO ₂)	200 (1 hr.)	200 (1 hr.)	µg/m ³	00.31	0
Sulphur Dioxide (SO ₂)	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	µg/m ³	0	0
Measurement in October 2024					
Indicator	IFC Guidelines (Averaging Period)	Georgian Standards (Averaging Period)	Unit	Segment Plant Kobi	Tskere
Particulate Matter (PM ₁₀)	50 (24 hrs.)	50 (1 hr.)	µg/m ³	0.001	0.004
Particulate Matter (PM _{2.5})	25 (24 hrs.)	25 (1 year)	µg/m ³	0	0
Carbon Monoxide (CO)	-	10000 (Max daily or hourly mean) ^c	µg/m ³	3.0	4.7
Nitrogen Dioxide (NO ₂)	200 (1 hr.)	200 (1 hr.)	µg/m ³	0	0
Sulphur Dioxide (SO ₂)	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	µg/m ³	0	0

^b: IFC guidelines for 24 hours are being used except NO₂ as standard is available for one-hour averaging period

^c For CO Georgian National standard is 10mg/ m³ µg/m³ maximum hourly or daily basis. For EU, the standard is 10 mg/m³ for 8 hours. For USEPA the standard is 10 mg/m³ (9 ppm) for 8 hrs. And 44 mg/ m³(35 ppm) for one hour. There is no IFC standard for CO

Figure 17: Dust Levels (PM10) at Lot 1 (July – December 2024)



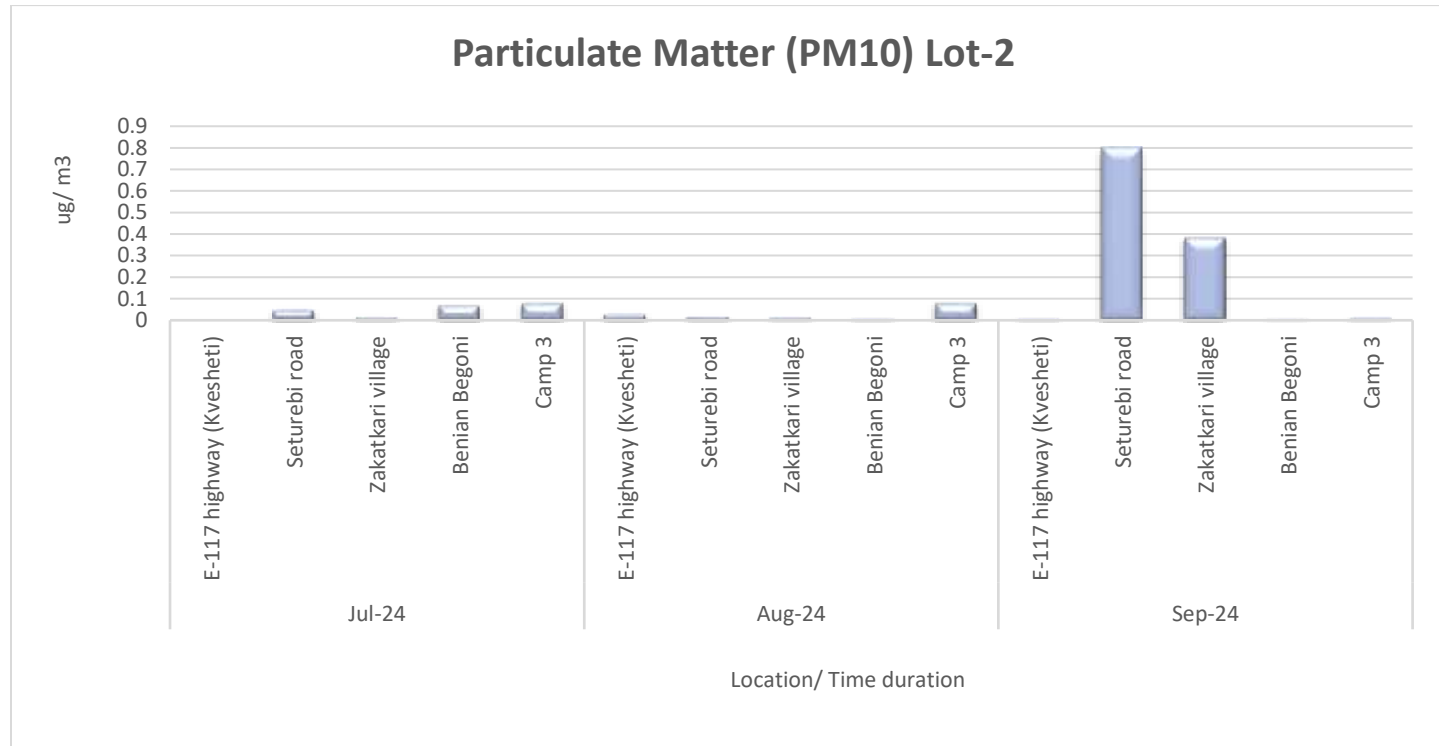
136. CC for Lot 2 monitored air quality from July to September 2024. The details of locations and results are provided in the Table 14B. All the parameters measured are within the permissible limits of IFC guidelines. Graphical presentation is shown in the Figure 18 to see the trends during the reporting period and ambient air is very clean. Fugitive dust emissions are being observed at the access road when heavy vehicles moving on the access roads during dry and windy days. Contractor is required to regularize the water sprinkling in Khada Valley and Didveli Plateau to suppress the fugitive dust during the next summer. Fugitive dust levels are the major issue in Khada Valley and Didveli Plateau at access road while vehicles travelling on access road during dry and windy days of summer season. Lot 2 has prepared dust management plan consisting of Action Plan to combat the dust and need to be properly implemented and UBM field officers should monitor on daily basis.
137. Aeroqual series 500 has been sent by laboratory for the calibration, because of that reason no air measurement activity was carried out for November and December 2024 for Lot 1 and October 2024 to December 2024 for Lot 2.

Table 14 B: Ambient Air Quality Monitoring Results Lot 2 (July- Dec 2024)

Parameter	Units	Limits (IFC) (Averaging Period)	Georgian Standards (Averaging Period)	Locations				Camp 3
				E-117 highway (Kvesheti)	Seturebi road	Zakatari village	Benian Begoni	
Measurement results in July 2024 (averaging Period 1 hr.)								-
Particulate Matter (PM10)	µg/m3	50 (24 hrs.)	50	0.047	0.045	0.012	0.067	0.077
Particulate Matter (PM 2.5)	µg/m3	25 (24 hrs.)	25 (1 hr.)	0.006	0.008	0.004	0.009	0.006
Carbon Monoxide (CO)	ug/m3	-	10000 (Max daily or hourly mean) c	0	0	0	0	0
Sulphur Dioxide (SO2)	µg/m3	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	0	0	0	0	0
Nitrogen Dioxide (NO2)	µg/m3	200 (1 hr.)	40 (1 hr.)	0	0	0.039	0	0
Measurement results in August 2024 (averaging Period 1 hr.)								
Particulate Matter (PM10)	µg/m3	50 (24 hrs.)	50	0.026	0.016	0.009	0.007	0.076
Particulate Matter (PM 2.5)	µg/m3	25 (24 hrs.)	25 (1 hr.)	0.006	0.006	0.051	0.004	0.014
Carbon Monoxide (CO)	ug/m3	-	10000 (Max daily or hourly mean) c	0	0	0	0	0
Sulphur Dioxide (SO2)	µg/m3	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	0	0	0	0	0
Nitrogen Dioxide (NO2)	µg/m3	200 (1 hr.)	40 (1 hr.)	0	0	0	0	0.006
Measurement results in September 2024 (averaging Period 1 hr.)								
Particulate Matter (PM10)	µg/m3	50 (24 hrs.)	50	0.006	0.80	0.381	0.004	0.008
Particulate Matter (PM 2.5)	µg/m3	25 (24 hrs.)	25 (1 hr.)	0.003	0.009	0.020	0.003	0.003
Carbon Monoxide (CO)	ug/m3	-	10000 (Max daily or hourly mean) c	2.8	3.0	5.2	3.4	2.1
Sulphur Dioxide (SO2)	µg/m3	20 (24 hrs.) 500 (10 min)	50 (1 hr.)	0	0	0	0.014	0

Nitrogen Dioxide (NO ₂)	µg/m ³	200 (1 hr.)	40 (1 hr.)	0.053	0.047	0.046	0	0.027
Nitrogen Dioxide (NO ₂)	µg/m ³	200 (1 hr.)	40 (1 hr.)	0	0	0	0.0	0





Figure 18: Dust Levels (PM₁₀) for Lot 2 (July – December 2024)



4.1.1 Biodiversity Monitoring

138. At Lot 1, in Kobi worksites surrounding area, two cameras are operating: - one camera is located at the SDA 3 for potential otter habitat and, potential habitat of corncrake species; - second camera is located upper hill of Narvani River. Two trap-cameras have been installed on Tskere Site at Khadistskali River and upper hill of the campsite.
139. For Lot 1, seasonal biodiversity monitoring at the Kobi and Tskere Sites has been conducted. No accidental damage of fauna was identified during the reporting period. Animal mortality due to the project activities was not revealed.

Figure 19: Locations of Camera Traps Installed by Lot 1

	
<p>Figure 1: The Trap camera covers SDA #3 area.</p>	<p>Figure 2: The trap camera covers Narovani River upstream.</p>
	
<p>Figure 3: The Trap camera covers upper slope of the Tskere campsite</p>	<p>Figure 4: The Trap camera covers upper slope of the Tskere campsite</p>

140. Wolves, foxes, a bear and Partridges were caught in summer 2024 at the upper hill of the Kobi campsite and at the SDA 3. Detailed findings of the survey carried out during the reporting periods are given in Table 15A with pictures.

Table 15A : Details of Findings of Biodiversity Features in Lot 1 during Reporting Period (July - December 2024)

	
<p>Wolves were observed on SDA #3 On Kobi Site. September 2024</p>	<p>House Sparrows at Kobi Campsite, December 2024</p>
	
<p>Bear at Kobi site uphill, July 2024</p>	<p>Red-winged blackbird on Tergi belly and on SDA #3. September (Kobi).</p>



Butterflies. August 2024, Kobi Site.



Ravens (few individuals) - Campsite (Kobi), August 2024.



Butterflies, August 2024. Tskere Site.



Trap camera for observation of fishes; Khadistskali River, Tskere, August 2024.















Georgian horse grazing near SDA 3, winter 2024







Rock pigeon in search of food during winter 2024, Kobi.

Figure 20. Details of Plants Observed and Recorded by Contractor ECoW (Spring, Summer and winter period, 2024) – Lot 1 (Kobi and Tskere)

		
<p>weeds/ shrubs dead due to snow cover. Winter 2024. Kobi</p>	<p>SDA 3 and topsoil covered with snow. All the weeds/ shrubs dead due to snow cover. Winter 2024- Kobi</p>	<p>Mix forest of deciduous and evergreen Pine trees during winter December 2024. Kobi</p>
		
<p><i>Primula farinosa</i> L.-Bird-eye primrose (Kobi Spring 2024)</p>	<p><i>Cardamine pratensis</i> L.- Lady's-smock (Kobi Spring 2024)</p>	<p><i>Gentiana verna</i> L. (Kobi Spring 2024)</p>

		
<p>Broad-leaved Marsh-orchid (Kobi spring 2024)</p>	<p>Potentilla concinna Richardso (Kobi spring 2024)</p>	<p>Fritillaria tubiformis Gren. & Godr. (Kobi spring 2024)</p>
		
<p>Anemone narcissiflora L Kobi (August 2024)</p>	<p>Alpen-Kreuzblume Kobi (August 2024)</p>	<p>Marsh dandelion Kobi (July 2024)</p>
		

<p><i>Cardamine raphanifolia</i> Pourr- Kobi (August 2024)</p>	<p><i>Myosotis alpestris</i> F.W. Schmidt- Kobi (August 2024)</p>	<p>Mountain Buttercup Kobi (August 2024)</p>
		
<p><i>Primula elatior</i> (L.) Hill – Kobi Spring 2024</p>	<p><i>Pedicularis kernerii</i> Dalla Torre- Tskere September 2024.</p>	<p><i>Bistorta officinalis</i> Delarbre, Tskere spring 2024.</p>
		
<p><i>Pontechium maculatum</i> (L.) Böhle & Hilger Kobi Spring 2024</p>	<p><i>Gymnadenia densiflora</i> (Wahlenb.) A.Dietr. Kobi Spring 2024</p>	<p><i>Tanacetum coccineum</i> (Willd.) Grierson- Kobi Spring 2024.</p>

		
<p>Veronica gentianoides Vahl Gentian speedwell- Kobi Summer 2024</p>	<p>Centaurea cheiranthifolia Willd. Kobi Summer 2024</p>	<p>Dactylorhiza majalis (Rchb.) P.F.Hunt & Summerh. Spring 2024 Kobi.</p>
		
<p>Carum carvi L. Caraway- spring 2024 Kobi</p>	<p>Betonica macrantha. Koch. Big Betony- spring 2024 Kobi</p>	<p>Veronica chamaedrys L. Germander Speedwell- Spring 2024</p>

LOT 2

141. To avoid contamination of topsoil and preserve according to topsoil management plan, contractor for Lot 2 removed tree roots and cuttings from the topsoil stored at plateau during the reporting period. Additionally, The Lot 2 Contractor fenced off the walnut trees at SDA #3 in Kvesheti during the reporting period to protect them during construction.

Figure 21A: Topsoil preservation October-November 2024 Lot 2



142. The contractor for Lot 2 obtained the tree cutting permit from the National Forestry Agency (NFA) from GARP RoW, stored the wood logs near parking lot and handed over 90 cubic meters of wood logs in total to the NFA during the reporting period as per the tree cutting permit requirements. The process of handing over the wood logs to NFA has been completed.

Figure 21B: Wood Logs handed over to NFA during October-November 2024



143. For Lot-2 Contractor carried out fish monitoring in November 2024 in River Khadistskali and Aragvi. The findings of the fish monitoring report indicate that Caspian trout (*Salmo caspius*) were observed during the survey and are widely distributed in the upper basin of the Tetri Aragvi River and its tributaries. In recent years, several field studies have been conducted in this river basin, where trout have been recorded. It is likely that trout inhabit the project area year-round and spawn there. During the summer monitoring, Kura spirin (*Alburnoides eichwaldii*) was also observed in the project area, but it was not seen this time. Overall, the Khadistskali River has low species diversity and population density of fish.

Figure 21C: Fish Monitoring in River Khadistskali and Aragvi - November 2024



144. For Lot 2, four cameras have been installed at different places in the project area and the locations for the cameras are being changed from time to time. In case of mammals, CC also checked for any evidence for the foot prints or faeces in or around the project area. Monitoring of focused species was held according to biodiversity monitoring plan, revealed results are shown in Tables 15B and 15C below.

Table 15B: Faunal Species Movement around the Project Corridor Lot 2

Monitoring objects during July-December 2024				
Mammals				
Species	Status by Georgian red list	Action	Location	Results



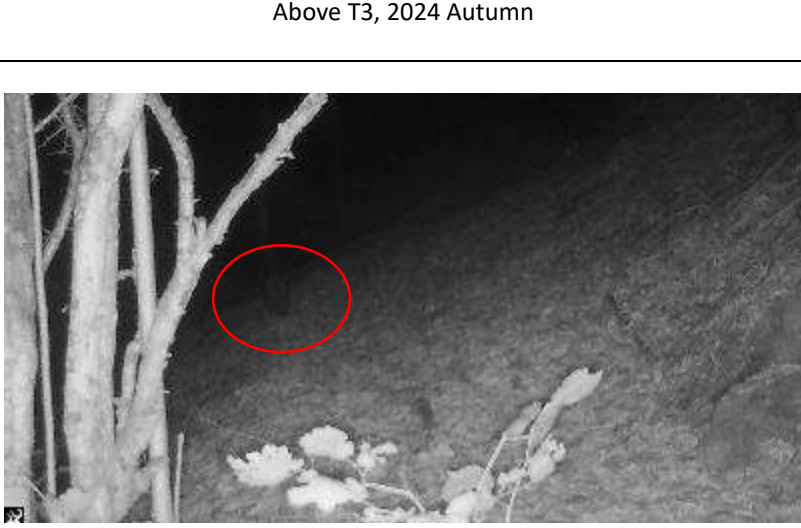
1. Brown Bear <i>Ursus arctos</i> 2. Eurasian lynx <i>Lynx lynx</i> 3. Eurasian otter <i>Lutra lutra</i> 4. Dahestanian tur <i>Capra cylindricornis</i>	1. VU 2. CR 3. VU 4. VU	1. Visual observation and collaborate with local people by asking if they saw this specie 2. Visual observation and collaborate with local people by asking if they saw this specie 3. Visual observation 4. Visual observation	1. Near T3 exit portal surrounding, Khada valley 2. Plateau, B3, Camp3. 3. Near village Bedoni, riv. Khadistskali territory 4. Near Camp3	1. Photo was taken by photo trap 2. No footprint, excrement and fur were found or taken any photo 3. No signs of vital activity were found 4. No signs of vital activity were found
Rodents				
Species	Status by Georgian red list	Action	location	Results
1. Caucasian Squirrel – <i>Sciurus anomalus</i>	1. -	1. Visual observation, especially on the trees	1. Tunnel N2, Plateau, B3	1. No squirrels were seen
Birds				
Species	Status by Georgian red list	Action	Location	Results
1. Egyptian vulture - <i>Neophron percnopterus</i> 2. Cinereous or black vulture - <i>Aegypius monachus</i> 3. Great rosefinch - <i>Carpodacus rubicilla</i> 4. White winged redstart - <i>Phoenicurus erythrogastrus</i> 5. Common blackbird – <i>Turdus merula</i> 6. White wagtail - <i>Motacilla alba</i>	1. VU 2. VU 3. VU 4. VU 5. – 6. -	1. Visual observation near possible nest 2. Visual observation 3. Visual observation 4. Visual observation 5. Visual observation 6. Visual observation	1. Near tunnel N1 2. Whole territory of Lot N2 3. Whole territory of Lot N2 4. Whole territory of Lot N2 5. Whole territory of Lot N2 6. Whole territory of Lot N2	1. No vulture were found (possible nest of vulture semms left) 2. No Cinereous black vulture were seen 3. No great rosefinch were seen near camp N3 4. This species was not found 5. This specie was found everywhere 6. This specie was found everywhere
Bats				

Species	Status by Georgian red list	Action	location	Results
1. Lesser mouse-eared myotis - <i>Myotis blythii</i> 2. Greater horseshoe bat - <i>Rhinolophus ferrumequinum</i> 3. Lesser horseshoe bat - <i>Rhinolophus hipposideros</i>	1. – 2. – 3. -	1. Visual observation 2. Visual observation 3. Visual observation	1. near tunnel N 1, access road N1, B2 2. near tunnel N, access road N1, B2 3. near tunnel N1, access road N1, B2	1. This specie wasn't found 2. This specie wasn't found 3. This specie wasn't found
Plants				
Species	Status by Georgian red list	Action	location	Results
1. Mountain oak 2. Common elm 3. Smooth-leaved elm 4. Common alder 5. European ash 6. Georgian oak 7. Common hornbeam 8. Litwinow birch 9. Field maple 10. Oriental beech	1. VU 2. VU 3. VU 4. – 5. – 6. – 7. – 8. – 9. – 10. -	1. Visual observation 2. Visual observation 3. Visual observation 4. Visual observation 5. Visual observation 6. Visual observation 7. Visual observation 8. Visual observation 9. Visual observation 10. Visual observation	1. Tunnel N1, Access road N2,4, B3 2 Tunnel N1, Access road N2,4, B3 3. Tunnel N1, Access road N2,4, B3 4. Tunnel N1, Access road N2,4, B3 5. Tunnel N1, Access road N2,4, B3 6. Tunnel N1, Access road N2,4, B3 7. Tunnel N1, Access road N2,4, B3 8. Tunnel N1, Access road N2,4, B3 9. Tunnel N1, Access road N2,4, B3 10. Tunnel N1, Access road N2,4, B3	1. This species wasn't found 2. This species wasn't found 3. This species wasn't found 4. During the reporting period mentioned specie was not necessary to cut 5. During the reporting period mentioned specie was not necessary to cut 6. During the reporting period mentioned specie was not necessary to cut 7. During the reporting period mentioned specie was not necessary to cut 8. During the reporting period mentioned specie was not necessary to cut 9. During the reporting period mentioned specie was not necessary to cut 10. Some individuals of this species were cut in case of B3 working activities from Khada valley side (access road N5) - In 2023 January and environmental specialist was attending the process
Fish				

Species	Status by Georgian red list	Action	location	Results
1. Salmo 2. Bullhead 3. Caucasian chub 4. Barbell 5. Mursa	VU - - -	1. - 5. Observation and control fishing	1. Aragvi, Khadistskali 2. Aragvi 3. Aragvi 4. Aragvi, Khadistskali 5. Khadistskali	Caspian Trout- Salmo Caspius widely distributed in upper part of the Aragvi River. Kura spiriline was found during the summer survey.

Table 15C: Photographs of Species Movement Noted by Camera Traps, Lot 2

	<p>Photo trap model: Browning</p>
	<p>Some pictures taken by photo trails during reporting period at different locations</p>

	
	<p><i>Capreolus capreolus</i> – roe deer – LC by IUCN – No status by Georgian red list</p>
	<p><i>Ursus arctos</i> – Brown bear - LC status by IUCN – EN status by Georgian red list</p>

Above T3, 2024 Autumn



Surroundings of exit of T3, Khada valley



Canis lupus – Grey wolf – LC status by IUCN – not included in Georgian red list



Didveli Plateau, Autumn 2024

	<p><i>Martes martes</i> – European pine marten – LC status by IUCN red list - not included in Georgian red list</p>
	<p><i>Pica pica</i> – Eurasian magpie - LC status by IUCN red list - not included in Georgian red list</p>

Didveli Plateau, Autumn 2024

Didveli Plateau, Autumn 2024

4.1.2 Cultural Heritage Monitoring

145. Lot 1. Monitoring of the Kobi Arched Bridge on the Narovan/Narvan River was conducted by cultural heritage specialists from the Engineer and the Contractor. During the initial monitoring in 2020, cracks and fractures were observed in the lower part of the bridge pier located directly in the river. This damage resulted from natural conditions. To address the bridge's deteriorating condition, barricades made of small pillars were installed in January 2021 to prevent heavy machinery from accessing the bridge. A warning sign was also placed in the area. However, starting in May 2021, residents began using the bridge despite these precautions. In response, the contractor installed additional markings near the bridge. RD informed NAHCP and cultural heritage specialists from the supervisory company conducted special training for drivers to discourage its use.
146. In April 2022, a significant deterioration of the bridge pier was observed, with widening cracks and part of the pier beginning to separate from the main structure. The bridge remained in this condition until July 28, 2024, when the northern part of the bridge collapsed. This damage was not due to the project.

Figure 22 A: Damaged part of the Kobi Arch Bridge



147. During reporting period Lot 1 Contractor has obtained the permit from NACHP for reinforcement of the collapsed second floor of Naraidze tower and on December 2024 the works were completed. The NACHP will inspect the site to confirm that the reinforcement work has been carried out in compliance with the approved project.
148. The Lot 2 contractor has started to remove the soil in the vicinity of Kaishauri Lake on Didveli Plateau. The earthmoving works were closely monitored by the CH specialists. The Chance find was not observed during the works. The soil is mostly rocky.

Figure 22B: Subsoil removal near Kaishauri Lake



149. . The conservation project for CH #10 was delayed multiple times due to adverse weather conditions, which caused the subcontractor to fall behind schedule. The work was ultimately completed in November 2024, and the NACHP conducted a site visit to assess the completed project, which was carried out by sole proprietor Paata Basishvili. In December 2024, the NACHP

officially accepted the completed works. The conservation of CH #10 (Didveli Backed Tower) was originally scheduled for completion by December 8, 2023.

Figure 23: Conservation Works of Didveli Backed Tower (CH Site #10)



150. The subcontractor proceeded with the relocation process for CH #26 (Remains of Backed Tower), The works were carried out by LTD Boni. The original location was part of the RoW, the new location was approved and predetermined by NACHP. carefully numbering each stone for tracking and identification. The placement of the numbered stones commenced systematically on the prepared platform, ensuring proper alignment and stability throughout the process. All works were closely monitored. By the end of November 2024, the relocation process was completed. The National Agency for Cultural Heritage Preservation conducted a site visit to assess and accepted the completed works.

Figure 24: Relocation Completed for CH #26



151. During reporting period, contractor for Lot 2 continued land clearing and excavation activities, specifically, at GARP. Wherever, the Contractor for Lot 2 started topsoil stripping as part of their construction activities. PMCSC Cultural Heritage Specialists closely monitored the earthworks and throughout the monitoring process, no cultural heritage artifacts or remains were discovered.
152. Both Contractors continued continuous vibration monitoring at several CH Sites. The detailed information is presented in Section 4.1 “Vibration.” Both Contractors’ and PMCSC Cultural Heritage Specialists have permanent access to the website where the vibration data is reflected in live mode. Also, as soon as the exceedance of vibration is detected, the specialists automatically receive a notification in the form of a message or e-mail. As soon as the PMCSC CH specialists receive the notification, it is verified from the website immediately and the exact figures are analyzed. PMCSC CH Specialists start looking for the cause together with the Contractor. If it is found that an exceedance has been observed as a result of construction works, appropriate mitigation measures will be taken. At the end of each month, the vibration monitoring sub-contractor submits the monthly monitoring report with all the monitoring data. The major exceedance due to the construction works did not occur during the reporting period.
153. In the reporting period, PMCSC CH Specialists constantly monitored the identified CH Sites. Construction didn’t affect any identified CH Sites.
154. The Contractor for Lot 2 upgraded and reinforced the damaged fences around the required CH sites.

Figure 25: Completely fenced Zakaidze Ttower, Tskere



Figure 26: Completely Fenced CH Site #25, Benian-Begoni



4.1.3 Health and Safety

155. The PMCSC continues to supervise all KGRP and Gudauri Access Road Project construction activities and has 4 H&S specialists on board: international H&S specialist, senior H&S specialist responsible for both Lots, and two H&S specialists responsible separately for each Lot. The PMCSC together with both Contractors continues to carry out regular worksite visits and inspections. In addition, these inspections also are done by the PMCSC and the Contractors, separately. The results and observations are documented for these inspections on H&S checklists.
156. These inspections ensure proactive identification of problems which contribute to the effective management of H&S. Both, the Contractors and the Engineer continue to deliver H&S trainings to the project personnel in order to improve the safety awareness and safety culture among the workers.
157. Proceeding from it, effective monitoring of all construction activities is ensured through the constant presence of H&S specialists at project worksites.
158. In addition, RD's HS specialist continues to conduct regular monitoring of project activities, revises H&S documentation and consults the Contractors on health and safety matters.

4.1.3.1 Community Health & Safety

159. Compliance with community health and safety was monitored during the whole reporting period by the PMCSC on a daily basis as a part of regular worksite inspections.
160. The Contractor continued to upgrade fences and warning signs across the worksites to ensure that locals are proactively informed regarding construction activities and risk associated with them. Throughout this period, the Contractor did not always manage to identify all shortcomings proactively but the PMCSC's and ADB ESM engaged timely and problems were rectified. (Pic 1, 2, Figure 27)

161. Fences of worksites which are adjacent to local populated areas are permanently maintained and warning signs updated. To ensure community health and safety, both Contractors carried out different activities during the reporting period:

- Lot 2 Contractor installed the fence along the ROW in the village of Jaghmiani, which is located close to the construction of Gudauri Access Road. Local's residential house was identified to be located close to the edge of the excavation and hence, the installation of fence was of an urgent need to prevent any falls (Pic 3, Figure 27).
- Lot 1 Contractor arranged metal fence at Tskere to protect the cemetery from negative impacts during the construction of cut and cover section (reinforcement and shotcrete of the slope). In addition, slope of cut and cover section which is located close to the cemetery was stabilized by the depositing of an additional spoil over/at the edge of the cut to prevent any possible slope collapse in the future.
- Lot 2 Contractor has renewed H&S signs at the worksites. These signs included informational signs restriction the access for locals to worksites and Tunnels and informing them regarding the hazards associated with the construction process.
- Road traffic signs and traffic cones were regularly provided at Bridge 2 and the Arakhveti along the construction of the road which interfered the traffic on the existing road and hence, required the proper management of traffic flow changes. The PMCSC's road safety specialist is involved in the management of mentioned above issues and provides all necessary instructions to both Contractors (Pic 4, Figure 27).
- Fences at Lot 2 sections were regularly repaired/installed at different worksites to protect excavations resulted from the construction process (Benian-Begoni, Arakhveti, etc.)
- Carried out upgrading and maintenance of fence along both sides of Bridge 2, Lot 2.
- Installed fences at the excavations at different locations along the Arakhveti village, adjacent to the highway and residential areas

162. The residents of the village Benian-Begoni expressed their concern regarding Lot 2 Contractor's dump trucks driving fast which was creating dust on the road. Also, it was not safe for the locals to share that road with the dump trucks as it was creating a risk to their safety. As a follow up, the Contractor has delivered the TBT to the drivers and increased the supervision of this process. Training was also scheduled for all drivers to be delivered regularly. (Pic 5, Figure 27).

163. A community health and safety meeting were conducted with the village Benian-Begoni by RDs Health and Safety Specialist and PMCSC's Social Specialist. During that meeting, locals were informed about the ongoing construction activities, community risks and existing control measures:

- Mobile equipment
- Excavations
- Signage and access restrictions
- Unauthorized entry to worksites

- Existing controls
 - Children on the ground.
 - Locals communicated their concerns which were noted, addressed and considered for the future (Pic 6, Figure 27).
164. During the reporting period the PMCSC has contracted local NGO “Partnership for road safety Georgia” for implementation of road safety awareness campaign. On 11th and 12th of November four road safety training sessions were conducted at two local public schools in Kvesheti and Gudauri, with the target to educate school children on general road safety practices (Pic 7 & 8 of Figure 27). In total, approximately 147 students attended these trainings, separately lower and upper grades students. During trainings, students had an opportunity to use simulated helmets and “drunk goggles”. At the end, students participated in Q&A session and were given informational posters and reflectors.
165. On 13 November a meeting was held with the representatives of Dusheti Mayor Office in the village of Kvesheti together with the locals. At this meeting, road safety issues were discussed, highlighting risk factors, the current state of the roads, and ongoing challenges.

Figure 27: Community Health and Safety





Pic 5



Pic 6



Pic 7



Pic 8



4.1.3.2 Occupational Health & Safety

166. During the reporting period, regular inspections of all worksites at both Lots were carried out by The PMCSC and both Contractors. Contractors' H&S specialists were still permanently assigned to different worksites (Tskere, Kobi, Khada Valley, Didveli Plateau) in an organized manner to ensure permanent presence and effective supervision. In addition to the Contractor, the PMCSC's H&S specialists closely monitor the compliance with the safety requirements through permanent worksite inspections. The Engineer's H&S specialists are also assigned to different areas of operation in an organized manner which improves the quality of supervision overall. The inspection results are documented in the inspection forms and different check lists.
167. During the reporting period Lot 2 Contractor started final lining works in EG of Tunnel No. 1. Most works in EG are carried out at height using mobile platforms for final lining. As for the Tunnel No. 1, final lining works were successfully finished and the Contractor started inverting works. Personnel involved in the tunnel works are trained and the Contractor's safety specialist who is assigned to these worksites, is permanently supervising all activities. Only minor violations were identified in Tunnel No. 1 such as missing guardrails at small section of the platform used by workers for the installation of geotextile lining. As a follow up, the platform was inspected, and the damaged guardrails system was immediately fixed. At the present moment, forced ventilation is not required anymore at Lot 2, as both tunnels (Tunnel No. 1 and EG) are broken through, and natural ventilation is strong enough and ensures healthy working environment.
168. Lot 1 Contractor broke through Emergency Gallery during the reporting period which significantly reduced the risks and even eliminated different hazards associated with the excavation of Emergency Tunnel. In particular, drill and blast works were completed which are classified as a high-risk activity and were the source of atmospheric hazard (toxic gases). Also, blasting was creating the risks of mechanical injuries as a result of improper management of blasting works. All developed controls (e.g. re-entry period, testing of the gases and necessary emergency equipment) for the EG excavation works were in place until the completion of these works. Currently, no atmospheric hazard is present in EG as blasting works are completed and natural ventilation took over. The installation of temporary support in EG was also completed. This task was a challenge for health and safety and was also associated with different risks for workers.
169. Invert and final lining works are still in the progress in EG which requires close monitoring and permanent supervision. Together with the Contractor, the Engineer's H&S specialist are involved in the supervision of these works on a daily basis.
170. The Lot 1 Contractor continues to work in the main tunnel mostly on the casting of the driveway shoulders. TBM disassembling is almost completed at Tskere which required difficult lifting activities with a few tandem lifts. This activity was under the permanent supervision of the PMCSC's and RD's H&S specialists. Personnel involved in this activity were trained and toolbox talks were regularly delivered at the worksite. (Pic 1, Figure 28).
171. The Contractor and the Engineer continued to monitor air quality during the tunnel works separately, with the use of portable gas detectors. The results of these inspections were recorded by the Contractor in a special log. No exceedances of allowable gas levels were identified, which indicates that the ventilation system together with all other controls was working effectively. Despite the fact that currently all tunnels are broken through and toxic atmosphere risks are at a low level, it is still reasonable to randomly check the air quality at a different location where tasks which can produce toxic fumes are taking place (e.g. welding).

172. The Engineer together with both Contractors delivered trainings during the reporting period to the tunnel personnel working in the Tunnels. Not only theoretical materials were explained to workers during these trainings, but also practical application targeting proper use of self-rescue equipment, etc.
173. During the reporting period both Contractors effectively managed their all-medical facilities. Project doctors are still mobilized on full time basis ensuring permanent medical coverage of all worksites.
174. During this reporting period, Lot 2 Contractor completed the construction Bridge 2 main structure (casting of box girders) which was the biggest challenge for health and safety at Lot 2 section during this reporting period. This resulted in connecting all piers with each other and closing the gaps where workers had to work on the formwork platforms and use stair towers to access the bridge. The stair towers, scaffolding and guardrail systems were a subject of permanent inspection carried out by a certified scaffolder during the reporting period (Pic 2, Figure 28). In addition to it, the Contractor's and the Engineer's HS specialists carried out regular joint inspections of Bridge 2 when the results were documented. Also, regular toolbox talks were conducted with the personnel at the bridge deck targeting different tasks. (Pic 3, Figure 28).
175. Collective protective measures are prioritized over the PPE during the construction of Bridge No. 2. Proceeding from it, the use of collective protection was expanded even more. In particular, the use of administrative and PPE controls at the leading edges of the bridge where it was not practical to use collective protection, were replaced with guardrails system. Despite the fact that exposure period was extremely short and the use of guardrails at leading edges of the bridge was difficult due to technical issue, guardrails were installed at those sections as well. Hence, 100 percent of bridge edges were protected by collective protection (Pic 4, Figure 28).
176. Currently, all formwork platforms and stair towers are removed as access to bridge deck is now possible from the embankment arranged from bridge's both sides (A1 and A2).
177. The use of PPE during work at height was controlled by the Contractor and all workers are trained in the proper use of fall arrest system during the training sessions
- Inspection of fall arrest equipment is done by the workers prior to use and regularly by H&S specialists when results are documented.
178. The PMSC together with the Contractors continued to deliver intensive trainings for Bridge No. 2 personnel regarding work at height. The frequency of this training increased during the reporting period. This training is mandatory for every employee who is working at height and is delivered prior to the start of work as well as at a regular interval. (Pic 5, Pic 6, Figure 28).

The following modules are discussed during work at height training sessions:

- Introduction and definition
- Roles and Responsibilities (Technical regulation No. 477 regarding work at height)
- Ladders (Technical Regulation No. 477 of the Government of Georgia)
- Scaffolding (Technical Regulation No. 477 of the Government of Georgia)
- Fall arrest equipment (Technical Regulation No. 477 of the Government of Georgia)
- PPE inspection
- Guardrails (Technical Regulation No. 477 of the Government of Georgia)
- Rescue plan
- Dropped objects

179. The Lot 2 Contractor did not ensure the effective internal communication with the Sub-Contractor during the Construction of Gudauri Access Road. In particular, Sub-Contractor company, responsible for the relocation of OHPL from the ROW, was not properly informed about the location of gas pipelines and was about to start the relocation of OHPL in the close vicinity. This process did not pose a significant risk to pipelines as this shortcoming was identified at the early stage and corrected. Despite it, the Contractor should have communicated the location of underground facilities in all parties involved in the more effective and ensure the compliance with the requirements at the implementation phase.
180. During the reporting period, Lot 2 Contractor invited third party certified company to inspect the stationary crane which is being used for the construction of Bridge No. 5 in Khada Valley. The crane successfully passed the inspection and was certified (Pic 7, Figure 28).
181. During the reporting period, the PMCSC continued the permanent monitoring of the construction process at Gudauri Access Road, especially with regards to health and safety. Effective communication was established between the PMCSC and the representatives of gas pipeline owners (GGTC), who were also supervising the activities on the spot. Hence, mutual support and proactive exchange of information improved the effectiveness of supervision and ensured compliance with GGTC requirements.
182. The Lot 2 Contractor has revised Health and Safety Management Plan in the reporting period. This revision was a periodic review to make sure that document remains current and effective. As a result of the revision, existing controls were revised and some new control measures were added.
183. During the reporting period, Lot 2 Contractor's H&S department has implemented a lot of different activities to improve the safety of mobile equipment operation, but still Lot 2 Contractor faces difficulties in this process. The dump trucks were still observed driving overloaded with the spoil and overspeed still occurred. The Contractor conducted trainings with the dump truck drivers at a different interval during the reporting period. The training was focused on defensive driving and driving in the winter period (Pic 8, Figure 28). In addition to the training, toolbox talks were delivered to the drivers at the worksites. The PMCSC was supervising the process of dump trucks' inspection and held a meeting with the maintenance shop supervisor. During the reporting period, all dump trucks became the subject of an additional inspection supervised by the PMCSC's and RD's H&S specialist (Pic 9, Figure 28). This was also a result of an incident that occurred at Lot 2 involving a dump truck. Inspection results were documented and identified problems fixed. Despite this fact, reactive maintenance of mobile equipment was still observed and hence, more efforts are required to improve the situation. The PMCSC continues to supervise this process. All necessary instructions were provided to the Contractor by the PMCSC regarding this issue.
184. Not quite effective management of health and safety was observed at 7+800 KM cut section at Lot 2. In particular, workers were observed working on the installation of rockfall protection metal mesh without wearing safety harnesses. The activity was stopped, and TBT delivered to the personnel. Despite this fact, this violation recurred later and hence, improvement of supervision at the spot is required.
185. Both Contractors continued to deliver Toolbox Talks on a regular basis. Toolbox talks target general safety requirements as well as specific topics for different work activities. Lot 2 Contractor increased a bit the number of TBT, but still more TBTs sessions are required. (Pic 10, Figure 28).

186. E&S external monitoring report was submitted in December 2024 by “Eco-Spectri” contacted by Roads Department of Georgia and ADB. The subject of monitoring was environmental, safety and cultural heritage aspects and recommendations prepared based on the findings observed. All worksites were visited during this monitoring as well as all relevant documentation were checked.
187. During the reporting period, both Contractors continued to reinstall and maintain safety/warning signs across all worksites to improve both occupational and community safety. Signs were installed at the entrances to the tunnels (restricting access) and at all worksites informing about present hazards and reminding workers to follow established safety procedures.
188. Safety control measures were implemented at the access road to Bridge 3 (Lot 2) to improve safety during the operation of equipment on this road. In particular, the surface was concreted, hard barriers installed along access road, concrete slabs installed to prevent any unwanted event if mobile equipment loses control, and safety signs posted. (Pic 11, Pic. 12, Figure 28) Same barriers were installed at the access road to TN 1 but the use of this road in winter period is not recommended.
189. Lot 1 Contractor increased the access control to Tunnel No. 5 during the winter period. It is necessary due to the fact that in winter, main road is frequently getting closed because of heavy snow and hence, locals might try to seek an alternative route through the main tunnel, which is broken through but still in the construction phase. It was decided that in addition to existing controls (electric boom gate etc.) set up a physical barrier at the entrance of tunnel. The PMCSC continues to closely monitor this issue.
190. Trainings conducted during the reporting period at both Lots, but not limited to (Pic 13, Pic 14, Figure 28):
 - General safety requirements.
 - Safety requirements during the tunnel construction.
 - Defensive driving
 - Work at height
 - Specific training targeting work at height during the construction of Bridge 2 (girder box casting)
 - Induction trainings
 - Lifting safety
 - Electrical safety
 - Winter driving

Figure 28: Health and Safety Related Trainings Conducted in the Reporting Period by Lot 1 and Lot 2







191. No incident happened during the last three reporting periods (18 months) at Lot 1 section, while two incidents occurred at Lot 2 section during this reporting period. Accident details which occurred during the reporting period are given in the Table 16 below.

Table 16. Works Related Accidents Reported during the Reporting Period

#	Date	Description	Investigation results	Corrective measures
1	July 16, 2024 Lot 2	On July 16th 2024 a dump truck driver was working at the construction of Gudauri access road, transporting spoil from the excavation site to SDA 1 at Didveli Plateau. While driving at a downhill section of the Access Road No. 3, the driver could not manage to control (decelerate) the dump truck and decided to jump out of the cabin when he received injuries (shoulder joint dislocation and wound at the scalp area). The dump truck continued to move forward which resulted in leaving the driveway, driving over the edge.	Incident investigation identified immediate and root causes. The immediate cause of the accident was: Using inadequate shift gear (Did not follow the existing procedure) - Dump truck driver accelerated the truck's speed by engaging an upper gear instead of using lower gear, which was crucial for controlling speed on a descent. Low gear should help to maintain a steady speed and prevent the truck from exceeding the recommended speed limit. As a result, the deceleration distance was increased, and brakes were less	Defensive driving safety refresher training was delivered to all Contractor's drivers. TBT targeting safe driving techniques was also delivered to the drivers' teams during the working hours at worksites. All dump trucks became a subject of the inspection (in addition to the scheduled inspections) and results were documented in the checklists. The Engineer's and RD 's safety specialists were involved. Preventive maintenance works were arranged as a

			<p>effective. Hence, the driver lost control over truck.</p> <p>The root cause of the accident was identified as the lack of training.</p> <p>The driver started working on KGRP project 1 month and 6 days before the incident and it was not managed to deliver all necessary trainings to the driver. It was obvious that his awareness of safe driving techniques was not good enough. Driver was holding driving license with relevant category, but more toolbox talks and training sessions could have improved the driver's awareness.</p>	<p>follow up on the inspection results which is a continuous process and requires permanent monitoring.</p>
2	August 16, 2024 Lot 2	<p>On August 16th, 2024, the Contractor's employee was working at Bridge No. 2 Pier No. 4 when he was unwinding a roll of steel rope which was delivered to Pier No. 4 for the use in the prestressed concrete tensioning works. During the unwinding process, once the steel rope roll was loosened, it snapped back, hitting worker to the right hand, and causing dislocation of fingers joint. An affected person was immediately delivered to camp 1</p>	<p>The immediate cause of the incident was a steel rope which snapped back that resulted from not following safety procedures, as it was obvious that safety measures were not followed, such as securing the wire or using protective equipment.</p> <p>The root cause of this incident was:</p>	<p>The Contractor delivered toolbox talk to the whole personnel working at the Bridge 2 regarding safety requirements for the steel rope unwinding process.</p> <p>The training program was revised, and this topic was included in all H&S training</p>

	medical facility and later, transferred to the hospital in Tbilisi where he received necessary medical assistance.	<ul style="list-style-type: none"> • Training/knowledge transfer as affected person did not receive specific training targeting safe methods of unwinding steel rope, which could prevent this incident. • Standards/procedures as no specific procedures were developed for this process and included in H&S management plan. 	<p>sessions and TBT topics.</p> <p>The Contractor prepared safety procedures for this task and included it in the Health and Safety Management Plan during the last revision of this document.</p>
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192. Trends related to the accidents reported during the reporting period are given in Table 17A and 17B for Lot 1 and Lot 2 respectively.

Table 17A: Types of Accidents Reported (July-December 2024) Lot 1

Accident Type	Reporting Period (July – December 2024)	Total (from commencement)
Near Miss	5	28
Incidents	0	8

Table 17B: Types of Accidents Reported (July- December 2024) Lot 2

Accident Type	Reporting Period (July- December 2024)	Total (from commencement)
Near Miss	3	18
Incidents	2	15

4.2 Summary of Environmental Instrumental Monitoring Outcomes

193. Groundwater quality testing for Lot 1 was conducted from July to November 2024. Samples were collected from a well located at the upper part of the accommodation camp (coordinates 459946.172E 4711509.980N) in Kobi Village. The results of the groundwater tests, as shown in Table 10, were compared with the Georgian Acceptable Limits outlined in Resolution #58 of the Georgian government, which approves the technical regulations for potable water. All tested chemical parameters met the National Acceptable Limits, indicating that the groundwater was not contaminated in terms of chemical contamination. However, Total Coliforms were detected in the spring water samples collected in July, August, and October 2024.

194. Groundwater levels were measured in Kobi and Tskere in August 2024 and again in October 2024 during the reporting period. The CC measures groundwater levels on a quarterly basis for Lot 1, and the results are documented in the Contractor's Quarterly Environmental and Social Monitoring Reports. The details of the measured groundwater levels are provided below:

August 2024:

- Kobi Site - 6.6 meters (coordinates: N470266.4; E461517), August, 2024
- Tskere Site Downhill - 7.2 meter (coordinates: N 470266.4174 E 461517.817), August 2024

October 2024:

- Kobi Site - 7.6 meters (coordinates: N470266.4; E461517), October, 2024
- Tskere Site Downhill - 8.1 meter (coordinates: N 470266.4174 E 461517.817), October 2024

195. There was no significant change in groundwater levels. Any change in groundwater level of less than 1 meter is expected to be due to weather variations.
196. The results presented in Table 11A indicate that there is no significant difference between the measurements taken upstream and downstream of the tunnel 5 water discharge point. Overall, the volume of water and turbidity decreased on the Kobi side, as most of the water flowed toward Tskere due to gravity.
197. During the reporting period contractor conducted water quality test in River Khadistskali from July to November 2024. Increase in turbidity levels were observed in downstream turbidity levels due to mixing of the tunnel water in the river. Overall, during the reporting period turbidity levels have been reduced in the range of 310 NTU due to completion of the excavation works in TBM and EG and reduced construction activities in TBM tunnel.
198. For Lot 2 surface water measurement details and results are given in the Table 11D. There is no significant change upstream and downstream results except turbidity level near Arkhveti Bridge and that could be due to the confluence of Khada river carrying the tunnel 5 water. However, in August 2025, COD levels are higher in the Aragvi river both downstream and upstream showing that this is not due to project activities. Concentration of the all the other measured parameters is within acceptable range of Applicable Standard MAC.
199. For Lot 1 overall, the LAeq results vary between 54 dBA to 65 dBA. The increased levels observed in September and October 2024 in Kobi from the range of IFC standard 55 d(BA) for residential areas during the day time. The slight increased high levels in Tskere from August to October 2024 are anticipated to be due to noise of water flowing from the tunnel to sedimentation ponds in Tskere. In Kobi the increased noise levels are due to cumulative effect of traffic on E-117 and construction activities in Kobi. Graphical presentation of the day time levels at Lot 1 is shown in the Figure 10. The difference of 3dB(A) is hardly to be detected by the human ear.
200. Noise monitoring results detail for Lot 2 is given in Table 12C. As indicated in the Table 12C and shown in Figure 12, along the E-117 noise levels are exceeding the day time IFC limits for residential area due to heavy traffic movements on the highway and construction activities; however, these are below the IFC limits of commercial noise levels 70 dB(A). Lot 2

201. In terms of vibrations, no significant Exceedance was observed due to construction activities at the locations mentioned in Table 13C.
202. PM10 levels including the concentration levels of NO₂, SO₂, CO and dust levels as indicated in Table 14A are within the national limits for air quality in Georgia and IFC guidelines (for trend of PM 10 Levels during reporting period (see figure 17). CC for Lot 1 was carrying out regular water sprinkling at Kobi; however, CC for Lot-1 is not using the access road 1 as they have access for Tskere through tunnel 5.
203. CC for Lot 2 monitored air quality from July to September 2024. The details of locations and results are provided in the Table 14B. All the parameters measured are within the permissible limits of IFC guidelines. Graphical presentation is shown in the Figure 18 to see the trends during the reporting period and ambient air is very clean. Fugitive dust emissions are being observed at the access road when heavy vehicles moving on the access roads during dry and windy days. Contractor is required to regularize the water sprinkling in Khada Valley and Didveli plateau to suppress the fugitive dust during the next summer. Fugitive dust levels are the major issue in Khada Valley and Plateau at access road while vehicles travelling on access road during dry and windy days of summer season. Lot 2 has prepared dust management plan consisting of Action Plan to combat the dust and need to be properly implemented and UBM field officers should monitor on daily basis.
204. Aeroqual series 500 has been sent by laboratory for the calibration, because of that reason no air measurement activity was carried out for November and December 2024 for Lot-1 and October 2024 to December 2024 for Lot-2.

4.3 Loan Agreement Compliance Status

205. Status of compliance with environmental safeguards related covenants in the Project's Loan Agreement signed between Government of Georgia and ADB on 20 June 2019¹ is summarized in Table 18.

Table 18. Loan Agreement Compliance Status

Schedule	Paragraph	Covenant	Compliance Status
7	38	<p><u>Environment</u> No physical works will be allowed prior to approval of the SEMP by the construction supervision consultant and RD.</p>	<p>Being Complied with</p> <p>SEMPs for both Lot 1 and Lot 2 have been approved and being implemented.</p> <p>IEE of the Gudauri Access Road published in March 2023 and SEMP has been updated and approved considering Gudauri access road for Lot 2 as per requirement of table 81</p>

¹ ADB. Loan Agreement (Ordinary Operations [Concessional]) for Loan L3803: Georgia: North–South Corridor (Kvesheti–Kobi) Road Project (20 June 2019). <https://www.adb.org/sites/default/files/project-documents/51257/51257-001-pam-en.pdf>

			<p>& 82 of the IEE. Detail given in table 22C.</p> <p>CC for Lot 2 updated waste management plan on May 14, 2024.</p> <p>CC for Lot 1 updated waste management plan on May 30, 2024.</p> <p>Both Lots updated their Re-cultivation Plans including the landscape reinstatement requirements prepared based on Visual Landscape Assessment Report.</p>
7	39	<p>The EMP, which also defines the institutional arrangements and responsibilities for its implementation, will be included in the bidding documents, and in the ensuing contracts. The SEMP will be implemented under close monitoring provided by the construction supervision consultant and the service of environment and social issues of the RD. The RD will submit semiannual environmental monitoring reports to ADB for disclosure on the ADB website. The capacity building of the RD environment specialist, the contractors and supervision consultants will also be conducted through Central and West Asia Department's ongoing regional TA.</p>	<p>Being complied with. EMP as a part of bidding documents and Technical Specification. RD submitting Semiannual monitoring report and all the set forth measures in EIA, Conditions set by MoEPA, and National Legislations are addressed in the SAEMR This is the 11th Semiannual Monitoring Report</p>
9	53	<p>Safeguards Monitoring and Reporting Project performance monitoring. RD will require the Engineer to (i) collect additional data from relevant agencies, including local governments and statistics bureaus, (ii) to measure the performance indicators at inception, at completion, and 3 years after project completion; and (iii) report key findings quarterly to ADB through the project's quarterly project reports.</p>	<p>Ongoing</p>
9	54	<p>Compliance monitoring. RD will provide an annual report on the project's compliance with legal, financial,</p>	<p>Ongoing Audited Project Financial Statements (January –</p>

		economic, environmental, social and other covenants.	December 2023) is published on ADB website in June 2024.
4	55	<p>Safeguards monitoring. RD will monitor the implementation of the environment and resettlement action plans. The semi-annual report will include the status of these plans. The EMP will be monitored and reported to ADB bi-annually with the assistance of supervision consultant team, the performance and results of which (through EMP reports) will be uploaded in ADB website. Construction environmental monitoring is a day-to-day process, which ensures that departures from the EMP are avoided or quickly rectified, or that any unforeseen impacts are quickly discovered and remedied. Specific actions in the EMP that are to be monitored are included in the EIA.</p> <p>In addition to the above, BAP implementation will also need to be monitored and this will be reported within the bi-annual environmental monitoring reports. If there are any unforeseen safeguards impacts or incidents these will be reported to ADB immediately for necessary action. RD will engage individual consultants for periodic inspection and reporting on safeguard matters.</p>	<p>Complied with RD submitting Social Monitoring Semiannual Report describing the Implementation status of LARP and Semi-Annual Environmental Monitoring Report describing the status of implementation of the EMP and its site specific and Topic specific Plans and are being submitted to ADB and published on ADB website after approval.</p> <p>Weblink for the document's disclosure by RD for KKR project is</p> <p>http://www.georoad.ge/?lang=eng&act=pages&func=menu&pid=1536737215</p>
9	57	Evaluation 57. Within six months of physical completion of the project, RD will submit a project completion report to ADB.	Not applicable at this stage
9	58	Reporting 58. The RD will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for the next 12 months; and (iii) a project completion report within six months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the	<p>Ongoing RD providing Semiannual reports for social Monitoring and Environmental Monitoring on the format prescribed by ADB applicable at this stage. Currently the project is at construction stage and commencement was October 2020.</p> <p>Procurement Plan for KKR published in June 2019.</p>

		executing agency audited financial statement together with the associated auditor's report, should be adequately reviewed. The RD will also be responsible for submitting to ADB quarterly safeguards monitoring reports to ADB for approval and disclosure on the RD and ADB websites.	Procurement Plan for KGRP project updated in February 2023.
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4.4 Material Resource Utilization

206. During the reporting period, following materials were mobilized on site by the Contractor for Lot 1:

Table 19 A: Material Mobilization by Lot 1 During the Reporting Period (July- December 2024)

No.	Material	Quantity	Unit
1	Concrete	88176	m ³
2	Rebar	5342.76	t
3	Section steel	81.47	t
4	Steel plate	15.24	t
5	Cement	53154	t
6	Concrete brick 20*20*40cm	0	pcs
7	Concrete brick 10*20*40cm	0	pcs
8	Sand	54430	m ³
9	Gravel	53860	m ³
10	Diesel	822.40	t
11	Electricity	5921807	KWh
12	Water used	273000	m ³

Note: Gravel comes from the quarry in the village Kobi, Kazbegi Municipality, License #10002555 & another quarry license #10002992. CC extracted the licensed amount of gravel from the quarry under license #10002555 and closed that quarry.

207. During the reporting period, following materials were mobilized on site by the Contractor for Lot 2 based on data provided by CC for Lot 2:

Table 19 B: Material Mobilization by Lot 2 During the Reporting Period (July- December 2024)

No.	Material	Quantity	Unit
1.	Concrete	62298.3	m ³
2.	Rebar	6838.012	t
3.	Section steel	54.016	t
4.	Steel plate	4	t
5.	Cement	27420.23	t

6.	Sand	33963.46	m ³
7.	Gravel	29287.19	m ³
8.	Diesel	1310735	liter
9.	Steel Pipe	54.44	t
10.	Steel fiber	0	kg
11.	Accelerator	177860	kg
12.	Water reducer	188950	kg
13.	Geotextile	35600	m ²
14.	Electricity	1198947	KWh
15.	Water Used	267,000	m ³
16.	Reinforced mesh	33.63	t
17.	Waterproofing menbrane	17996	m2

Note: Gravel comes from Mleta quarry (license N10001711) and quarry near parking area (license N10001723).

4.5 Waste Management

208. CC for Lot 1 has a waste management plan. The Contractor has an agreement with the Kazbegi Municipality regarding provision of the waste containers, collection and transportation of household waste. In addition to that the contractor has an agreement with the licensed company – Medical Technology LLC for collection, transportation and treatment of the hazardous waste. Temporary hazardous waste storage areas have been arranged since October 2019 at the segment plant/crusher in village Kobi and in Tskere near batching plant. Different types of hazardous waste are kept in the restricted area (fenced on impervious base with roof) before transporting by the licensed waste transportation/treatment company; however, the handling, storage and disposing of the hazardous waste is still challenging as it is hard to find the recycling industries for this kind of wate in Georgia. Other types of waste including plastic containers, used tyres, and scrap material is stored behind batching plant in Kobi and contractor has to designate some area in Tskere for this kind of waste; however, contractor has reused many plastic containers to fence the spoil stored in Tskere. The PMCSC environment team is helping the contractor to findout the licensed contractor to collect the used tyres, plastic containers and scrap material.

209. Information regarding the generation of waste during reporting period is given in the Table 20 A.

Table 20 A: Waste Management for Lot 1 During Reporting Period (July-December 2024)

#	Domestic/Hazardous Waste & Sewage	Estimated Volume of Waste	Storage Area	Licensed Company Collecting the waste
1	Household waste	4300 m ³	Camp sites, Workshops, Construction sites	Kazbegi Municipality and Dusheti Municipality
2	Sewage water	500 m ³ 15 m ³ / day Waste water is treated by STP.	Wastewater treatment plant	Ltd. Sanitary
3	Used tires	6 m ³	Temporary waste storage	TRC Ltd.

			area at the Workshop	
4	Absorbents, hydraulic oil and contaminated soil, filters, rugs,	160 kg	Temporary waste storage area at the Workshop	Medical Technology LLC
5	Waste paints and varnishes	10 kg	Temporary waste storage area at the Workshop	Medical Technology LLC
6	Chemical additive tanks	58 pcs	Temporary waste storage area at the Workshop	Medical Technology LLC
7	Oil drums	42 pcs	Temporary waste storage area at the Workshop	Medical Technology LLC
8	Used food oil	180 liters	Camp separate wastebaskets	Medical Technology LLC
9	Printer tonner	4 kg.	Temporary waste storage area at the Workshop	Medical Technology LLC
10	Medical Waste	2.5 kg	Temporary waste storage area at the Workshop	Medical Technology LLC

210. CC for Lot 2 has a waste management plan. The Contractor has an agreement with the Dusheti Municipality regarding provision of the waste containers, collection and transportation of household waste. However, the effective waste management continues to be a challenge at Lot-2 worksite.
211. In addition to that the contractor has an agreement with the licensed company – “Sanitary” Ltd for collection, transportation and treatment of the waste from biological treatment plants, in case of hazardous waste the contractor has agreement with “Medical technology” Company.
212. Temporary hazardous waste storage area has been arranged in Batching Plant 1, in camp2 & camp 3 and in parking area. Different types of hazardous waste are kept in the restricted area (fenced on impervious base with roof) before transporting by the licensed waste transportation/treatment company. Non-Hazardous waste including scrap is stored at the exit of Tunnel1. Information regarding the generation of waste during reporting period is given in the Table 20B.

Table 20 B: Waste Management for Lot 2 During Reporting Period (July-December 2024)

#	Domestic/Hazardous Waste & Sewage	Estimated Volume	Storage Area	Licensed Company collecting the waste
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1	Household waste	5000 kg	Camp sites, Workshops, Construction sites	Dusheti Municipality
2	Sewage water	216 m ³	Septic Tanks Camp1 , 2& 3	Ltd. Sanitary
3	Used tires	200 kg	Temporary waste storage area at the Workshop	Ltd. Medical technology
4	Hydraulic and used oil	30 l	Temporary waste storage area at the Workshop	
5	Waste paints and varnishes	20 kg	Temporary waste storage area at the Workshop	
6	Chemical additive tanks	100 kg	Temporary waste storage area at the Workshop	Ltd. Medical technology
7	Oil drums	50 kg	Temporary waste storage area at the Workshop	Ltd. Medical technology
8	Used food oil	50 l	Camp separate waste baskets	
9	Printer tonner	0	Temporary waste storage area at the Workshop	
10	Absorbents (e.g. oil filters, polluted clothes and materials)	50 kg.	Temporary waste storage area at the Workshop	Ltd. Medical technology
11	Medical Waste	2 kg	Temporary waste storage area at the Workshop	Ltd. Medical technology

4.5.1 Current Period

213. The main source that generates the big amount of the waste is earthworks, specifically, excavation of the soil and rock soil material excavated from the tunnels.

214. Estimated calculations for spoil generation at Lot 1 is given below:

Lot 1:

- Estimated spoil generation for Lot 1: 2,730,299 m³
- Estimated spoil reuse for Lot 1: 150,003 m³
- Estimated spoil to be disposed of in SDAs for Lot 1: 2,580,296 m³

215. For Lot 1, the main sources that generated the big amount of the waste is tunnel construction, specifically: excavation of the soil and rock material from the Tunnel 5. Estimated calculations for spoil generation and excavated material up to December 2024 are given below:

Lot 1: Current estimated mass balance for spoil material:

Spoil Mass Balance Lot 1				
Estimated Total Spoil Generated up to December 2024 – 3,034,678 m ³				
Kobi				
SDA	Capacity of SDA m ³	Spoil Material Stored m ³	Spoil to be reused for road Embankments m ³	Space available for additional spoil material m ³
SDA 1	370,970	346,695	0	24,275
SDA 3	2,611,700	2,497,983	302,070	415,787
Note: 101,000 m ³ already used as filling material for Kobi in front of North Portal				
Tskere				
Storage Area	Estimated Stored Material m ³	Used for backfill cut and cover tunnel m ³	Balance m ³	
Tskere Temporary Storage Area	77,020	100,000	0	

216. For Lot 2 the main source of generation of spoil is the material generated from Tunnel 1, Tunnel 2, Tunnel 3 and Tunnel 4 excavation. Estimated calculations for spoil generation and excavated material up December 2024 is given below:

Total spoil to be generated including GARP = 1.811 M m³

Total excavated = 0.879 M m³ (132000 in SADA1& 3 + 747000 reused)

To be excavated = 0.931 M m³

Space available in Bedoni and SDA3= 0.140 M m³

Need to be disposed of = 0.791 M m³ (0.931-0.140)

(Lot-2 contractor needs to find an area for 0.791 M m³)

4.6 Trainings

217. The following trainings were carried out by Lot 1 and Lot 2 Contractors during the reporting period, with the support of the PMCSC Safeguard team and RD's H&S specialists. These topic specific trainings were repeated on a monthly or weekly basis during the reporting period.

Lot 1

- Safety trainings for drivers
- Environment Induction and Safety training for new workers
- Safety training for EG lining workers
- Safety training for blasting workers
- Safety trainings for new workers
- Safety trainings for Side Deck workers
- Safety trainings for welding workers
- Safety trainings for truck drivers
- Safety training for security personnel
- Safety training for on work at height
- Training provided to CRTG Managers regarding recultivation, handing over the land to the owners, signing agreement, river protection works, post construction activities, audits.

Figure 29: Training provided to the CRTG Manager by PMCSC Environment Specialist (September 2024)



Figure 30: Photographs of Training Session at Lot 1, July 2024



Lot 2

- Environment Induction trainings for new employees
- Working at Height
- Tool Box talks for Bridge 2 P4
- Driving safety training
- Site safety induction for workers
- Tool Box talks for flagmen
- Tool Box Talks
- Strand Coil Drum Opening
- Environment Induction trainings for drivers
- Onsite training regarding topsoil stripping and storing in August 2024 in village Benian-Begoni

Figure 31: Environment Induction Training for New Drivers Lot 2 (September 2024)



Figure 32: Environmental Induction Training for Bridge 3 Workers (August 2024)



Figure 33: Onsite Training for Topsoil stripping in Benian-Begoni Village (August 2024)



Figure 34: Road Safety Trainings for the Works and Flagmen (November 2024)



Figure 35: Toolbox Talks with Crew and Working at Heights Trainings at Lot 2 (July 2024)



218. In addition to that, ADB provided trainings to the RD, Consultants and Contractor's staff in Tbilisi regarding batching plant operation, decommissioning and site rehabilitation on July 22, 2024 in RD office.

Figure 36: Training Provided by ADB to RD, Consultant and Contractors



219. Environment Seminar for highway construction was organized by European Investment Bank and RD in November 7, 2024

Figure 37: Environment Seminar Orgnized by EBRD November 2024



220. Additional photos of H&S trainings are presented in Annex 4, while the sample attendance sheets are annexed as Annex 5.

4.7 Grievance Redress Mechanism and Complaints

221. Grievance Redress Committees (GRCEs) at Municipality levels were established during the EIA study with the office order from RD. For Lot 2 GRCE for Dusheti municipality is based in Kvesheti; while, for Lot 1 GRCE for Kazbegi Municipality is based in Kobi village.

222. In response to RD letter# N2-12/3725 dated: 25-03-2020, The contractor for Lot #1 submitted through letter # 200330-0021-CRG-RDMRDI the name of the candidates for grievance resolution committee: Lela Bachiashvili (+ 995 593132361, lelabachi@yahoo.com) and Liang Hong Jun (+995 557466348, liang.hongjun@crtg.cn). Since mobilization the Contractor's Social Specialist Lado Shonia (+995 59 913777, lado_shon@yahoo.com) has also become a member of GRCE commission.
223. For the PMCSC, for social concerns Tamar Javakhi, (Contact: +995 599613196, javakhitako@gmail.com) and for environment, Nikoloz Sopadze, (Contact: +995 597728871, nikasofadze@gmail.com) were nominated as focal persons.
224. As for Lot 2, CLO Gocha Mghebrishvili (+995 579907199, gmghebrishvili71@gmail.com) is responsible for receiving and resolution of complaints.

Grievances Received & Redressed up to Reporting Period at Level 1 (GRCE)

225. As of 31 December 2024, 165 grievances (12 categories) have been received by GRCE. 35 grievances are from Lot 1 section and 130 from - Lot 2. People mostly (100) apply concerning damage to infrastructure/assets due to the Contractor's activities. Out of 93 closed complaints related to damage to Infrastructure and Assets, only 16 were unsubstantiated and therefore, rejected which indicates to the fact that the Contractors proactively assessed the risks before commencement of the civil works.
226. Totally 17 grievances are open. Six cases which are related to the damage to the houses due to vibration are under monitoring. These cases are on tech. hold and the monitoring will proceed after resuming of the works adjacent to houses. One grievance is related to the impact of retaining wall construction activities on the local resident's house. As for other grievances the details are as follows:
- Three grievances require action from the Contractor: 1. Preparation layout design of additional underpasses, bus stops, footpaths at Arakhveti section of the Project Road. 2. Relocation of electric poles installed at the territory of private properties by Subcontractor company.
 - One grievance is related to the possible flooding of the property due to improper water discharge.
 - One grievance is related to the complaint from AP that RoW is coming to close to her house and she is requesting increasing of distance.
 - To close out one grievance actions should be agreed with the Cultural Heritage Agency.
 - The joint complaint submitted to ADB by 8 APs will be closed after grievances separately filed by them will be resolved.
 - Two grievances relate to the dust emissions during summer season which are on tech. hold since during the monitoring period the Contractor failed to take appropriate measures for dust suppression.
227. During the reporting period 19 grievances (2 – Lot 1 section and 17 – Lot 2 section) were closed. For the statistics, please refer to the tables below.

Table 21 A: Summary of the grievances by category with the status of Resolution received by GRCE since commencement of the Project including reporting period

Number of Complaints by Category:	Closed	Tech.hold	Open	Total	%
Damage to Infrastructure / Assets	93	4	3	100	60,61%
Crop Compensation	0	0	0	0	0,00%
Other	11	1	4	16	9,70%
Inclusion in LARP	6	0	1	7	4,24%
Disturbance: Noise / Vibration / Dust	5	4	0	9	5,45%
Restriction or loss of access	21	0	0	21	12,73%
Recruitment / Employment	5	0	0	5	3,03%
Loss of business	1	0	0	1	0,61%
Compensation Rate	0	0	0	0	0,00%
Registration / Ownership Status	0	0	0	0	0,00%
HSE Concerns	5	0	0	5	3,03%
Road Upgrading	1	0	0	1	0,61%
Total	148	9	8	165	100%

Table 21 B: Summary of the grievances by category with status of Resolution received during the Reporting Period by GRCE (01.07.2024 – 31.12.2024)

Number of Complaints by Category:	Closed	Tech.hold	Open	Total	%
Damage to Infrastructure / Assets	8	1	1	10	55,56%
Crop Compensation	0	0	0	0	0,00%
Other	1	0	1	2	11,11%
Inclusion in LARP	1	0	1	2	11,11%
Disturbance: Noise / Vibration / Dust	1	1	0	2	11,11%
Restriction or loss of access	1	0	0	1	5,56%
Recruitment / Employment	0	0	0	0	0,00%
Loss of business	0	0	0	0	0,00%
Compensation Rate	0	0	0	0	0,00%

Registration / Ownership Status	0	0	0	0	0,00%
HSE Concerns	1	0	0	1	5,56%
Road Upgrading	0	0	0	0	0,00%
Total	13	2	3	18	100%

Grievances Received & Redressed up to the Reporting Period at Level 2 (GRCN)

228. A total of 69 persons have submitted 6 categories of grievances to the GRCN out of which 64 grievances have been resolved as of 31 December 2024. 2 grievances are from Lot 1 section and the remaining ones from Lot 2. People now mostly (29 Nos.) are complaining about inclusion in the acquisition list out of which all cases are closed out. Compensation rates were disputed by 11 APs, out of which all the cases have been resolved.

229. No grievances were received during the reporting period.

Table 21C: Summary of the grievances by category with status of Resolution since the commencement of the Project including the Reporting Period

Number of Complaints by Project:	Closed	Tech.hold	Open	Total	%
Kvesheti-Kobi	64	2	3	69	92,7%

Table 21D: Summary of the grievances by category with status of Resolution received during the Reporting Period by GRCN

Number of Complaints by Project:	Closed	Tech.hold	Open	Total	%
Kvesheti-Kobi	1	0	2	3	33,3%

5. FUNCTIONING OF SEMP

5.1 SEMP Review

230. PMCSC approved SEMP for both Lots: Lot 1 on 12-06-2020 and Lot 2 on 25-05-2020 respectively, and the no objection has been given by ADB/EBRD in November 2020 with the condition that SEMP is a 'live document' and will need to be updated throughout the construction period, whenever required, due to arise of unforeseen potential impacts.
231. SEMP status is being reviewed regularly in joint E&S weekly meetings between the lenders, RD and PMCSC. An Environmental & Social Management System Action Tracker has been developed by ADB and has been provided to the PMCSC use and take forward to support their management of the project. The tracker is updated on each six-month basis to speed up the process of development of safeguard documents, getting the respective permits/approvals from the relevant authorities, meeting the conditions set in the EIA approval from MoEPA, compliance with the suggested mitigation measures set in the EMP, and resolution of the complaints from the project affected communities and workers.

5.2 Preparation of Topic Specific Plans

232. The updated status for the approvals of site specific and topic specific plans for Lot 1 up to December 2024 is given in the Table 22 A.

Summary of Approvals for Lot 1

Total submitted by CC=32

Approved = 32

Not approved = 0

Not relevant at this stage = 2

% approved = 100 %

Table 22 A: Updated Approval Status for the Site Specific and Topic Specific Plans Lot 1

No.	Plans	Revision Version	Approval Date	Status
1	SEMP	E	10/8/2020 Updated on November 06, 2023 including SDA 3 and avalanche protection measures.	Approved
2	Topsoil Management Plan	E	23.10.2023	Approved
3	Waste Management Plan	D	23.06.2021 Approved by MoEPA on 17.03.21 Updated on 14-06-2024	Approved
4	Waste Water Management Plan	E	25.01.2023	Approved

5	Noise Control Plan	D	02.12.2020	Approved
6	Air Quality Management Plan	C	28.04.2021	Approved
7	Construction Vibration Management Plan	B	23.07.2020	Approved
8	Spill Management Plan	D	23.10.2020	Approved
9	Occupational and Community Health and Safety Plan	D	20.10.2020	Approved
10	Labor and Working Conditions Management Plan	E	06.12.2023	Approved
11	Traffic Management Plan	A	06.05.2020	Approved
12	Emergency Response Plan	F	15.03.2021	Approved
13	Ground Water Management Plan	E	23.03.2022	Approved
14	Recultivation/Land Restoration Plan Kobi	C	29.12.23	Approved
15	Recultivation/Land Restoration Plan Tskere	D	29.12.23	Approved
16	Biodiversity Management Plan	I	20.05.2021	Approved
17	Tunnel Blasting Plan	C	22.06.2020	Approved
18	Cultural Heritage Management Plan	Final Document updated on 27-09-2023	29-09-2023	Approved Updated version
19	Local Content Management Plan	E	02.11.2020	Approved
20	Spoil Disposal Area SDA 1 Kobi	E	30-03-2022	Approved
21	Spoil Disposal Area SDA 3 Kobi	B	23-10-2023	Approved
22	Asphalt Plant Management Plan	N/A	-	Not relevant yet
23	Concrete Batching Plant Management Plan – Kobi	B	6.04.22	Approved
24	Concrete Batching Plant Management Plan – Tskere	B	22-03-2022	Approved
25	Construction Camp Management Plan # 1 Kobi Camp site	E	02.12.20	Approved
26	Construction Camp #2 Management Plan (Tskere Camp)	B	23-03-2022	Approved
27	OHS Plans for Tunnels	C	24.08.2020	Approved

28	Accommodation Option Risk Assessment Kobi and Tskere Camps	F	04.03.22	Approved
29	Code of Conduct (for workers)	E	05.12.23	Approved
30	Tunnel Transition Plan	-	-	Not relevant yet
31	MES for Temporary Access Roads and River Crossings.	C	4/19/2022	Approved
32	Method statements for temporary storage areas	A	4/13/2022	Approved
33	Method Statement for Kobi Quarry # 1	A	4/14/2022	Approved
34	Method Statement for Kobi Quarry # 2	A	5/03/ 2023 submitted and approved on 23-10-2023	Approved

233. The updated status for the approvals of site specific and topic specific plans for Lot 2 up to December 2024 is given in the Table 22 B.

Summary of Approvals for Lot 2

- Total submitted =30
- Approved = 30
- Not approved = 0
- Not required at this stage =2
- % approved = 100 %

Table 22 B: Updated approval status for the site specific and topic specific plans Lot 2

No.	Plan	Revision Version	Approval Date	Status
1	SEMP	D	20.10.2020	Approved
2	Topsoil Management Plan	B	13.04.2022	Approved
3	Waste Management Plan	B	19.12.2020 Approved by MoEPA	Approved
4	Waste Water Management Plan	B	28-03-2022	Approved
5	Air quality Management Plan	A	15.02-2022	Approved
6	Noise Control MP	1v.	15-02-2022	Approved
7	Spill management Plan	A	19.02.2020	Approved
8	Traffic Management Plan	C	02.11.2020	Approved
9	OHS Management plan	A	11.05.2020	Approved
10	Labor and Working Condition MP	A	27.10.2020	Approved
11	Code of Conduct	A	4.10.2020	Approved

12	Emergency Response Plan	A	20.04.2020 Will be improved after the design for avalanche protection measures	Approved
13	Ground water MP	A	20.10.2020	Approved
14	Reclamation/Land restoration.	B	29.12..2023	Approved
15	Biodiversity MP	A	Sept 2021	Approved
16	Vibration MP	B	Main plan is approved on 24 January, 2022. Update, if any, will be provided by Gamma.	Approved
17	Tunnel Blasting Plan	B	24-09-2021	Approved
18	Cultural Heritage MP	9	26.09.23	Approved
19	Local Content MP	B	26-03-2021	Approved
20	Spoil Disposal Management Plan SDA# 1	A	3/1/2022	Approved
21	Spoil Disposal Management Plan SDA# 2	A	3/1/2022	Approved
22	Spoil Disposal Management Plan SDA# 3 (Kvesheti)	A	07-04-2022 approved by MoEPA. Approved on 25-10-2023 by PMCSC	Approved
23	Accommodation option risk assessment (Camp 1,2 & 3)	B	24.10.2020	Approved
24	Camp Management Plan (Camp 1,2 & 3)	A	PMCSC approved the document on 21 February, 2022.	Approved
25	Concrete Batching Plant MP	A	31.10.2020 PMCSC submitted the plan to RD on 21 February, 2022.	Approved
26	Asphalt plant MP	-	-	Not Relevant
27	MES for Temporary Access Roads and River Crossings.	C	PMCSC has reviewed the updated document and approved it on 25 February 2022.	Approved
28	Method Statement for Temporary Storage Area	B	Feb 21, 2022	Approved
29	Bridge Construction plan	B	11-03-2022	Approved
30	Tunnel transition Plan	-	-	Not Relevant yet
31	MES for Temporary Access Roads and River Crossings.	A	PMCSC has reviewed the updated document and approved it on 25 February. It was shared with RD on 1 March	Approved
32	Method Statement for Mleta Quarry	A	02-08-2021	Approved

234. CC for Lot 2 has updated the SEMP by including Gudauri Access road and update the subplans of SEMP as per requirement of Table 81 & 82 of the IEE for Gudauri Access Road and get it approved from the relevant authorities.

235. The approvals for the Gudauri Access Road Project are summarized as follows:

Total submitted by CC=15

Approved = 15

Not approved = 0

% approved = 100 %

Table 22 C: Updated approval status for the site specific and topic specific plans for GARP, Lot 2

No.	Plan	Revision/Version	Approval Date	Status
1	SEMP	V1	4/17/2024	approved
2	Topsoil Management Plan	V2	3/26/2024	Approved
3	Waste Management Plan	V1	2/22/2024	Approved
4	Air Quality Management Plan	V1	2/22/2024	Approved
5	Noise Control Plan	V1	2/5/2024	Approved
6	Traffic Management Plan	V1	2/22/2024	Approved
7	Occupational and Community Health and Safety Plan	V2	4/17/2024	Approved
8	Emergency Response Plan	V1	2/22/2024	Approved
9	Re-cultivation/Land Restoration Plan	V1	3/26/2024	Approved by UBM and NACHP (11.04.24)
10	Construction Vibration Management Plan	V1	5/23/2024	Approved
11	Cultural Heritage Management Plan	V1	3/26/2024	Approved (The KKR CHMP was updated by incorporating information on Gudauri ARP)

12	Local Content Management Plan	V2	3/27/2024	Approved
13	Labor and Working Conditions Management Plan	V2	3/27/2024	Approved
14	Code of Conduct	V1	5/23/2024	Approved
15	Spoil Management Plan	V1	3/7/2024	Approved

- 236.
237. Environmental Due Diligence Report (EDDR) and Cultural Heritage Due Diligence Report (CHDDR) for avalanche protection walls in Khada Valley have been completed in the reporting period.
238. The contractor for Lot 1 and Lot 2 completed the geodynamic process survey report in compliance with condition 21, in May 2024 stating that the construction of the project has no significant impact on the geological conditions of the project's rocks.
239. CC for Lot 2 carried out preliminary construction ecological and cultural heritage survey and submitted the preliminary construction audit report on 17-05-2024 that was approved by the PMSC. Additionally, the contractor carried out the survey and prepared a preliminary ecological survey report for the lake at Didveli Plateau. The report is attached as an Annex-8.

5.3 Permitting Status

240. The updated status for the approvals and permits from MoEPA and other relevant authorities as per requirement of National Legislation and requirement of the EIA for both Lot 1 and Lot 2 up to December 2024 is given in the Table 23 A and 23 B.

Table 23 A: Updated Status for the National Permits/ Approval from MoEPA and other Relevant Authorities for Lot 1

#	Item	Current Status	Approval Date	Comments
1	Campsite Layout Plan - Kobi	Approved / Being Implemented	Approved on 11-10- 2021 by letter # 10640-01-2-202110111800	N/A
2	Campsite Layout Plan - Tskere	Approved / Being Implemented	Approved by MoEPA on 18.03.22.	N/A
3	Forest use agreement	Approved / Being Implemented	Approved. The tree cutting permit No 11/67971 10-03-2019	N/A
4	Approval of construction or upgrade activities	Approved / Being Implemented	CC Obtained the permission from Kazbegi Municipality for construction/upgrade of the access road to quarry near Kobi village	N/A

			21-03-2022	
5	Transportation permit	Approved / Being Implemented	Approved from Ministry of Internal Affairs for oversized and over weight - Permit No 2-03171 30-8-2021	N/A
6	Spoil disposal approval – SDA 1 (Kobi) Environmental Decision	Approved / Being Implemented	Approved on 11-10- 2021 by letter # 10640-01-2-202110111800	N/A
7	Spoil Disposal approval- SDA 3 (Kobi)	Approved / Being Implemented	Approved on 28-12-2022. Letter # N 21/8291	N/A
8	Permit to use explosives	Approved / Being Implemented	Issued by the Ministry of Sustainable Development and Infrastructure - Permit N000310 01-10-2020	N/A
9	Construction permit	Approved / Being Implemented	Approved by Public Law Legal Entity Technical and Construction Supervision Agency - 6 - 11- 2019 #188-04	N/A
10	Batching Plant Layout Plan - Kobi	Approved / Being Implemented	Approved on 11-10- 2021 by letter # 10640-01-2-202110111800	N/A
11	Batching Plant Layout Plan - Tskere	Approved / Being Implemented	The Layout Plan approved by MoEPA on 18.03.22.	N/A
12	Emissions of hazardous substances in to ambient air from stationary sources for batching plant - Kobi BP	Approved / Being Implemented	Approved for Kobi site - N 14248/01, 31.12.2021	N/A
13	Emissions of hazardous substances in to ambient air from stationary sources for batching plant - Tskere BP	Approved / Being Implemented	Approved on 27.05.22.	N/A
14	Emissions of hazardous substances in to ambient air from stationary sources for Crusher - Kobi side	Approved / Being Implemented	Approved with Crusher Screening.	N/A
15	Waste Management Report	Approved / Being Implemented	Approved by MoEPA in March 17, 2021 Updated and approved on 14-05-24.	N/A
16	Maximum Permissible discharges of Pollutants discharged to Surface Water Tunnel #5 Water and Car washing Facility	Approved / Being Implemented	Approved on 10-12-2021 by MoEPA.	N/A

17	Maximum Permissible discharges of Pollutants discharged to Surface water for Sewage Water - Kobi Campsite	Approved / Being Implemented	Approved. STP screening document, covering permit on MPDP, by MoEPA on 01.06.22.	N/A
18	Maximum Permissible discharges of Pollutants discharged to Surface water for Sewage Water - Tskere Campsite	Approved / Being Implemented	Approved STP screening document, covering permit on MPDP, by MoEPA on 24.05.22.	N/A
19	Water extraction from River Baidara for Batching Plant - Kobi	Approved / Being Implemented	Approved by MoEPA on 23.05.22.	N/A
20	Water extraction for TBM	Approved / Being Implemented	Approved on 25-11-2022	N/A
21	Water extraction for Camp in Kobi	Approved / Being Implemented	approved 10-05-2021	N/A
22	Water extraction for Crusher in Kobi	Approved / Being Implemented	Approved 10-05-2021	N/A
23	Water extraction for Tskere Camp	Approved / Being Implemented	Approved. 10-05-2021	N/A
24	Water extraction for Tskere Batching Plant	Approved / Being Implemented	Approved 10-05-2021	N/A
25	Quarry # 1 Kobi	Approved / Being Implemented	CC got the license from Kobi quarry Operator 10-10-2019Add	N/A
26	Quarry # 2 Kobi	Approved / Being Implemented	27-07-2022	N/A
27	Explosive Storage Area - Kobi	Approved / Being Implemented	CC got approval from MoEPA. 13-07-2021	N/A
28	Explosive Storage Area - Tskere	Approved / Being Implemented	Approved CC got approval from HACHP and local municipality. 21-10-2022	N/A
39	Re-cultivation Plan - Tskere	Approved	Approved 11-09-2022	N/A

Table 23 B: Updated Status for the National Permits/ Approval from MoEPA and other Relevant Authorities for Lot 2

#	Item	Current Status	Approval date	Comment
1	Campsite Layout Plan #1	Approved / Being Implemented	The layout plan was approved on 16.03.22 by MoEPA.	N/A

2	Campsite Layout Plan #2	Approved / Being Implemented	The layout plan was approved on 10.03.22 by MoEPA.	N/A
3	Campsite Layout Plan #3	Approved / Being Implemented	Approved by MoEPA on 30.05.22.	N/A
4	Forest use agreement	Approved / Being Implemented	Approval granted for RoW and Access roads. The tree cutting permit No 11/67971, No 11/66281, 2598/S 21-11-2019	N/A
5	Approval of construction or upgrade activities	Approved / Being Implemented	Obtained from Dusheti Municipality for construction/upgrade of access roads. 25-12-2019	N/A
6	Transportation permit	Approved / Being Implemented	Approved 22-07-2020	For TBM not applicable to Lot 2
7	Spoil disposal approval – SDA #1 Environmental Decision - Plateau	Approved / Being Implemented	Approved by MoEPA on 28-09-2021	N/A
8	Spoil disposal approval – SDA #2 Environmental Decision - Plateau	Approved / Being Implemented	Approved by MoEPA on 25.02.22.	N/A
9	Spoil disposal approval – SDA #3 Environmental Decision (covers two areas 0.4 km and 0.8 km approval (Kvesheti)	Approved / Being Implemented	Approved on 07.04.22.	N/A
10	Environmental Decision	Approved / Being Implemented	Approved by MoEPA 25-04-2019 Order # 2354	N/A
11	Construction permit	Approved / Being Implemented	Approved by Public Law Legal Entity Technical and Construction Supervision Agency - 6 -11- 2019 #188-04	N/A
12	Batching Plant Layout Plan #1	Approved / Being Implemented	Approved by MoEPA on 18-11-2021.	N/A
13	Batching Plant Layout Plan #2	Approved / Being Implemented	The layout plan was approved on 10.03.22 by MoEPA.	N/A
14	Batching Plant Layout Plan #3	Approved / Being Implemented	Approved by MoEPA on 30.05.22.	N/A
15	BP# 1 - Emissions of hazardous substances in to ambient air from stationary sources for batching plant	Approved / Being Implemented	Approved by MoEPA by Permit # N 13163/01 dated: 15/12/2021.	N/A
16	BP# 2 Emissions of hazardous substances in to	Approved / Being Implemented	Approved 26-09-2022	N/A

	ambient air from stationary sources for batching plant			
17	BP# 3 Emissions of hazardous substances in to ambient air from stationary sources for batching plant	Approved / Being Implemented	Approved 20-07-2022	N/A
18	Waste Management Report	Approved / Being Implemented	<ul style="list-style-type: none"> Approved by MOEPA On 05-07-2021 The updated version, which also covers the Gudauri bypass, was approved on 14.06.2024 	N/A
19	Camp 1 Maximum Permissible discharges of Pollutants discharged to Surface Water	Approved Screening documents for biological treatment approved	25-11-2022	N/A
20	Camp 2 Maximum Permissible discharges of Pollutants discharged to Surface Water	Approved	Screening documents for biological treatment approved. 16-09-2022	N/A
21	Camp 3 Maximum Permissible discharges of Pollutants discharged to Surface Water	Approved Screening documents for biological treatment approved;	13-09-2022	N/A
22	TUN# 1 Maximum Permissible discharges of Pollutants discharged to Surface Water	Approved	September 2023	N/A
23	Surface Water extraction for BP #1	Approved	29-07-2022	N/A
24	Surface Water extraction for BP #2 and Campsite #2	Approved	25-10-2022	N/A
25	Quarries	Approved / Being Implemented	Permit # 1088 dated: 28-09-2020 by Ministry of Economy	N/A
26	Explosive Storage Area	Approved / Being Implemented	Construction permit obtained on 21-06-2021 from Dusheti Municipality. Permit to use explosive from Ministry of Economy and Sustainable Development on 30-06-2021.	N/A

241. The updated status for the approvals and permits from MoEPA and other relevant authorities as per requirement of National Legislation and requirement of the IEE of GARP is given in the Table 23C.

Table 23 C: Updated Status for the National Permits/ Approval from MoEPA and other Relevant Authorities for GAR Project Lot 2

#	Item	Current Status	Comment	Actions
Pre-construction				
1	Waste Management Plan	Approved / Being Implemented	Approved from MoEPA 02-02-2024	N/A
2	Cultural Heritage Clearance	Approved / Being Implemented	The NACHP's General Action Plan includes CH clearance for Gudauri ARP. Updated on 26-09-2023	N/A
Construction				
3	Forest Use Agreement	Approved / Being Implemented	Forestry Agency issued the tree felling permit. 12-11-2023	N/A
4	Non-forest Land Use Agreement	Approved / Being Implemented	-	N/A
5	Re-cultivation Plan	Approved / Being Implemented	Approved on 11.04.24 by MoEPA	N/A
6	Approval of the Topsoil Storage	Approved / Being Implemented	Approved on 11.04.24 by MoEPA	N/A

6. GOOD PRACTICES

The 6.1 Good Practices

242. The following good practices were adopted by the Contractors for Lot 1 and Lot 2 during the reporting period.

Lot 1

- The Contractor cleaned the camp on regular basis, with municipality truck transporting the waste in timely manners.
- CC measured the night time noise levels on regular basis.
- CC started to reduce the height of SDA 1 and utilize the area to temporarily store TBM parts.

- CC arranged the plastic containers in the upright position, closed the lids and covered them with tarpaulin.
- CC measured the survey control points of SDA 3 to prevent spoil material from being disposed of outside the designated area.
- The Contractor arranged access to the cemetery in Tskere.
- The contractor completed the reinforcement works of the collapsed second floor of Naraidze tower in December 2024

Figure 38: Access arranged to Cemetery by Contractor for Lot 1



Lot 2

- CC protected the lake by installing silt fence at Didveli Plateau and extended on demand by the PMSC.
- Carried out fish monitoring in the rivers Khadistskali and Aragvi by hiring independent Ichthyologist for summer and autumn seasons.
- CC collected and removed the chemical boxes and filter from the Didvili plateau site.
- CC collected all the wood logs from the designated area near parking area and handed over to NFA.
- CC collected the hazardous waste from the site and handed over to medical technology.
- A fence was provided to protect walnut trees in the Kvesheti SDA 3.
- The contractor reused washout water from the concrete pit at BP 2 and used it for construction activities at the didvili plateau construction site and GARP.
- Batching Plant 1 was maintained as a model for pollution prevention and efficient resource use, with all materials stored properly under cover to avoid loss, along with a well-maintained washout facility and signs posted for each facility.
- Snow was removed from access roads.
- The contractor completed the conservation works for site CH#10.

- Conducted road safety awareness campaign in November 2024 and held safety training sessions in schools in Kvesheti and Gudauri.

Figure 39: Best Practices adopted by Contractor at Lot 2



	
<p>Reuse of treated water from concrete washout facility</p>	<p>Fish monitoring in Khadistskli River</p>

PMCS

- The PMCS Safeguard team is closely monitoring the site, especially during the soil stripping and earthworks at the site.
- Training sessions have been conducted for the managers of Lot 1 on the decommissioning of primary facilities, rehabilitation of spoil disposal areas, river protection measures, and signing agreements with landowners upon land handover.
- Two UBM field officers for environmental compliance monitoring—one for Lot-1 and one for Lot-2 are present on-site at all times to guide the contractor.
- Additionally, PMCS along with RD tracking the progress of resolving issues noted in the Environmental and Social Action Tracker, which is being prepared by ADB ESM, on a weekly basis.
- Reviewd and approved the contractor plans and reports.

RD

- RD organized training sessions and seminars with donor organizations, including the European Investment Bank (EIB) and the Asian Development Bank (ADB). These initiatives aimed to build the capacity of contractors and supervision consultants to effectively address safeguarded issues related to road construction projects and the operation of batching plants, as well as their impacts on the surrounding environment and mitigations required.
- Followed and speed up the process to obtain all the required permits from the relevant authorities.
- The RD safeguards team, led by the Deputy Chairperson, conducts regular site visits for compliance monitoring, coordinating with the PMCS team and the Contractors safeguard teams. RD actively urge the Contractors to address all non-compliance issues in a timely manner.
-

- To address the long-standing pending issues, the Deputy Chairperson called meetings in the RD office with both contractors for Lot 1 and Lot 2, along with PMCSC, and issued the minutes of the meetings specifying target dates for resolving the issues
- Conducted training in coordination with EIB for the capacity building of RD staff, Contractor and PMCSC staff.
- The safeguards team, under the guidance of the Deputy Chairperson, has weekly meetings with the ADB safeguards team to review the issues raised by the ADB ESM and ADB CLO in the Weekly E&S Monitoring Reports.
- RD Environmental Specialists visiting the site on a regular basis and are thoroughly familiar with the issues present on-site. During the reporting frequency of visits was increased.
- RD's Health and Safety Consultant is permanently present at the worksites on a full-time basis, undertakes regular worksite inspections, tracks and revises the monthly H&S monitoring reports, checks the adequacy of corrective measures, provides necessary instructions and trainings to the Contractor.

7. SUMMARY AND RECOMMENDATION

7.1 Summary

243. During the reporting period, Lot 1 continued construction activities for the development of TUN 5, which includes both the TBM tunnel and the Emergency Gallery (EG). The excavation for both the TBM and EG has been completed. The dismantling of the TBM is currently underway, and the contractor is transporting the TBM components to SDA 1 for temporary storage. Additionally, drainage works, the construction of ventilation decks, and lining works for the Emergency Gallery are also in progress at Lot 1.
244. In Lot 2, construction activities were carried out for the lining of Tunnel 1 and Emergency Gallery for Tunnel 1, completion works (installation of railings, paving the deck etc.) for Bridge 2, piling works for Bridge 3, excavation of Tunnel 2 and Tunnel 4, construction of underpasses, culverts, and retaining walls, rock filling for the embankment, road compaction and pavement at certain locations within the RoW. Lot 2 completed excavation of Tunnel 1 (main tunnel) and Tunnel 3; however, tunnel lining works are still ongoing.
245. In the monitoring period the contractor for Lot 2 continued earthworks along the Gudauri Access Road and construction of embankments and relocating the utilities. This phase of the project involved the removal of topsoil, a process closely scrutinized by the PMCSC' Cultural Heritage team.
246. During the reporting period, there was a decrease in the total number of staff for Lot 1, with a reduction of 52 workers due to a decrease in work activities. In contrast, Lot 2 experienced no significant change in staff numbers, with only 1 worker reduced during the same period.
247. The ratio of local to foreign workers is 54.8% local and 45.2% foreign for Lot 1, while Lot 2 has 33.8% local and 66.2% foreign workers. The decrease in foreign staff for Lot 1 is attributed to reduced construction activities and the completion of TBM and EG excavation.
248. Both Contractors conducted environmental instrumental monitoring. The summary of the monitoring outcome is presented in section 4.2 Summary of Environmental Instrumental Monitoring Outcomes.

249. Both Contractors' ECoWs carried out biodiversity monitoring and recorded the monitoring outcomes in the monthly and quarterly reports respectively. No issues of concern were identified by ECoWs. For details refer to section 4.1.1 Biodiversity Monitoring. During the reporting period, a pre-construction biodiversity survey was also conducted to assess the potential construction impacts on the lake located at the Didveli plateau due to the excavation of spoil material. Additionally, the contractor for Lot 2 carried out fish monitoring during the summer season in August 2024 and the autumn season in November 2024 for the Khadistskali River and Aragvi River, hiring an independent ichthyologist (a sample report is included as Annex 10). The contractor for Lot 1 purchased a camera for fish monitoring in May 2024 and initiated monitoring in the Khada River; however, the Lot 1 contractor is also required to conduct fish monitoring in the Tergi and Narvani rivers in Kobi.
250. Lot 2 Contractor continued collection of wood logs from tree cutting from Gudauri Access Road, stored at designated place near parking lot to handover to NFA. Total 90 cubic meters of wood logs were handed over to NFA.
251. Lot 2 Contractor conducted pre-construction Ecological environment survey near the lake at Didveli plateau which was accepted by the PMCSC.
252. Out of five hundred twenty-seven (527) issues during the project life, five hundred eighteen (518) issues were closed and some of them were partially mitigated or corrective action in progress requiring further improvement. There are 03 issues pending from the previous reports identified by the PMCSC as mentioned in Table 8C for which resolution is in progress.
253. Out of 37 issues highlighted for both the Lots: Lot1 and Lot 2, during the reporting period by ADB ESM, 21 issues were closed and for 16 issues resolution is in progress.
254. During the reporting period, Lot 1 made significant progress in addressing the safeguard issues. The CC conducted regular instrumental monitoring in Kobi and Tskere and ensured consistent water sprinkling on E-117. Additionally, the CC managed the collection of waste from the camps and delivered it to the municipality. They also removed broken waste containers from the campsite and carried out regular clean-ups at the campsites.
255. In July 2024, the contractor cleaned out the Khadistskali River and maintained regular cleaning of the batching plant floor and sedimentation pit at the Kobi Batching Plant. Additionally, the contractor cleaned the tunnel water sedimentation ponds to treat water in both Kobi and Tskere after instructions made by PMCSC and RD. At the Crushing Plant, regular cleaning of sedimentation ponds was conducted, and additional ponds were added for more effective treatment with the efforts from PMCS and RD, allowing for the reuse of water in the crushing plant operations. Signs were posted for each facility related to environment.
256. CC organized the scrap material and positioned used containers upright with their lids securely closed. They covered used tires and machinery that were not in use and established a hazardous material storage area in the warehouse designated for substructures. In September 2024, CC washed the batching plant in Kobi. Additionally, CC checked the control points and marked the boundaries of SDA 3 to ensure all spoil was stored in the designated area for SDA 3. They stabilized the slope in Tskere to protect the cemetery and conducted regular instrumental monitoring for noise, air quality, water, and vibration. Finally, CC formally handed over the land previously used for the blasting storage area to the landowner by signing a land handover agreement. The outstanding issues with the recommendations for corrective actions are listed in the section 7.2 Recommendations

257. Overall, during the reporting period, the Lot 2 contractor made significant progress in addressing outstanding safeguard issues, resolving nearly all pending items from previous reports. Specifically, the long-standing issues related to Batching Plant 2 included improving stormwater management by extending the pipe from the sedimentation pit to the concrete washout pit. The contractor also repaired and built a fence to prevent water from flowing from the batching plant onto private land, which could lead to contamination of private land. Additionally, they connected the kitchen wastewater to the sewage treatment plant (STP) to prevent it from flowing toward the Batching Plant 2. The Contractor ensured the timely cleaning of concrete washout pits at all batching plants. As for Batching Plant 1, it can now serve as a model facility in terms of material conservation, housekeeping, transmixer washing, recycling of concrete washout water, and the installation of posted signage.
258. CC ensured the timely collection and transportation of municipal waste from Camp 3 to the municipality containers located in the parking area, which are easily accessible by municipality trucks. Additionally, municipality trucks regularly transport waste from Camps 1 and 2. Furthermore, the contractor cleaned the area under Bridge 2 and the Exit of Tunnel 1, collecting all oil spills to maintain a clean construction site. Hazardous waste, including used tires and used oil, was collected from the site and properly handed over to Medical Technology. Sewage from the septic tanks is collected by a cesspool truck as needed. The contractor also repaired the effluent pipe and tested the effluent from the sewage treatment plant (STP) to ensure that all tested parameters complied with the Maximum Allowable Concentrations (MAC) of Georgia and the International Finance Corporation (IFC) guidelines.
259. The transportation of spoil from Khada Valley to Kvesheti and the earthworks for GARP were the primary sources of dust emissions. The dust management continued to be a challenge, particularly during the windy and dry summer days, due to inadequate management by the contractor.
260. The conservation works for the CH #10 site and the relocation of CH #26 have been completed and accepted by NACHP.
261. In terms of health, safety, and environmental (HSE) considerations, the contractor enhanced the safety signs along the E-117 highway. However, working at height at Bridge 2 section continues to be a challenge and the Contractor is required to maintain all good practices and supervision during these works. The contractor also needs maintain safety barriers across worksites and keep flagmen at all necessary locations to mitigate risks associated with community safety and occupational health and safety (OHS). Both Contractors continued to deliver safety Toolbox Talks and trainings on a regular basis to the workforce. Toolbox Talks and trainings were delivered on a general topic as well as targeting some specific scenarios/procedures. The Contractor for Lot 1 should improve the lighting in Tunnel 5 at a few sections to avoid traffic accidents.
262. Regular site visits were conducted by the ADB and RD safeguard teams, including visits during the ADB Environmental Safeguard Mission in September 2024. When necessary, the RD Chairperson convened meetings at the RD office with Contractors and PMCSC to ensure compliance with safeguard issues.
263. The External Environmental Monitoring Firm (EEMF) "Ecospectri" Ltd conducted the site inspection at KKRK On 20.06.24. The representatives of the EEMF "Ecospectri" Ltd on behalf of RD conducted the site inspection to verify compliance with the Lot 1 and Lot 2 Contractors Environmental Management Plans (EMPs) and progress toward the expected outcomes. The

report concluded that as of June 2024, the project is being implemented in accordance with conditions of the ADB loan agreement, specifically with regards to the following:

- Inclusion of the environmental clauses, EMP and EMoP in the conditions of contract.
- Securing of EIA approval and relevant permits and licenses required for implementation.
- Issuance of written notices and reminders by the RD-PIU to the contractor related to the management of environmental risks and impacts and implementation of corrective action plans.
- Safeguards monitoring and regular submission of the SAEMRs which are disclosed at the ADB and RD websites.
- Conduct of meetings with communities to inform them about the project implementation and the GRM.

7.2 Recommendations

264. Both contractors are recommended to improve the progress in resolving the current outstanding safeguard issues and to ensure proactive planning of future activities ensuring alignment with safeguard requirements and obtaining approval from PMCSC prior to start of new activities.
265. The Table 24 presents all outstanding issues/non-compliances identified during the reporting period (July – December 2024) and pending issues from the previous monitoring report(s), as well as the recommended mitigation measures which contractors are required to adopt in the 1st and 2nd quarter of 2025 to meet the requirements furnished in the EMP and conditions of the contract.

Table 24: Summary of Recommendations and Responsibilities

Recommendations for Lot 1 and Lot 2 for Q1 and Q2 of 2025	Responsibility
Lot 1	
Contractor ECoW should join the team in Q1. The new environmental filed officer should be full time	CC for Lot# 1 to implement and PMCSC to monitor
The Contractor should submit plan for the management of tunnel water in Tskere.	CC for Lot# 1 to implement and PMCSC to monitor
The wastewater from crusher will be connected to the new sedimentation pits for effective treatment of tunnel water	CC for Lot# 1 to implement and PMCSC to monitor
The Contractor should identify the source of chemical contamination of water from tunnel and avoid spilling of any chemical, hazardous or non-hazardous.	CC for Lot# 1 to implement and PMCSC to monitor
The Contractor should transfer hazardous waste to the license sub-contractor up to Spring 2025.	CC for Lot# 1 to implement and PMCSC to monitor
The Contractor should start separating the topsoil from the subsoil immediately in Tskere as soon as snow melts.	CC for Lot# 1 to implement and PMCSC to monitor
Reshaping the SDA 3 activities should start during winter period, PMCSCs Geodesist should check footprints of SDA 3 during the 1 st quarter of 2025.	CC for Lot# 1 to implement and PMCSC to monitor
The Contractor has to receive written confirmation of an acceptance for spoil disposed at former SDA 2 on request at the state property.	CC for Lot# 1 to implement and PMCSC to monitor
Contractor to maintain security arrangement to restrict the public cars entrance in the tunnel during road closures in winter.	CC for Lot# 1 to implement and PMCSC to monitor
Lab will take two samples one from the kitchen and 2 nd from the washroom tap to test the water quality	CC for Lot# 1 to implement and PMCSC to monitor

Contractor to immediately inform the PMCSC/RD in case of any accident.	CC for Lot# 1 to implement and PMCSC to monitor
CC to monitor and repair the unstable slope at the southern portal of the tunnel to avoid damage to Cemetery	CC for Lot# 1 to implement and PMCSC to monitor
Clean the crushing plant sedimentation ponds on regular basis	CC for Lot# 1 to implement and PMCSC to monitor
Collect the other waste including iron, plastic, wood from the spoil material and stop this practice of mixing waste	CC for Lot# 1 to implement and PMCSC to monitor
Remove the damaged municipality containers at the waste collection area in Kobi campsite and there should be no unused container at the site	CC for Lot# 1 to implement and PMCSC to monitor
Repair the damaged part of the guard rail in TBM tunnel and maintain it until the completion works of side deck.	CC for Lot# 1 to implement and PMCSC to monitor
Separate the clean and turbid water in Tskere	CC for Lot# 1 to implement and PMCSC to monitor
Stop discharging turbid water from crushing plant in to the river and this practice should be completely stopped	CC for Lot# 1 to implement and PMCSC to monitor
Start planning of rehabilitation/ recultivation of SDA 1 and SDA 3 in Kobi	CC for Lot# 1 to implement and PMCSC to monitor
Direct all the water from vehicle washing facility into the sedimentation ponds and maintain the sedimentation pit.	CC for Lot# 1 to implement and PMCSC to monitor
The contractor should clean up the whole site on monthly basis.	CC for Lot# 1 to implement and PMCSC to monitor
Call the third party for collection of scrap, tires, and leftover hazardous material	CC for Lot# 1 to implement and PMCSC to monitor
Call the company to take stray dogs as population being increased in Kobi Camp	CC for Lot# 1 to implement and PMCSC to monitor
Collect the other waste including iron, plastic, wood from the spoil material and stop this practice of mixing waste	CC for Lot# 1 to implement and PMCSC to monitor
Regular cleaning of concrete washout pits, sedimentation ponds and change of absorbents to treat tunnel water in Tskere and Kobi	CC for Lot# 1 to implement and PMCSC to monitor
CC to remove the stockpiled crushing material from the river protection zone of Narvani River.	CC for Lot 1 to implement and PMCSC to monitor
CC to continue maintenance of the small septic tank near PMCSC's office as it is smelling, specifically, when wind direction is towards east.	CC for Lot 1 to implement and PMCSC to monitor
Regular cleaning of the septic tank in Kobi	CC for Lot 1 to implement and PMCSC to monitor
Regular water sprinklings required at the access roads in Kobi and E-117 during dry and windy season.	CC for Lot# 1 to implement and PMCSC to monitor
Regular cleaning of campsites in Tskere and Kobi	CC for Lot# 1 to implement and PMCSC to monitor
Continue Tunnel gas monitoring on regular basis in TBM as well as EG.	CC for Lot# 1 to implement and PMCSC to monitor
All the vehicles should be washed at washing area in Kobi near sedimentation ponds and no vehicle washing allowed in TBM tunnel	CC for Lot# 1 to implement and PMCSC to monitor
Carry out fish monitoring and water quality testing in Tergi and Narvani river	CC for Lot# 1 to implement and PMCSC to monitor
Remove the garbage near EG exit in Kobi all the time coming out of the tunnel water and maintain all the time	CC for Lot# 1 to implement and PMCSC to monitor
Remove the oil spills from the site all the time	CC for Lot# 1 to implement and PMCSC to monitor

Continue ground water level monitoring on quarterly basis and night time noise levels	CC for Lot# 1 to implement and PMCSC to monitor
Keep checking the tires pressure for the Ambulance from time to time to get it ready all the time for emergency.	CC for Lot# 1 to implement and PMCSC to monitor
Remove snow from the walkways and access road to be used	CC for Lot# 1 to implement and PMCSC to monitor
Submit the MSDS for any new material to be used and this should be available at the site all the time.	CC for Lot# 1 to implement and PMCSC to monitor
Improve the lighting in Tunnel 5 to avoid traffic accidents	CC for Lot# 1 to implement and PMCSC to monitor
Recommendations of ADB ESM	
Mass balance calculation was provided. The Submit the spoil management action plan for SDA #3. needs to be submitted and the footprint verified for SDA 3	CC for Lot# 1 to implement and PMCSC to monitor
Remove the spoil from the topsoil stockpile under the supervision of PMCSC Environmental Field Officer in Tskere	CC for Lot# 1 to implement and PMCSC to monitor
Obtain the letter of acceptance for the spoil dumped in the ex-spoil disposal area 2 in Kobi.	CC for Lot# 1 to implement and PMCSC to monitor
Lot 2	
Contractor for Lot 2 should remove the construction waste immediately from the CH #10 site and complete the fence.	CC for Lot# 2 to implement and PMCSC to monitor
Contractor will find out the source of water coming out of the tunnel 1 as the tunnel should be dry and submit the plan to engineer that how the water will be managed at the time of joining the bridge and tunnel entrance according the drainage design.	CC for Lot# 2 to implement and PMCSC to monitor
Contractor to repair the pit for Batching Plant 2 and maintain it during the next quarter	CC for Lot# 2 to implement and PMCSC to monitor
Contractor to clear the lake and avoid boulders flowing in to the lake. Avoid the lake protection zone about 30 meters from the edge of the lake. Dedicated environment staff should be present all the time there in coordination with UBM field officer to monitor the activity of earth removal.	CC for Lot# 2 to implement and PMCSC to monitor
The contractor to clean the whole site on monthly basis.	CC for Lot# 2 to implement and PMCSC to monitor
Remove the subsoil from the topsoil and restore the area near the Water Tank at Gudauri Access Road and ensure no mixing of topsoil with subsoil at Project site.	CC for Lot# 2 to implement and PMCSC to monitor
Sign an agreement with locals to use their land for storing drainage pipes at Plateau during spring.	CC for Lot# 2 to implement and PMCSC to monitor
Contractor and engineer will jointly find the alternative locations for the new spoil disposal area in Kvesheti up to January 31-2025. Contractor will submit the mass balance of spoil generated up to December 2024, required for embankments, and need to be disposed of.	CC for Lot# 2 to implement and PMCSC to monitor
Contractor has collected the oil spill; however, should remove broken excavator and made arrangements to shift from private land up to January 31, 2025.	CC for Lot# 2 to implement and PMCSC to monitor
Continue to promote good practices for working at height at Kvesheti-Bridge 2 Section during the works on bridge sidewalks.	CC for Lot# 2 to implement and PMCSC to monitor

Avoid contamination of lake while collecting fill material at plateau. Workers are not allowed to throw the waste near lake.	CC for Lot# 2 to implement and PMCSC to monitor
Monitor all the STPs for the leakage and repair STPs and outlet pipes immediately when required	CC for Lot# 2 to implement and PMCSC to monitor
Update spoil disposal management Plan providing the calculations based on assumptions of spoil to be reused for embankments and dump in spoil disposal areas.	CC for Lot# 2 to implement and PMCSC to monitor
Don't disturb the private land by parking vehicle and due to movement of vehicles. Remove the vehicles parked in private land at plateau	CC for Lot# 2 to implement and PMCSC to monitor
Fugitive dust is the main issue at the site, follow the recommendations given in dust management plan to control the dust during dry and windy days of summer	CC for Lot# 2 to implement and PMCSC to monitor
No timbers are allowed to place at private land while tree cutting activities at GARP	CC for Lot# 2 to implement and PMCSC to monitor
Take strict measure to avoid rock mass / boulders movement to block the access road 1 at bridge 3	CC for Lot# 2 to implement and PMCSC to monitor
Maintain safety warning signs all the time at the site	CC for Lot# 2 to implement and PMCSC to monitor
No direct discharge of tunnel water is allowed in the forest land at tunnel 1 entrance	CC for Lot# 2 to implement and PMCSC to monitor
CC to submit the quarterly Environment and Social Monitoring reports and instrumental monitoring reports on monthly basis	CC for Lot# 2 to implement and PMCSC to monitor
Monitoring of the week slopes around all the bridges	CC for Lot# 2 to implement and PMCSC to monitor
All the drilling pits should be well maintained, equipped with silt fence and should not be overflowing in to water bodies at bridge# 3,4,5 & 6.	CC for Lot# 2 to implement and PMCSC to monitor
All the drilling machines should be in good conditions and there should be no oil spills at site and don't do maintenance works for equipment on access roads.	CC for Lot# 2 to implement and PMCSC to monitor
Call the Medical Technology to take all the left-over hazardous material including the used oil, contaminated soil, used tires, plastic containers and other scrap material.	CC for Lot# 2 to implement and PMCSC to monitor
Housekeeping is improved in the camps during the reporting period. Keep it maintained and remove the snow from the access road to camp 1 for easy access to Municipality trucks.	CC for Lot# 2 to implement and PMCSC to monitor
Provide the secondary containments/ drip trays to all the Generator at the site.	CC for Lot# 2 to implement and PMCSC to monitor
CC to start rehabilitation of SDA #1 according to Spoil disposal management plan by fixing the height and completing the drainage channel and revegetation of the area	CC for Lot# 2 to implement and PMCSC to monitor
Recommendations of ADB ESM	
The Lot 2 Contractor is recommended to Stop spoil dumping on the SDA #3 until proper site clearing and topsoil removal have been completed.	CC for Lot# 2 to implement and PMCSC to monitor
For the slope below the BR #3 (positive direction): 1. Provide the erosion control measures on the impacted slope, e.g. provide the drainage water diversion channel on the upper part and on both sides of the impacted slope, to avoid erosion of the adjacent parts of the slope; 2. Reinstate the impacted area during the final reinstatement works.	CC for Lot# 2 to implement and PMCSC to monitor

At Acces Road #3, remove the construction material (concrete pipes) and discarded tires to the designated area within the project footprint on Didveli Plateau.	CC for Lot# 2 to implement and PMCSC to monitor
Remove the dump trucks and excavator from the private land opposite the BP #2 on Didveli Plateau.	CC for Lot# 2 to implement and PMCSC to monitor
At water tank installation area, Village Jaghmiani, GARP, Contractor is recommended to: (i) remove the excavated spoil to the designated disposal area, and (ii) restore the affected land after the tank installation is complete.	CC for Lot# 2 to implement and PMCSC to monitor
PMCSC to ensure the Lot 2 Contractor's activities on the land parcel with cadastral code 71.62.60.856 comply with legal and project environmental requirements and that the activity is feasible; Otherwise, the activities should be stopped. The Lot 2 Contractor is recommended to submit the necessary documentation, including the due diligence report, a comprehensive land use agreement with the landowners, and a method statement, to PMCSC for approval.	CC for Lot# 2 to implement and PMCSC to monitor
Tunnel 1 Entrance, the Lot 2 Contractor is recommended: (i) to reinstall the tunnel water sedimentation pond to ensure treatment of tunnel water, and (ii) reinstall the water discharge pipes to avoid erosion and degradation of forest land.	CC for Lot# 2 to implement and PMCSC to monitor
The PMCSC is recommended to work closely with the Lot 2 Contractor and issue an updated spoil mass balance calculation along with a spoil management plan that details the amount of spoil to be reused and disposed of, as well as, the specific locations for reuse and disposal.	CC for Lot# 2 to implement and PMCSC to monitor
In Zakatkari village, the Lot 2 Contractor is recommended: (i) conduct TBT with heavy equipment operators to ensure careful operation and reduce the risk of rockfalls from the RoW; (ii) remove large rocks deposited at the base of the road embankment; (iii) assign a watchman to manage traffic until rock removal from the project area is complete; (iv) remove any rocks that have already fallen onto the village road.	CC for Lot# 2 to implement and PMCSC to monitor
At lake on Didveli Plateau, • Separate topsoil from spoil where feasible and transport the topsoil to the designated storage area at BP #2. • ensure the presence of personnel on-site to oversee the proper removal of topsoil. • clearly demarcate the work area on the lake side, taking into account the lake's protection zone. • restore any areas within the lake protection zone that may have been encroached upon. • install a silt fence along the lake's protection zone to prevent soil runoff from the site and protect the lake from pollution. • remove waste from the area adjacent to the lake.	CC for Lot# 2 to implement and PMCSC to monitor
The Lot 2 Contractor is recommended to: (i) remove the leftovers of the construction material and ensure proper housekeeping around the CH Site #10; (ii) upgrade the damaged sections of the fence around the CH Site #10.	CC for Lot# 2 to implement and PMCSC to monitor

The Lot 2 Contractor is recommended to cover the water collection tank installed in the village Jaghmiani.	CC for Lot# 2 to implement and PMCSC to monitor
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7.3 ADB Mission Corrective Action Plan (CAP)

266. ADB Mission led by ADB Senior Environmental Specialist along with RD, PMCSC and Contractors visited the site in September 2024 for one day and gave recommendations to bring the project in compliance with the safeguard requirements. Maximum efforts were carried out to address these comments in the reporting period and upcoming quarter, and to address in the next report. Corrective Action Plan (CAP) of the recommendations along with the implementation status is given below in the Table 25.
267. Most of the issues have been addressed, including the survey of SDA 3 in Kobi conducted by PMCSC and the Lot 1 Contractor's survey team. The wood logs were collected in the designated area near the parking lot and have been handed over to NFA by Lot 2 Contractor. Safety signage has been improved at E-117 near Bridge 2 by Lot 2 Contractor; however, amber lights are still required for nighttime visibility, and flagmen should be more active on-site.

Table 25: CAP for recommendations by ADB Mission (September 2024)

Observations	Responsibility	Status
Recycling and reuse of water at the crushing plant for dust suppression	RD PMCSC CC for Lot-1	Closed. Contractor has added two additional ponds at crushing plants. However, during the winter crushing plant is not running due to winter.
Marking the survey control points of SDA 3 to dispose of spoil within the boundaries of SDA	RD PMCSC CC for Lot-1	Closed. Contractor with the UBM survey team checked the control points and concluded that all the spoil dumped is within the boundary of the allocated area of SDA 3. Contractor will start reshaping SDA 3 after winter.
Treatment of tunnel water at the south portal of TUN 5	CC for Lot-1	Closed. Tunnel water quality has been improved due to reduced construction activities inside the Tunnel 5. Contractor is shifting the TBM parts to SDA 1.
Handling of wood logs to NFA	CC for Lot-2	Closed. All the wood logs were stored at the designated area near Parking Lot and handed over to NFA during the reporting period.
Improvement of signage at the connection between bridge 2 and E-117.	CC for Lot-2	Closed and continual improvement required. Contractor improving the signage as and when required. However, contractor should install the amber

		light to guide the traffic during night time.
Wearing of the PPEs	CC for Lot-2	Closed and to be maintained. CC provided the PPEs according to the nature of jobs; however, enforcement required to wear. CC providing trainings and conducting TBTs.

ANNEXES

Annex 1: Project Pictures

Pictures	Description
	Onsite drivers training in July 2024 lot-2
	Onsite drivers training at Lot-2 July 2024




National Supervision Agency Conducted the visits of Bridge 3. To inspect soil collection and storage.






Upstream water sampling from River Tergi August 2024 Lot-1.

	Downstream Water quality Monitoring from Khadistskali River 2024 Lot-1
	Air quality Monitoring Kobi Lot-1
	Noise monitoring Kobi Lott-1 August 20244

	<p>Vibration MEASUREMENT DEVICE IS BEING INSTALLED IN THE WINDOW OF CHURCH INN TSKERE. Loot-1</p>
	<p>Water sampling from Aragvi River September 2024</p>
	<p>Nose measurement in Kvesheti village September 2024</p>

 A photograph showing two workers in safety gear (one in a light blue vest and white helmet, the other in an orange vest) standing on a dirt road. In the background, a yellow bulldozer is visible, and the air is hazy, suggesting a construction site with dust or fog.	<p>Air quality monitoring in Zakatkari September 2024</p>
 A landscape photograph showing a large area of topsoil storage. The foreground is a gravelly, rocky area. In the background, there are rolling hills covered in green grass and some trees, under a clear blue sky.	<p>Topsoil storage area in Kobi August 2024</p>
 A wide-angle landscape photograph showing a road under construction on a plateau. The road is a mix of dirt and gravel, winding through a valley. The background features rolling green hills and mountains under a clear blue sky.	<p>A view of road construction at plateau September 2024</p>

 A photograph showing a large pile of cut wood logs in a grassy field. In the background, there are mountains and a blue sky with some clouds. A dark car is parked near the logs, and a crane is visible in the distance.	<p>Wood logs collected near parking place to handover to NFA September 2024</p>
 A photograph of a large, red and black crushing plant parked on a gravel surface. The plant has a large hopper and a discharge chute. The background shows a clear blue sky and some greenery.	<p>Crushing plant parked near parking lot September 2024</p>
 A photograph of a weighing station at a batching plant. A white truck is parked on a scale. A person is standing near the scale. The background shows a forested hillside under a blue sky with clouds.	<p>Weighing station at Batching Plant 1 September 2024</p>



Material covered for the use in batching plant
1 September 2024



Material placed under the roof – sustainable
use of material BP 1 September 2024

 A photograph showing a large pile of material, possibly gravel or sand, completely covered by a bright blue tarp. The tarp is secured with ropes. In the background, there are some white containers and a wooden fence.	<p>Material covered with Tarpuline at BP 1 September 2024</p>
 A photograph showing several large white tote bins arranged in a neat row on a gravel surface. The bins are stacked and appear to be part of a batching plant. There are trees and a hillside in the background.	<p>Totes arranged properly at Batching plant 1September 2024</p>
 A photograph of a concrete washout facility. It features several rectangular concrete basins filled with green water. A concrete wall is in the foreground. In the background, there is a large blue building and a tall silo with Japanese text. The sky is blue with some clouds.	<p>Concrete washout facility BP 1. September 2024</p>






Tunnel water arrangement at tunnel after completion of linings lot-2



Ongoing Construction activities at Gudauri Access road project September 2024



 A wide-angle photograph showing a dirt road winding through a valley with green hills under a blue sky with scattered clouds.	<p>A view of Access Road 4 September 2024</p>
 A photograph of a dirt area on a hillside, likely a construction site, with a view of distant mountains.	<p>Place for shifting of CH in Benian Begoni September 2024</p>
 A photograph showing a pile of dirt and rocks on a hillside, with a road visible in the background.	<p>Spoil material being shifted from Benian Begoni to Kvesheti road for embankment. September 2024</p>

	<p>Access bridge washed away Bridge 6 due to heavy flood August 2024</p>
	<p>Sedimentation ponds cleaning Tskere august 2024</p>
	<p>Slope failure at Bridge 3 July 2024</p>



Watering in Setrubi August 2024 2024



Bedoni village water sprinkling August 2024





Water sprinkling at Setrubi August 2024



Water sprinkling in Kvesheti August 2024



Watering near camp 3 August 2024

	<p>Fish monitoring in Khada River September 2024</p>
	<p>Water recycling from concrete washout facility to use for concrete. August 2023</p>
 <p>Site visiting by National Environmental Supervision company</p>	<p>Environment Agency site visit.</p>

Annex 2: Instrumental Monitoring Test Results

(Sample reports only for vibration and instrumental monitoring for air, noise water. Summary of results for all the reports is in the section 4.1)

Environmental Monitoring Report : Lot 1 (November 2024)



Kvesheti-Kobi Highway Environmental Monitoring Monthly Report



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Director: Sophie Berishvili

November 2024



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1. General Information

Project number: #11.11.24

Date of the monitoring: 11.11.2024

Gergili LLC team undertakes monthly monitoring services for ambient air quality, noise, and water quality monitoring on Kvesheti-Kobi highway construction.

LLC Gergili is a subcontractor of China Railway Tunnel Group Co., Ltd. Branch In Georgia (CRTG) and is responsible for execution of monitoring works and preparation of monthly reports for the environmental instrumental monitoring for the Kvesheti-Kobi highway construction project, which includes following:

- Atmospheric Air Pollution (NO₂, SO₂, CO, Dust)
- Water (Surface water, ground water, sanitary sewage water...)
- Noise Level
- Vibration

This report represents the results of the monitoring activities performed by Gergili team in November, 2024. Luka iremashvili (chemist) from Gergili team and from CRTG – Vince Wenzhao Zhang (HSE Officer) participated in the monitoring.

The work was done according to the proposal prepared for Kvesheti-Kobi highway construction. The methodology and procedures follow international guidelines.

During the monitoring, the construction was in an active phase, all the technique was on and working. Therefore, the results of the monitoring activities represent the actual, full-scale impact of the construction activities on the environment.

Monitoring activities included ambient air monitoring of the following parameters: PM10, PM2.5, NO₂, SO₂, and CO concentrations, surface and ground water quality analysis, noise and vibration monitoring.

2. Description of the Performed Works

For November's monitoring, there were 5 different points for water quality. 4 points for surface water monitoring and 1 point for ground water monitoring. measured parameters at both locations - Noise was measured at 2 locations: 1 point in Kobi and another point in the village of Tskere.

During the monitoring activities, Gergili team used Aeroqual Series 500 for ambient air monitoring (all parameters), water monitoring has not been done at the location, water was sampled and then analyzed in the lab. For noise monitoring, REED instruments 9300 was used. While, the vibration level was measured by REED instruments SD-8205.

The monitoring took place on 11th of November, 2024. In Kobi the weather was 1°C, in Tskere the weather was 1° C.



All the equipment was calibrated, cleaned, and tested for the field work.

Table 2.1 GPS coordinates of the monitoring points

#	Monitoring PointReference	Type Of Monitoring	E	N	Date
1	SWS #1	Surface Water	459160	4711681	11.11.2024
2	SWS#2	Surface Water	459256	4711930	11.11.2024
3	SWS #3	Surface Water	44°30'43.76"E	42°33'18.18"N	11.11.2024
4	SWS#4	Surface Water	459307	4711741	11.11.2024
5	GWS#1	Ground water	44°30'43.76"E	42°33'18.18"N	11.11.2024
6	AAS #1	PM2.5, PM10, CO, NO ₂ , SO ₂	459307	4711741	---
7	AAS #2	PM2.5, PM10, CO, NO ₂ , SO ₂	459494	4711616	---
8	NM #1	Noise (Kobi)	459943	4711826	11.11.2024
9	NM #2	Noise (Tskere)	44.535226	42.480379	11.11.2024



Figure 2.1. Monitoring Points on Kobi-Kvesheti Construction Site in November



Figure 2.2 Monitoring Points on Kobi-Kvesheti Construction Site in November





Figure 2.3 Monitoring Points in Village of Tskere Construction Site – November



Figure 2.4 Monitoring Points in Village of Beniani Construction Site – November





3. Water Quality Monitoring

3.1 Ground Water Monitoring - GWS-#1



Water sample was taken from the well. The well is located above the construction camp. Gergili team used sterile bottles for sampling. The volume of the water was – 5 liters. The samples were not examined/analyzed at the location. Instead, they were sent to the lab considering all the safety rules.

Figure 3.1.1 Ground Water Quality Monitoring (GWS - #1)

The sample was taken by the customer

Table 3.1.1 Results of Ground Water Sample (GWS-#1) with Permissible Norms and Used Methods

Parameter	Measurement Unit	Method used	Results	Maximum permissible limit according to ordinance #425
Organoleptic Parameters				
Color	degrees	Gost 3351-74	0	not be observed in the water column
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.95	6.5-8.5
Turbidity	NTU	ISO 7027-1:2016	1.24	N/A
TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05	0.3
Total Mineralization (TDS)	mg/L	SST ISO 7888-2007	136.1	<1000
Microbiological Parameters				
Total Coliforms	cfu/1 L	ISO9308-1:2014	Didn't show	≤10 000/1L



3.2 Surface Water Sampling Point -SWS-#1

The first sample of surface water was taken from the river Tergi, approximately 150 meters above from the tunnel water discharge point. A sterile bottle was used for sampling. Sampled water was transported to the lab for analysis. The volume of the water was – 5 liters.

The weather was 1°C, cloudy weather.

The sampling time was – 10:40

Figure 3.2.1 Upstream Water Quality Monitoring (SWS - #1)



Table 3.2.1 Results of Laboratory Analysis with Permissible Norms and Used Methods for SW-#1

Parameter	Measurement unit	Method used	Results	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.78	6.5-8.5
Conductivity	mS/cm	SST ISO 7888:1985	0.635	≤0.3
Turbidity	NTU	ISO 7027-1:2016	9.68	N/A
TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	MgO/L	HACH Method LCK 214	4.60	≤30
Microbiological Parameters				
Total Coliforms	cfu/1 L	ISO9308-1:2014	40	≤10 000/ 1 L



3.3 Surface Water Sampling Point #2

Second sample of the surface water was taken from the same river Tergi, approximately 150 meters below the tunnel water discharge point. The team used the sterile bottle for sampling. The sample was taken in the lab for the analysis. The volume of the water was – 5 liters.

The weather was 1°C, cloudy weather.

The sampling time was -10:57

Figure 3.3.1 Down Stream Water Quality Monitoring (SWS - #2)



Table 3.3.1 Results of the Laboratory Analysis with Permissible Norms and Used methods for SW-#2

Parameter	Measurement unit	Method used	Result	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.81	6.5-8.5
Conductivity	mg/L	SST ISO 7888:1985	0.674	≤0.3
Turbidity	NTU	ISO 7027-1:2016	12.40	N/A
TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	7.49	≤30
Microbiological Parameters				
Total Coliforms	cfu/1 L	ISO9308-1:2014	60	≤10 000/ 1 L



3.4 Surface Water Sampling Point #3

Second sample of the surface water was taken from the same river Khadistskali, before the water discharge point. The team used the sterile bottle for sampling. The sample was taken in the lab for the analysis. The volume of the water was – 5 liters.

The weather was 1°C, cloudy weather. The sampling time was -12:25

Figure 3.4.1 Up Stream Water Quality Monitoring (SWS - #3)



Table 3.4.1 Results of the Laboratory Analysis with Permissible Norms and Used methods for SW-#3

Parameter	Measurement unit	Method used	Result	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.6	6.5-8.5
Conductivity	mg/L	SST ISO 7888:1985	0.276	≤0.3
Turbidity	NTU	ISO 7027-1:2016	0.40	N/A
TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	0.00	≤30
Microbiological Parameters				
Total Coliforms	cfu/1 L	ISO9308-1:2014	20	≤10 000/ 1 L



3.5 Surface Water Sampling Point #4

Second sample of the surface water was taken from the same river Khadistskali, approximately 150 meters after the water discharge point. The team used the sterile bottle for sampling. The sample was taken in the lab for the analysis. The volume of the water was – 5 liters.

The weather was 1°C, cloudy weather. The sampling time was -12:32

Figure 3.5.1 Down Stream Water Quality Monitoring (SWS - #4)



Table 3.5.1 Results of the Laboratory Analysis with Permissible Norms and Used methods for SW-#4

Parameter	Measurement unit	Method used	Result	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	8.09	6.5-8.5
Conductivity	mg/L	SST ISO 7888:1985	0.194	≤0.3
Turbidity	NTU	ISO 7027-1:2016	130	N/A
TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	1.28	≤30
Microbiological Parameters				
Total Coliforms	cfu/1 L	ISO9308-1:2014	3200	≤10 000/ 1 L



3.6 Conclusion

In the water samples taken on November 11th, 2024, according to Resolution #425, the level of water pollution in the current month

in Kobi Up stream water conductivity exceeds the limit (**0.635**),

In Downstream water of Kobi conductivity (**0.674**)



4. Air Quality Monitoring

AEROQUAL SERIES 500 HAS BEEN SENT TO CALIBRATION, BECAUSE OF THAT REASON NO AIR MEASUREMENT ACTIVITY WAS CARRIED OUT ON THE LOCATION.



5. Noise Level Monitoring

Optimal Limits of Noise Level. These limits are based on IFC guidelines

Recipient status	Time interval	The average permissible norm of noise (dB)	Maximum permissible norm of noise (dB)
Populated area	7:00-23:00	55	70
Populated area	23:00-7:00	45	60
Industrial; Commercial	Day-Night	60	75

Noise level was determined at 2 locations - NM#1, NM#2, in Kobi and in the village of Tskere. The purpose of noise level monitoring is to determine how construction works affect the population. The noise level was determined using REED instruments 9300 (417 Sound Level).

5.1 Noise Level Monitoring first point – NM#1

The Monitoring time in Kobi was 10:49

The weather was 1°C, Sunny weather.

In Kobi, the distance of the monitoring point from the noise source was 100 meter to main highway, 100 meter to living camp, 600 meter to batching plant and 3 kilometers to tunnel.

During noise monitoring, heavy vehicles were moving around the monitoring point in Kobi.

Figure 5.1.1 Noise (NM#1) Monitoring Point in Kobi





Table 5.1.1 Noise (NM#1) Monitoring Results in Kobi

Different Parameters of NoiseLevel	Result (dB)
LAF _{max}	66.7
LAF _{min}	56.3
LAF _{av}	61.5

5.2 Noise Level Monitoring second point – NM#2

The monitoring time in Tskere was – 12:05

The weather was 1°C, Sunny weather.

During the noise monitoring there were heavy vehicles around the monitoring point about 70-80 meter away.

Figure 5.2.1 Noise (NM#2) monitoring 2 point





Table 5.2.1 Noise (NM#2) Monitoring Results in the village of Tskere

Different Parameters of NoiseLevel	Result (dB)
LAF_{max}	57.4
LAF_{min}	54.2
LAF_{av}	55.8

5.3 Conclusion

The results of the noise level monitoring conducted on November 11th, 2024, in the villages of Tskere and Kobi, according to the above standards, the noise of level in the current month does not exceed the permissible norms.



8. Annex 1 – Calibration Certificates



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GAC - CL - 0017
სსტ იხმ/იკ 17025:2017/2018
11.11.2021 - 11.11.2025

საკალიბრაციო ლაბორატორია
CALIBRATION LABORATORY

დაკალიბრების სერტიფიკატი № 5522
CALIBRATION CERTIFICATE

გაცემის თარიღი Date of issue	17.11.2023 წ.
დაკალიბრების ობიექტი Calibrated item	უნივერსალური ხელსაწყო SD-9300 №000793, ხმაურის ადაპტერი REED INSTRUMENTS SL-417 S/N 067603 <small>გაზომვის საშუალების დასახელება/იდენტიფიკაცია measuring instrument/identification</small>
დამკვეთი Customer	შპს „ბი-ბი-ი“ სამეცნიერო კვლევითი საგამოცდო ლაბორატორია, თბილისი, ვაჟა-ფშაველას მე-3 კვარტალი, კორპ. 7 სარდაფი 13ა <small>დასახელება, მისამართი name of customer, address</small>
დაკალიბრების მეთოდი Calibration method	CP-092.G, გოსტ 8.635-2013 <small>მეთოდის დასახელება/იდენტიფიკაცია method name/identification</small>
დაკალიბრება შესრულებულია Calibration is performed by using	ხმაურზომების კალიბრატორი № E1-23071137, სერტ. №202300306-82875 06.03.2023 <small>საწილში გაზომვის საშუალების დასახელება/იდენტიფიკაცია description of the standard measuring instrument /identification</small>
მიკვლევადობა Traceability	West Caldwell Calibration Laboratories, inc. / NIST
დაკალიბრების ადგილი Calibration Site	<input checked="" type="checkbox"/> შემსრულებლის ლაბორატორია/Supplier's Lab. <input type="checkbox"/> დამკვეთის ობიექტი/Customer's Site
დაკალიბრების პირობები Ambient condition	(20-22)°C; (55-54)%RH; (97.3-97.5)kPa
დაკალიბრების შედეგები იხილეთ მე-2 გვერდ(ებ)ზე See Calibration Results on _____ page(s)	
ლაბორატორიის უფროსი Chief of laboratory	ლ. ნანობაშვილი <small>სახელი, გვარი name</small>
პირის ხელმოწერა, რომელმაც ჩაატარა დაკალიბრება Signature of the person who performed calibration	ლ. ბეგაშვილი <small>სახელი, გვარი name</small>



IF-03.G

სერტიფიკატი № 5522
Certificate №

დაკალიბრების შედეგები
CALIBRATION RESULTS

გარეგნული დათვალიერების შედეგი: დამაკმაყოფილებელი არადამაკმაყოფილებელი
მოსინჯვის შედეგი: დამაკმაყოფილებელი არადამაკმაყოფილებელი

სიხშირე 1 kHz			სიხშირე 4 kHz			სიხშირე 125 Hz		
ფაქტობრივი მნიშვნელობა, dB	დასაკალიბრებელი ხელსაწყოების ჩვენება, dB	განუსაზღვრელობა U, dB	ფაქტობრივი მნიშვნელობა, dB	დასაკალიბრებელი ხელსაწყოების ჩვენება, dB	განუსაზღვრელობა U, dB	ფაქტობრივი მნიშვნელობა, dB	დასაკალიბრებელი ხელსაწყოების ჩვენება, dB	განუსაზღვრელობა U, dB
დიაპაზონი 50-100 dB								
74	72.9	0.12	74	72.9	0.12	74	72.9	0.12
84	82.9	0.12	84	82.9	0.12	84	82.9	0.12
94	92.9	0.12	94	92.9	0.12	94	92.9	0.12
დიაპაზონი 80-130 dB								
84	82.4	0.12	84	82.5	0.12	84	82.5	0.12
94	92.6	0.12	94	92.6	0.12	94	92.6	0.12
104	102.6	0.12	104	102.7	0.12	104	102.7	0.12
114	112.9	0.12	114	113.0	0.12	114	113.0	0.12

გაერთიანებული განუსაზღვრელობის მნიშვნელობა მიღებულია სტანდარტული განუსაზღვრელობის მნიშვნელობის წამრავლით მომცველობის კოეფიციენტზე k=2, რაც ნორმალური განაწილების შემთხვევაში შეესაბამება დაფარვის 95% აღნაბობას.

დაკალიბრების თარიღი
Calibration date 17.11.2023 წ.

დამატებითი ინფორმაცია
Additional Information 1 (ერთი) წელი
დაკალიბრებათაშორის ინტერვალი დამკვეთის მოთხოვნის შემთხვევაში
Calibration interval, if requested by the customer

პირის ხელმოწერა, რომელმაც ჩატარა დაკალიბრება
Signature of the person who performed calibration
ლ. ზეგაშვილი
სახელი, გვარი
name



Vibration Monitoring Report : Lot-1 July 2024



North–South Corridor (Kvesheti–Kobi) Road Project

Tskere Village Vibration Monitoring Report



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Tbilisi
July, 2024



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1. Introduction

Vibration induced in buildings are a frequent concern in cities around the world. Commonly, complaints are made by homeowners, as heavy construction vehicles travel at various speeds on adjacent roads, resulting in annoying vibrations and possible structural damage. Passenger vehicles rarely produce perceptible vibrations to cause significant structural damage. Generally, traffic induced vibrations are caused by heavy vehicles. These vibrations are generated by road surface irregularities, namely: potholes, cracks, and uneven pavement joints. Dynamic interaction forces between the vehicle and pavement are created by these irregularities resulting in a generation of stress waves that travel through the adjacent soils.

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

Soil type and stratification can influence the level of vibration greatly. Vibration levels increase as soil stiffness and damping decrease. Traffic vibrations appear worst in areas underlain by a soft silty clay layer between 7 meters and 15 meters deep. The natural frequencies of the soil may coincide with the natural frequency of the structures at these locations. Seasonal variations and the moisture content of the soil are also a consideration when measuring vibrations. In locations where the topsoil freezes, vibration levels can be less than half those in other seasons.

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.

The classification of damage categories used in analysis of vibration impacts is determined by ISO 4866 and is the following:

- **Damage threshold:** Formation of cracks on the surfaces of the thread-like drywall, increase of existing cracks on the plaster surfaces or on the surfaces of dry stone walls; also cracks in the mortar joints in the thread-like construction in brick and concrete;
- **Minor damage:** Widening of cracks, detachment and fall of plaster or pieces of plaster drywall; formation of cracks in blocks of brick or concrete;
- **Major damage:** Damage of structural elements; cracks in the support columns; opening of joints; set of cracks in masonry.

Tskere Village Vibration Monitoring Report



In the present work the effects of vibration in terms of nuisance/annoyance to people are not considered, and only the potential damage to structures are evaluated.

Based on the 2020 december agreement signed between parties LLC "Gergili" and "China railway tunnel group Co., Ltd. Branch in Georgia", LLC "Gergili" conducted a study on the propagation of vibration in Tskere Village, during tunnel construction works.



2. Project Description

The Government of Georgia (GoG) has launched a program to upgrade the major roads of the country. The program is being managed by the Roads Department (RD) of the Ministry of Regional Development and Infrastructure (MoRDI). As a part of the program, upgrading of Kvesheti-Kobi section of the E117 is planned. This section includes the construction of 9 km long main tunnel that will cross the Caucasus ridge bypassing the existing road that connects Kvesheti to Kobi through Gudauri area and the Jivari pass. The project is located in Dusheti and Kazbegi municipalities, Mtskheta-Mtianeti region in the central northern part of Georgia.

Kvesheti Kobi road section with six junctions and three service roads will play an important role in the development of Kazbegi and Dusheti municipalities by facilitating the communities of Kvesheti, Bedoni, Tskere and Kobi by providing year-round access to markets, educational institution, health facilities of capital Tbilisi and increase the tourist attraction in Treghe valley.

The tunnel provides more secure and reliable conditions for passengers on the road in winter. Besides The National Park of Kazbegi and Gudauri Winter Resort will avoid the traffic flow by the help of the new road. The road will also improve the livelihood conditions of inhabitants living in gorge. They are isolated from outside world in winter and the villages of Khada are almost empty. There are no grocery store and pharmacy and the medical assistance is not available. Because of the nonexistence of the road and severe weather conditions local people have to go to Kvesheti on foot, which is connected with a lot of difficulties and risks. We must take into consideration the fact that there are mostly middle aged and elderly people living in the upper villages of gorge. It's especially hard for them to pass this road in winter.

After project realization, distance between Kvesheti and Kobi will be reduced by 12 km instead of existing 35 km road, and travel time will be reduced to 20 minutes instead of 1 hour.

The construction works of Kvesheti-Kobi section is financing by Asian Development Bank and European Bank for Reconstruction and Development. The construction works started in the end of 2019 and will be completed in 2023.

During this reporting period project is at construction stage. Contractor is carrying out activities related to tunnel construction, permitting, machinery mobilization, approval and designing of gas pipeline relocation, identification and fulfilling the requirements for spoil disposal areas, development of living arrangements, get approved site specific and topic specific management plans.



Figure 1: Project Location



The length of the new alignment is 22.7 km and will be divided into two construction packages, or 'Lots' as follows:

- Lot 1: Tskere – Kobi: Chainage KM 12.7 – KM 22.7 (10 km);
- Lot 2: Kvesheti – Tskere: Chainage KM 0.0 – KM 12.7 (12.7 km).

The present vibration survey report covers lot 1 - Tskere village section.



3. Vibration Monitor SWARM

The SWARM vibration monitor is the most efficient and high-quality vibration monitor on the market and uses MEMS (Micro-ElectroMechanical Systems) technology. Geophones are no longer needed.

The SWARM vibration monitor worldwide in construction and infrastructure and also to measure vibrations of other nature, such as vibrations at windmills, vibrations at data centers and vibrations from heavy traffic. The SWARM is used to measure potential damage to structures and to measure nuisance for people in buildings.

The SWARM is IP65 rated, complies with industry standards and measures according to the latest and relevant standards and guidelines.

The measurement data is automatically sent from the SWARM to the Honeycomb platform via 4G/LTE or WiFi. There is no need to retrieve monitoring data from the jobsite. Saving time and manpower through the unprecedented efficiency of the SWARM.

Omnidots SWARM measures the V_{top} (PPV / Peak Particle Velocity) and the A_{top} (PPA / Peak Particle Acceleration) for guidelines DIN4150-3, BS7385 and SBR-A.

All monitoring data is saved as CSV, Excel or retrieve the data using the Omnidots API. Honeycomb is capable of generating notifications for V_{top} (PPV) and also for A_{top} (PPA).

Figure 2. Vibration Monitor SWARM



Installing the SWARM is incredibly fast and easy, as you can see in this video. You can configure the measuring points remotely via the Honeycomb web platform. There you can also access your measurement data 24/7, from anywhere in the world from your laptop, smartphone or tablet.



4. Measuring in accordance with DIN 4150-3 Standard

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 (V_i) of the three individual components (peak values) of vibration velocity at frequencies of 1 to 80 Hz.

The measurements are carried out at the foundation. Vibrations in the ceiling of the upper most outer walls also provide valuable information for analysis. These detect the horizontal response of the building to the vibration at the foundation. Only the greatest value of both the horizontal components is then used for the analysis.

The standard provides guide values for permissible vibration velocities for short time and sustained vibrations in three types of buildings (Notes from DIN 4150-3 about the guide values is given in Table 1, 2).

Table 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 2: Guide values for continuous vibration

Guide values for vibration velocity v_i 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	-

Vertical continuous vibration with a vibration velocity below 10 mm/s normally do not cause damage to ceilings in houses. For delicate buildings there are no guide values available.

For sustained vibrations on pipelines, the guide values for short time vibrations, reduced by 50%, can be applied.

The following advice is given in DIN 4150-3 for the placement of sensors:

- For foundation vibrations the transducer should be placed on the lowest floor at the foundation or on the outer wall.
- In the upper ceiling level, the sensor should be placed inside or very close to the outer wall.
- For buildings without a basement the measurement location must not be higher than 0.5m above the ground level.
- The measurement location should predominantly be on the side of the building facing the excitation.
- One of the lateral coordinates (X / Y) should be parallel to an outside edge of the building.
- Buildings with larger ground areas should be measured at several points.
- In addition to measuring at the foundation and the upper ceiling, if required, measurements can be carried out in the vertical direction on the ceilings, where the strongest vibrations are to be expected (mostly central).
- When measuring pipelines, where possible, the sensor should be placed on the pipeline itself.



5. Evaluation of Effects of Vibration on Buildings

5.1 DIN 4150-3 Standard

Categorization of buildings: Table 1, 2 contains building categorization determined by DIN 4150, in particular: Category 1: Commercial/Industrial buildings and similar; Category 2: Residential building and similar; and Category 3: Sensitive Buildings.

Short or long vibration: In case of construction of the road as well as in case of road operation, the buildings will be subject to short vibration impacts – impacts that occur for short period of time (e.g. the period of time when roller compactor is working or when a heavy vehicle is crossing in front of an impacted building). Characterization of long (transient) and short vibrations is defined in DIN 4150-3. Nevertheless, only for demonstration purpose, in comparison of modelled vibration impact to the damage thresholds, thresholds for both – short and long vibration impacts for II category buildings assigned to structures have been referred.

5.2 ISO 4866:2010 Standard – Mechanical Vibration and Shock

The principles for carrying out vibration measurement and processing data regarding the effects of vibration on structures are established by the International Standard ISO4866:2010 – “Mechanical vibration and shock, Vibration of fixed structures, Guidelines for the measurement of vibrations and evaluation of their effects on structures”.

The most common and frequent structural damage from man-made sources occurs in the frequency range from 1 to 150 Hz.

Natural sources, such as earthquakes and wind excitation, usually contain damage-level energy at lower frequencies, in the range from 0,1 Hz to 30 Hz.

The classes are defined with reference to a building Unreinforced or light framed structures/ Residential or light commercial type. The reference building shall not have any constructional defects nor shall it have sustained accidental damage. If the construction does not fulfil these requirements, it shall be allocated to a lower class.

5.3 Description of Damage

For the purposes of this International Standard ISO 4866:2010, the damages classified into the following categories:

- **Cosmetic.** The formation of hairline cracks on drywall surfaces (see ISO 4356), or the growth of existing cracks in plaster or drywall surfaces; in addition, the formation of hairline cracks in mortar joints of brick/concrete block construction.
- **Minor.** The formation of large cracks or loosening and falling of plaster or drywall surfaces, or cracks through bricks/concrete blocks.
- **Major.** The damage to structural elements of the structure, cracks in support columns, loosening of joints, splaying of masonry cracks, etc.



6. Vibration Propagation Study

On 15th of July, 2024, the measurement device's battery was changed, vibration survey field works were carried out by the representatives of LLC "Gergili". The research procedure was conducted in accordance with the form approved by the organization. The aim of the study was to assess the impact of vibration generated during construction works on the surrounding buildings. One point was defined as the location of the vibrating device:

- 1) Church adjacent to the construction site in Tskere.

Figure 3: Study Area





Figure 4: Measurement Point - The Church



Figure 5: Cultural Heritage Structure, where the measurement device is installed in window of the church



The tables below show the measurement protocol N1, where the technical details of the measurements are presented. Vibration measurement and data collection at point N1 was done during July:



Measurement protocol N1	
1. General	
1.1 Person in charge	Irakli Ramishvili - Head of the BBE Science Research Laboratory
1.2 Measurement period	01/07/2024 12:49:00 – 31/07/2024 12:50:59
2. Kind of vibration	
2.1 Excitation	Construction work
2.2 Operating conditions	Intensive construction works
3. Structure	
3.1 Name and address	Church in Village Tskere
3.2 Classification	Sensitive building. According to DIN 4150-3 standard N3 categories of buildings (sensitive buildings)
3.3 Description	Stone building
4. Location and position	
4.1 Source of vibration	
5. Environmental conditions	Open space, smooth surface.
6. Subjective observations	The vibration of the working specifics affect minor on the general condition
7. Measuring chain	Threshold for measurement storage: 0.2 mm/s Guideline: DIN4150-3 80Hz Measuring interval (seconds): 2 Measurement method: DIN 4150-3; Settings: Long term; Calculate Vmax (Peak vibration velocity): On Measurement processing and report generation done with MEMS software.
8. Measurement result	
8.1 Event chart	



<p>Peak vibration velocity/time</p>	
<p>Peak vibration velocity/frequency</p>	
<p>9. Evaluation</p>	<p>Construction vibration does not affect the overall condition</p>
<p>10. Signs</p>	
<p>Signature</p>	<p>Irakli Ramishvili</p>

As can be seen from the data from the protocol, the level of vibration exposure generated by the construction at the control points are much lower than the reference values specified in DIN 4150-3.

Tskere Village Vibration Monitoring Report



Following exceedances of vibration levels were observed in July:

Exceedances						
Date	X Fdom (Hz)	X Vmax (mm/s)	Y Fdom (Hz)	Y Vmax (mm/s)	Z Fdom (Hz)	Z Vmax (mm/s)
July 15, 2024 13:12:14	2.5	46.9259	1.0	26.6207	6.0	28.0271
July 17, 2024 16:24:14	1.0	2.2148	1.0	1.6201	1.0	4.1890
July 17, 2024 16:24:59	57.5	2.4815	61.0	2.7223	1.0	3.3988
July 17, 2024 16:26:59	1.0	3.6595	1.0	9.5030	1.0	10.9563
July 17, 2024 16:27:44	52.0	1.0323	52.5	1.4821	1.0	2.6461
July 17, 2024 16:27:59	1.0	3.7951	1.0	5.2357	1.0	7.1034
July 17, 2024 16:28:14	1.0	1.6266	1.0	2.3707	1.0	9.5970
July 17, 2024 16:29:59	1.0	0.7195	1.0	1.7185	1.0	2.9625
July 24, 2024 09:24:14	1.0	1.8951	21.0	3.2707	1.5	0.4532

On July 15, the Gergil team removed the vibration device, based on the client's request, the excesses recorded on July 15 belong to the removal of the device by the Gergil team.

As for the rest of the days where the excess occurred, according to the client's information, the excess on the mentioned days was caused by the movement of animals.



Conclusion

1. Based on the agreements dated 2020 December 17th (No. CRTG-KKHSE-2020-0002) and dated 2021 June 22th (Amendment Agreement – Amendment #1) signed between parties LLC "Gergili" and "China railway tunnel group Co., Ltd. Branch in Georgia", LLC "Gergili" conducted a study on the propagation of vibration in Tskere Village, during tunnel construction works.
2. One point was selected as vibration location: The church near the construction site (about 50 m from the project zone).
3. Vibration survey was performed in accordance with the German standard DIN 4150-3 and the standard of the International Certification Organization ISO 4866: 2010, as well as following the procedures of vibration survey developed by the company.
4. Vibration level data was collected:
N1 point - 01/07/2024 12:49:00 – 31/07/2024 12:50:59
5. Annex N1 shows the vibration level values in 2-second intervals for N1 point. Exceedance of the reference value of DIN 4150-3 standard at N1 was observed several times in July, 2024. Vibration measurement and data collection at point N1 was done during whole July, from where,
 - On July 15, the Gergil team removed the vibration device, based on the client's request, the excesses recorded on July 15 belong to the removal of the device by the Gergil team.
 - As for the rest of the days where the excess occurred, according to the client's information, the excess on the mentioned days was caused by the movement of animals.
6. At the given stage, the construction works are accomplished with heavy vehicles and works done by personnel, so there is no source of a permanent vibration as a result of the construction activities. An analysis of the measurement values at point N1 in July shows that cases of sharp increases in vibration levels was not observed during vibration measurement and data collection in July.
7. At the measurement point the vibration data obtained as a result of construction works is significantly less than the values provided by the standard during most of the measurement period.



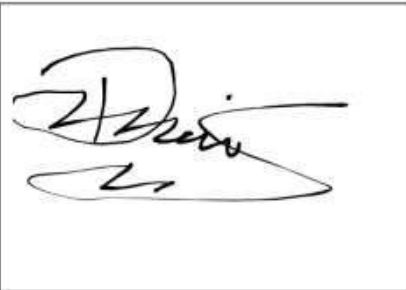
7. Calibration Certificate

Calibration report

Certificate of Calibration

Certificate number: 20231121707372798779



Manufacturer	Omnidots B.V.
Location of calibration	Omnidots Potklei 5 9351 VS Leek
Model	SWARM V2.2b-G
Name	FIHOWO
Date of calibration*	2023-11-21 (YYYY-MM-DD)
Temperature (°C)	20±3°C
Humidity (% RH)	60±30%
Signature:	

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Calibration report

Certificate of Calibration

Certificate number: 20231121707372798779



Calibration procedure

The Swarms are mounted on the calibration mounts. The shaker then targets a speed and keeps the same power for 60 seconds. Over this time measurement samples are logged and compared to the reference sensor.

Calibration report

Certificate of Calibration

Certificate number: 20231121707372798779



Calibration equipment used

Model	Serial number	Description	Calibration certificate
OMNSH01	0002	Horizontal shaker	n.a.
OMNMO01	0004	Calibration mount	n.a.
OMNMO01	0005	Calibration mount	n.a.
OMNMO01	0006	Calibration mount	n.a.
OMNDR01	0002	Shaker driver	n.a.
Epson A352AD	00000540	Reference sensor	2020-11-24
Swarm	HOJIFI	Reference check	2022-08-01
n.a.	76d2765	Calibration software	n.a.

Calibration report

Certificate of Calibration

Certificate number: 20231121707372798779



Calibration results after measurement

Axis	Frequency	Reference measurement V_{ref} ($V_{ref} \cdot \text{weighting}(f)$)	Excitation measurement of the device V_{meas}	Deviation 100 X ($(V_{meas} - V_{ref}) / V_{ref}$)	Result
X	16.0	8.86	8.97	1.26	PASS
Y	16.0	9.80	9.89	0.97	PASS
Z	16.0	8.98	9.12	1.64	PASS

Name

FIHOWO

Date of calibration*

2023-11-21 (YYYY-MM-DD)

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Environmental Monitoring Report : Lot 2 (November 2024)



LLC BBE Scientific Research Laboratory

Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere
Section
Environmental Measurement Report November
2024



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Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere Section
Environmental Measurement Report – November
2024



1. General Information

Project number: #151124

Date of the monitoring: 15.11.2024

BBE LLC team undertakes monthly monitoring services for ambient air quality, noise, and water quality monitoring on Kvesheti-Kobi highway Lot 2 Kvesheti-Tskere section.

This report represents the results of the monitoring activities performed by BBE team in November, 2024. The work was done according to the proposal prepared for Kvesheti-Kobi highway Lot 2 Kvesheti-Tskere section. The methodology and procedures follow international guidelines.

During the monitoring, the construction was in an active phase, all the technique was on and working. Therefore, the results of the monitoring activities represent the actual, full-scale impact of the construction activities on the environment.

Monitoring activities included surface water quality analysis noise level monitoring.

2. Description of the Performed Works

For November's monitoring, there was 3 points for water quality. Noise was measured at 4 locations.

Nata Khvedelidze (chemist) and Luka Iremashvili (chemist) from BBE team participated in the monitoring.

During the monitoring activities, Nata Khvedelidze and Luka Iremashvili from BBE team made noise monitoring, REED instruments 9300 was used. water monitoring has not been done at the location, water was sampled and then analyzed in the lab.

The monitoring took place on 15th of November, 2024. The weather was sunny, 0° C.

All the equipment was calibrated, cleaned, and tested for the field work.

Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere Section
 Environmental Measurement Report – November
 2024



Table 2.1 GPS coordinates of the monitoring points

#	Monitoring Point Reference	Type Of Monitoring	E	N	Date
1	SWS #1	Surface water	44.5085630° E	42.4308274° N	15.11.24
2	SWS #2	Surface water	44.5182498° E	42.4284740° N	15.11.24
3	SWS #3	Surface water	44.529248° E	42.427485° N	15.11.24
4	AAS #1	PM2.5, PM10, CO, NO ₂ , SO ₂	44.524469° E	42.433225° N	-----
5	AAS #2	PM2.5, PM10, CO, NO ₂ , SO ₂	44.497582° E	42.448308° N	-----
6	AAS #3	PM2.5, PM10, CO, NO ₂ , SO ₂	44.532888° E	42.468643° N	-----
7	AAS #4	PM2.5, PM10, CO, NO ₂ , SO ₂	44.532870° E	42.468635° N	-----
8	AAS #5	PM2.5, PM10, CO, NO ₂ , SO ₂	44.575948° E	42.420784° N	-----
9	NM#1	Noise (Batching plant)	44.575948° E	42.420784° N	15.11.24
10	NM#2	Noise (Bridge #2)	44.524606° E	42.426190° N	15.11.24
11	NM#3	Noise (Zakhathkari)	44.524469° E	42.433225° N	15.11.24
12	NM#4	Noise (near to the camp #3)	44.532870° E	42.468635° N	15.11.24



3. Water Quality Monitoring

3.1 Surface Water Monitoring - SWS-#1

In the water sampling area there were several activities which can impact river water: Mleta quarry activities, Bridge N2 pilling activities, and heavy vehicle movement near temporary bridge N1 (which is connecting village Kvesheti to village Bedoni and also Khada valley).

At an upstream location, there are no activities (which can cause an impact on river) of Kvesheti-kobi lot 2 project. Thus, river water at selected area is itself as it is – that's why it is identified as up-stream.

The first sample of surface water, upstream water was taken from the Aragvi river. The volume of water was 5 liters. The team used sterile bottles for sampling. The samples were not examined/analyzed at the location. Instead, they were sent to the lab considering all the safety rules.

The weather was -1°C, sunny weather.

Time of sampling -11:07

Figure 3.1.1 Surface Water Quality Monitoring (SWS-#1)





Table 3.1.1 Results of Surface Water Sample (SWS-#1) with Permissible Norms and Used Methods

Parameter	Measurement unit	Method used	Result	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.45	6.5-8.5
Turbidity	NTU	ISO 7027-1:2016	2.60	N/A
TPH	mg/L	ვალიდირებული მეთოდი GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	mg/L	HACH Method LCK 214	0.0	≤30
Conductivity	Ms/cm	SST ISO 7888:1985	0.276	N/A

3.2 Surface Water Monitoring - SWS-#2

This area was selected because of bridge N2 pilling. Those pilling areas are located near the river, that's why water quality has been checked to reveal if there is any impact on it.

The second sample of surface water, downstream water was taken from the Aragvi river. The volume of water was 5 liters. The team used sterile bottles for sampling. The samples were not examined/analyzed at the location. Instead, they were sent to the lab considering all the safety rules.

The weather was -1°C, sunny weather.

Time of sampling – 12:11

Figure 3.2.1 Surface Water Quality Monitoring (SWS - #2)





Table 3.2.1 Results of Surface Water Sample (SWS-#2) with Permissible Norms and Used Methods

Parameter	Measurement unit	Method used	Result	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.62	6.5-8.5
Turbidity	NTU	ISO 7027-1:2016	2.50	N/A
TPH	mg/L	ვალიდირებული მეთოდი GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	mg/L	HACH Method LCK 214	0.00	≤30
Conductivity	Ms/cm	SST ISO 7888:1985	0.280	N/A

3.3 Surface Water Monitoring - SWS-#3

This area was selected because of heavy vehicle movement on temporary bridge N1 which is located on the river Aragvi. To reveal if here is any impact from accidental spill or falling of any materials which can be carried by trucks.

The third sample of surface water, downstream # 2 water was taken from the Aragvi river. The volume of water was 5 liters. The team used sterile bottles for sampling. The samples were not examined/analyzed at the location. Instead, they were sent to the lab considering all the safety rules.

The weather was - 1°C, sunny weather.

Time of sampling – 12:32

Figure 3.3.1 Surface Water Quality Monitoring (SWS - #3)





Table 3.3.1 Results of Surface Water Sample (SWS-#3) with Permissible Norms and Used Methods

Parameter	Measurement unit	Method used	Result	Maximum permissible limit according to ordinance #425
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.68	6.5-8.5
Turbidity	NTU	ISO 7027-1:2016	149	N/A
TPH	mg/L	ვალიდირებული მეთოდი GL-SOP Wch-73-G-19	<0.05	≤0.3
Chemical Oxygen Demand (COD)	mg/L	HACH Method LCK 214	0.0	≤30
Conductivity	Ms/cm	SST ISO 7888:1985	0.310	N/A

3.4 Conclusion

During the monitoring of the water on the 15th of November, 2024, no exceedance of the maximum allowable concentration was observed.

4. Air Quality Monitoring

Ambient air monitoring is an integral part of an effective air quality management system. The purpose of air quality monitoring is to study if an area has an air pollution problem and how construction works affect the air quality, which can lead to negative impacts on the environment, working personnel and the local population in close proximity of the works. Monitoring helps in assessing the level of pollution in relation to the ambient air quality standards.

Table 4.1.1 Dust Particles; Carbon Monoxide (CO); Nitrogen Oxides (NO₂) and Sulfur Oxides (SO₂) Concentration Permissible Limits

Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere Section
Environmental Measurement Report – November
2024



Parameter	Time Interval	Maximum Permissible Concentration $\mu\text{g}/\text{m}^3$	National limit for Human Rights –MPC, $\mu\text{g}/\text{m}^3$	IFC/WHO (updated 2016) –guideline value, $\mu\text{g}/\text{m}^3$	EU Air Quality Standards, Permitted Exceedences Per Year $\mu\text{g}/\text{m}^3$
PM 2.5	1 hr	25		25	
	1 year	10	12-17	10	25 / n/a
PM 10	1 hr	50		50	
	24 hrs	50	25-35		50 / 35
	1 year	20	20-28	20	40 / n/a
CO	8 hour mean	10	5-7		1000
NO ₂	1 hour	200	35-140	200	200 / 18
	1 year	40	26-32	40	40 / n/a
SO ₂	1 hour	350	350	500	350 / 3
	24 hrs	125	5	20	125 / 24
	1 year	500			

In order to evaluate dust particle concentration in the air, the team used Aeroqual Series 500, which includes PM10, PM2.5 sensors. The specific sensor is calibrated and tested for its accuracy and precision. CO concentration was also evaluated using Aeroqual series 500, with specific CO sensor, which is also calibrated and tested.

Aeroqual series 500 has been sent to calibration, because of that reason no air measurement activity was carried out on the location.



5. Noise Level Monitoring

Optimal Limits of Noise Level. These limits are based on IFC guidelines

Recipient status	Time interval	The average permissible norm of noise (dB)	Maximum permissible norm of noise (dB)
Populated area	7:00-23:00	55	70
Populated area	23:00-7:00	45	60
Industrial; Commercial	Day-Night	70	70

Noise levels were measured at 4 locations. The purpose of noise level monitoring is to determine what impact the workflow has on residents. Noise was measured using the REED Instruments 9300-(417-sound level).

5.1. Noise Level Monitoring first Point

The mentioned monitoring point is located near the first concrete plant.

During the noise level monitoring near the first concrete plant, the work process was carried out around the monitoring point, 2 heavy vehicle was moving. This location was measured on the track where the cars were moving.

Temperature - -1°C, Sunny Weather

Monitoring Time -12:21

Figure 5.1.1 Noise (NM#1) Monitoring Point – Close to the First Batching Plant





Table 5.1.1 Noise (NM#1) Monitoring Results - Close to the First Batching Plant

Different Parameters of Noise Level	Result (dB)
LAF _{max}	82.1
LAF _{min}	61.7
LAF_{av}	71.9

5.2 Noise Level Monitoring second Point

The mentioned monitoring point is located near Bridge 2.

During the noise monitoring near Bridge 2, the work process was carried out around the monitoring point, about 700 meters away. During the monitoring, a tractor was working in the tunnel and heavy machinery was moving around the tunnel. During the monitoring, only the noise received from the work was recorded. Construction of bridge N2 girders was in progress.

Temperature - -1°C, Sunny weather

Monitoring Time – 10:48

Figure 5.2.1 Noise (NM#2) Monitoring Point – Around the Bridge #2



Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere Section
Environmental Measurement Report – November
2024



Table 5.2.1 Noise (NM#2) Monitoring Results - Around the Bridge #2

Different Parameters of Noise Level	Result (dB)
LAF _{max}	67.1
LAF _{min}	56.3
LAF_{av}	61.75

5.3 Noise Level Monitoring third Point

The mentioned monitoring point is located in Zakatkari

During the noise monitoring in Zakatkari, the work process was carried out around the monitoring point, about 10 meters away.

Temperature - -1°C, Sunny weather

Monitoring Time - 10:14

Figure 5.3.1 Noise (NM#3) Monitoring Point – Zakatkari



Table 5.3.1 Noise (NM#3) Monitoring Results - Around the Bridge #2

Different Parameters of Noise Level	Result (dB)
LAF _{max}	58.4
LAF _{min}	56.9
LAF_{av}	56.65



5.4 Noise Level Monitoring Fourth Point

The mentioned monitoring point is located close to camp #3.

During the noise monitoring near camp #3, the work process was carried out around the monitoring point, about 2 km away. Work was underway near the third tunnel.

Temperature --10C, Sunny Weather

Monitoring Time – 11:52

Figure 5.4.1 Noise (NM#4) Monitoring Point – Close to Camp #3



Table 5.4.1 Noise (NM#4) Monitoring Results - Close To Camp #3

Different Parameters of Noise Level	Result (dB)
LAF _{max}	61.5
LAF _{min}	54.2
LAF _{av}	57.85

Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere Section
Environmental Measurement Report – November
2024



5.6 Conclusion

The results of the noise level monitoring conducted on the 15th of November, 2024 no exceedance of the maximum allowable concentration was observed.



6. Methodology and Instruments Used

6.1 Noise

The noise monitoring spot was chosen so it could fully show the impact of construction processes on the population. Noise was monitored for an hour. BBE team used REED instruments 9300 to determine the noise level.

The sound level meter consists of a calibrated microphone, electronic circuits, and a display. The microphone detects small air pressure variations associated with sound and converts them into electrical signals. The aforementioned signals are then processed using the instrument's electronic circuitry. The display shows the sound level in decibels.

The sound level meter acquires the sound pressure level at a particular location.

A sound level meter is used for acoustic measurements. It is a hand-held instrument with a microphone.

Figure 6.2.1 Noise level is determined by the REED INSTRUMENTS 9300 model adapter





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Identification Number: 405347469

Report № 041224 - 1

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Date of report delivery - 04.12.2024
Sample name and quantity Surface water up stream ,5 Liters
Client name: China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)
Sample was taken in: 15.11.2024
Sampling Place: well located in Kvesheti
Analysis start and finish: 15.11.2024-26.11.2024
Sample analysis goal: physical-chemical and microbiological analysis
Sample was taken by: Luka iremashvili
Analysis Done By: The Exam Laboratory of the Scientific Research Laboratory of G.Natadze Sanitation, Hygiene and Medical Ecology Scientific Research Institute.

№	Parameter	Measurement Unit	Used Method	Result
Physical-chemical Parameters				
1	pH	-	SST ISO 10523:2008/2010	7.45
2	Conductivity	mg/L	SST ISO 7888:1985	0.276
3	Turbidity	NTU	ISO 7027-1:2016	2.60
4	TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05
5	Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	0.0

**Maximum Permissible Limit According to Ordinance #425 On the Approval of The Technical Regulations against surface water pollution in Georgia – 31.12.2013 Tbilisi, Georgia

*Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.
2. The results belong only to an experienced pattern.*

QC Lab Manager: R.Zedginidze

Agreed: Director of Laboratory I. Ramishvili





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Report № 041224 - 2

Date of report delivery - 04.12.2024

Sample name and quantity Surface water down stream N1,5 Liters

Client name: China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)

Sample was taken in: 15.11.2024

Sampling Place: well located in Kvesheti

Analysis start and finish: 15.11.2024-26.11.2024

Sample analysis goal: physical-chemical and microbiological analysis

Sample was taken by: Luka Iremashvili

Analysis Done By: The Exam Laboratory of the Scientific Research Laboratory of G.Natadze Sanitation, Hygiene and Medical Ecology Scientific Research Institute.

№	Parameter	Measurement Unit	Used Method	Result
Physical-chemical Parameters				
1	pH	-	SST ISO 10523:2008/2010	7.62
2	Conductivity	mg/L	SST ISO 7888:1985	0.280
3	Turbidity	NTU	ISO 7027-1:2016	2.50
4	TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05
5	Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	0.0

**Maximum Permissible Limit According to Ordinance #425 On the Approval of The Technical Regulations against surface water pollution in Georgia – 31.12.2013 Tbilisi, Georgia

Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.

2. The results belong only to an experienced pattern.

QC Lab Manager: R.Zedginidze

Agreed: Director of Laboratory I. Ramishvili





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Date of report delivery - 04.12.2024
Sample name and quantity Surface water down stream N2,5 Liters
Client name: China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)
Sample was taken in: 15.11.2024
Sampling Place: well located in Kvesheti
Analysis start and finish: 15.11.2024-26.11.2024
Sample analysis goal: physical-chemical and microbiological analysis
Sample was taken by: Luka iremashvili
Analysis Done By: The Exam Laboratory of the Scientific Research Laboratory of G.Natadze Sanitation, Hygiene and Medical Ecology Scientific Research Institute.

№	Parameter	Measurement Unit	Used Method	Result
Physical-chemical Parameters				
1	pH	-	SST ISO 10523:2008/2010	7.68
2	Conductivity	mg/L	SST ISO 7888:1985	0.310
3	Turbidity	NTU	ISO 7027-1:2016	149
4	TPH	mg/L	Validated method GL-SOP Wch-73-G-19	<0.05
5	Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	0.0

**Maximum Permissible Limit According to Ordinance #425 On the Approval of The Technical Regulations against surface water pollution in Georgia – 31.12.2013 Tbilisi, Georgia

Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.
2. The results belong only to an experienced pattern.

QC Lab Manager: R.Zedginidze

Agreed: Director of Laboratory I. Ramishvili





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BBE GE –

Date of Report Delivery –04.12.2024
Measurement type: Noise level monitoring
Client Name: China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)
Sampling place: Close to the First Batching Plant (NM#1)
Sampling date: : 15.11.2024
Measurements Done By: Nata Khvedelidze

Different Parameters of NoiseLevel	Result (dB)
LAF _{max}	82.1
LAF _{min}	61.7
LAF _{av}	71.9

Examiner: N.khvedelidze

QC Lab Manager: R. Zedginidze

Agreed: Director of Laboratory I. Ramishvili





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Report № 041224 -6

Date of Report Delivery -04.12.2024

Measurement type: Noise level monitoring

Client Name: China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)

Sampling place: Zakatkari (NM#3)

Sampling date: 15.11.2024

Measurements Done By: Nata Khvedelize

Different Parameters of NoiseLevel	Result (dB)
LAF _{max}	58.4
LAF _{min}	56.9
LAF _{av}	56.65

Examiner: N.Khvedelidze 

QC Lab Manager: R. Zedginidze 

Agreed: Director of Laboratory I. Ramishvili 





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Report 041224-7

Date of Report Delivery -04.12.2024
Measurement type: Noise level monitoring
Client Name: China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)
Sampling place: Close to camp #3 (NM#4)
Sampling date: 15.11.24
Measurements Done By: Nata Khvedelidze

Different Parameters of NoiseLevel	Result (dB)
LAF _{max}	61.5
LAF _{min}	54.2
LAF _w	57.85

Examiner: N.Khvedelidze 

QC Lab Manager: R. Zedginidze 

Agreed: Director of Laboratory I. Ramishvili 



Kvesheti-Kobi Highway Lot 2 Kvesheti – Takere Section
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2024



8. Calibration Certificates



შპს "მეტროლოჯი"
"METROLOGY" LLC

0144, თბილისი, ბერი გაბრიელ სალოსის გამზ. 191დ
191d, Beri Gabriel Salosi Ave, Tbilisi, 0144
ტელ./Phone: +995 (32) 2-700-800, www.metrology.ge



სსიპ GAC
GAC - CL - 0017
სსტ იხი/იკ 17025:2017/2018
11.11.2021 - 11.11.2025

საკალიბრებალი ლაბორატორია
CALIBRATION LABORATORY

დაკალიბრების სერტიფიკატი № 5522
CALIBRATION CERTIFICATE

გაცემის თარიღი
Date of issue 17.11.2023 წ.

დაკალიბრების ობიექტი
Calibrated item უნივერსალური ხელსაწყო SD-9300 №000793, ხმაურის ადაპტერი REED INSTRUMENTS SL-417 S/N 067603
გაზომვის საშუალების დასახელება/იდენტიფიკაცია
measuring instrument/identification

დამკვეთი
Customer შპს „ბი-ბი-ი“ სამეცნიერო კვლევითი საგამოცდო ლაბორატორია, თბილისი, ვაჟა-ფშაველას მე-3 კვარტალი, კორპ. 7 სარდაფი 13ა
დასახელება, მისამართი
name of customer, address

დაკალიბრების მეთოდი
Calibration method CP-092.G, გოსტ 8.635-2013
მეთოდის დასახელება/იდენტიფიკაცია
method name/identification

დაკალიბრება შესრულებულია
Calibration is performed by using ხმაურმზომების კალიბრატორი № E1-23071137, სერტ. №202300306-82875 06.03.2023
სანიშნო გაზომვის საშუალების დასახელება/იდენტიფიკაცია
description of the standard measuring instrument /identification

მიკვლევადობა
Traceability West Caldwell Calibration Laboratories, inc. / NIST

დაკალიბრების ადგილი
Calibration Site შემსრულებლის ლაბორატორია/Supplier's Lab. დამკვეთის ობიექტი/Customer's Site

დაკალიბრების პირობები
Ambient condition (20-22)°C; (55-54)%RH; (97.3-97.5)kPa

დაკალიბრების შედეგები იხილეთ მე-2 გვერდ(ებ)ზე
See Calibration Results on 2 page(s)

ლაბორატორიის უფროსი
Chief of laboratory ლ. ნანობაშვილი
სახელი, გვარი
name

პირის ხელმოწერა, რომელმაც ჩაატარა დაკალიბრება
Signature of the person who performed calibration ლ. ბეგაშვილი
სახელი, გვარი
name



IF-03.G

სერტიფიკატი № 5522
Certificate №

დაკალიბრების შედეგები
CALIBRATION RESULTS

გარეგნული დათვალიერების შედეგი: დამაკმაყოფილებელი არადამაკმაყოფილებელი
მოსინჯვის შედეგი: დამაკმაყოფილებელი არადამაკმაყოფილებელი

სიხშირე 1 kHz			სიხშირე 4 kHz			სიხშირე 125 Hz		
ფაქტობრივი მნიშვნელობა, dB	დასაკალიბრებელი ხელსაწყოების ხელსაწყოების ჩვენება, dB	განუსაზღვრელი ლობა U, dB	ფაქტობრივი მნიშვნელობა, dB	დასაკალიბრებელი ხელსაწყოების ჩვენება, dB	განუსაზღვრელი ლობა U, dB	ფაქტობრივი მნიშვნელობა, dB	დასაკალიბრებელი ხელსაწყოების ჩვენება, dB	განუსაზღვრელი ლობა U, dB
დიაპაზონი 50-100 dB								
74	72.9	0.12	74	72.9	0.12	74	72.9	0.12
84	82.9	0.12	84	82.9	0.12	84	82.9	0.12
94	92.9	0.12	94	92.9	0.12	94	92.9	0.12
დიაპაზონი 80-130 dB								
84	82.4	0.12	84	82.5	0.12	84	82.5	0.12
94	92.6	0.12	94	92.6	0.12	94	92.6	0.12
104	102.6	0.12	104	102.7	0.12	104	102.7	0.12
114	112.9	0.12	114	113.0	0.12	114	113.0	0.12

გარეთიერი განუსაზღვრელობის მნიშვნელობა მიღებულია სტანდარტული განუსაზღვრელობის მნიშვნელობის ნორმული მომდევნოების კოეფიციენტზე $k=2$ რაც ნორმალური განაწილების შემთხვევაში შეესაბამება დაფარვის 95% აღმათობას.

დაკალიბრების თარიღი
Calibration date 17.11.2023 წ.

დამატებითი ინფორმაცია
Additional Information 1 (ერთი) წელი
დაკალიბრებათაშორის ინტერვალის დამკვეთის მოთხოვნის შემთხვევაში
Calibration interval, if requested by the customer

პირის ხელმოწერა, რომელმაც ჩაატარა დაკალიბრება
Signature of the person who performed calibration
ლ. ბეგაშვილი
სახელი, გვარი
name


ხელმოწერა, მტკბილი
signature, stamp

გვ. 2 2-დან

Vibration Monitoring Report Lot-2 November 2024



LLC Gergili

**Kvesheti-Kobi Highway Lot 2 Kvesheti –
Tskere Section**
**Long-Term Vibration Monitoring Report–
November 2024**



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Director: Sophie Berishvili

Tbilisi
November, 2024



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1. Introduction

Vibration induced in buildings are a frequent concern in cities around the world. Commonly, complaints are made by homeowners, as heavy construction vehicles travel at various speeds on adjacent roads, resulting in annoying vibrations and possible structural damage. Passenger vehicles rarely produce perceptible vibrations to cause significant structural damage. Generally, traffic induced vibrations are caused by heavy vehicles. These vibrations are generated by road surface irregularities, namely: potholes, cracks, and uneven pavement joints. Dynamic interaction forces between the vehicle and pavement are created by these irregularities resulting in a generation of stress waves that travel through the adjacent soils.

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

Soil type and stratification can influence the level of vibration greatly. Vibration levels increase as soil stiffness and damping decrease. Traffic vibrations appear worst in areas underlain by a soft silty clay layer between 7 meters and 15 meters deep. The natural frequencies of the soil may coincide with the natural frequency of the structures at these locations. Seasonal variations and the moisture content of the soil are also a consideration when measuring vibrations. In locations where the topsoil freezes, vibration levels can be less than half those in other seasons.

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.

The classification of damage categories used in analysis of vibration impacts is determined by ISO 4866 and is the following:

- **Damage threshold:** Formation of cracks on the surfaces of the thread-like drywall, increase of existing cracks on the plaster surfaces or on the surfaces of dry-stone walls; also cracks in the mortar joints in the thread-like construction in brick and concrete;
- **Minor damage:** Widening of cracks, detachment and fall of plaster or pieces of plaster drywall; formation of cracks in blocks of brick or concrete;
- **Major damage:** Damage of structural elements; cracks in the support columns; opening of joints; set of cracks in masonry.



In the present work the effects of vibration in terms of nuisance/annoyance to people are not considered, and only the potential damage to structures are evaluated.

Based on the May 20th, 2024 agreement signed between parties LLC "Gergili " and " Constant Department (Branch) of China Railway 23nd Bureau Group Co. LTD", LLC "Gergili " conducted a study on the propagation of vibration during tunnel construction works in:

1. Kvesheti (VM#1 – #10 Tower);
2. Lukho (VM#4 – Svianaant Tower);
3. Mughure (VM#5 - Cultural Heritage #29);

2. Project Description

The Government of Georgia (GoG) has launched a program to upgrade the major roads of the country. The program is being managed by the Roads Department (RD) of the Ministry of Regional Development and Infrastructure (MRDI). As a part of the program, The Kvesheti – Tskere section, or 'Lot 2' includes 2.5 km of tunnels and 1.5 km of bridges. The main elements of this section are:

- Kvesheti bypass road (length 3.2 km),
- Bridge 1 (length 27.8m, height 14m, 2 lane)
- Bridge 2 over the Aragvi river (length 435.28m, height 62m, 3 lanes)
- Tunnel 1 (length 1540.64m, 2 lanes) with gallery (1092m) (New Austrian tunneling method-NATM 3)
- Bridge 3 - Arch bridge over the river Khadistskali (length 426m, height 164m, 3 lane)
- Tunnel 2 (length 193.42m, C&C, 3 lane)
- Bridge 4 over the left tributary of River Khadistskali (length 147.80m, height 26m, 3 lane)
- Tunnel 3 (length 388.38m)
- Bridge 5 (length 322m, height 55m, 3 lane)
- Tunnel 4 (length 299m, C&C, 3 lane)
- Bridge 6 (length 218m, height 48m, 3 lane)
- Five grade junctions are planned (KM0.3, KM1.7, KM3.1, KM7.7, KM10,5) and 3 service roads.

The Lot 2 Project impacts eight villages – Kvesheti, Arakveti, Zakatkari, Beniani, Begoni, Sviana, Rostiani and Mughure.

The tunnel provides more secure and reliable conditions for passengers on the road in winter. Besides The National Park of Kazbegi and Gudauri Winter Resort will avoid the traffic flow by the help of the new road. The road will also improve the livelihood conditions of inhabitants living in gorge. They are isolated from outside world in winter and the villages of Khada are almost empty. There are no grocery store and pharmacy and the medical assistance is not available. Because of the nonexistence of the road and severe weather conditions local people have to go to Kvesheti on foot, which is connected with a lot of difficulties and risks. We must take into consideration the fact that there are mostly middle aged and elderly people living in the upper villages of gorge. It's especially hard for them to pass this road in winter.



After project realization, distance between Kvesheti and Kobi will be reduced by 12 km instead of existing 35 km road, and travel time will be reduced to 15 minutes instead of 1 hour.

The construction works of The Kvesheti-Tskere Section is financing by Asian Development Bank. The construction works started in the end of 2019 and will be completed in 2023.

During this reporting period project is at construction stage:

1. VM#1 - #10 Tower - Svianaant Tower - located near the Khadiskali gorge, 124 meters from the portal of the third tunnel and near the fourth access road, due to the proximity to the construction area, heavy equipment traffic is frequent on this section. The tower is heavily damaged, one side of it has completely collapsed.

Main works: Excavation/reinforcement of 4th access road.

equipment. Main works: Excavation/reinforcement of 4th access road.

2. Lukho (VM#4 – Svianaant Tower);
3. VM#5 – Cultural Heritage #29;

The length of the new alignment is 22.7 km and will be divided into two construction packages, or 'Lots' as follows:

- Lot 1: Tskere – Kobi: Chainage KM 12.7 – KM 22.7 (10 km);
- Lot 2: Kvesheti – Tskere: Chainage KM 0.0 – KM 12.7 (12.7 km).

The present vibration survey report covers Lot 2 - section.



Figure 1: Locations of Vibration Devices



Figure 2: Location of Vibration Device





Figure 3: Location of Vibration Device



3. Vibration Monitor SWARM

The SWARM vibration monitor is the most efficient and high-quality vibration monitor on the market and uses MEMS (Micro-ElectroMechanical Systems) technology. Geophones are no longer needed.

The SWARM vibration monitor worldwide in construction and infrastructure and also to measure vibrations of other nature, such as vibrations at windmills, vibrations at data centers and vibrations from heavy traffic. The SWARM is used to measure potential damage to structures and to measure nuisance for people in buildings.

The SWARM is IP65 rated, complies with industry standards and measures according to the latest and relevant standards and guidelines.

The measurement data is automatically sent from the SWARM to the Honeycomb platform via 4G/LTE or WiFi. There is no need to retrieve monitoring data from the jobsite. Saving time and manpower through the unprecedented efficiency of the SWARM.

Omnidots SWARM measures the V_{top} (PPV / Peak Particle Velocity) and the A_{top} (PPA / Peak Particle Acceleration) for guidelines DIN4150-3, BS7385 and SBR-A.

All monitoring data is saved as CSV, Excel or retrieve the data using the Omnidots API. Honeycomb is capable of generating notifications for V_{top} (PPV) and also for A_{top} (PPA).



Figure 4. Vibration Monitor SWARM



Installing the SWARM is incredibly fast and easy, as you can see in this video. You can configure the measuring points remotely via the Honeycomb web platform. There you can also access your measurement data 24/7, from anywhere in the world from your laptop, smartphone or tablet.

1. Complies with industry standards: DIN4150-2, DIN4150-3, DIN 45669-1, BS7385, BS6841, ISO2631, SBR-A 2010, SBR-A 2017, SBR-B, Circulaire du 23/07/1986, ISEE (USBM RI8507 & OSMRE) and SN640312a.
2. The SWARM continuously sends the measurement data automatically to Honeycomb via 4G/LTE, WiFi or PoE using an adapter.
3. Mounting is very quick and easy.
4. The SWARM is compact, lightweight, and IP65 rated.



4. Measuring in accordance with DIN 4150-3 Standard

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 (V_i) of the three individual components (peak values) of vibration velocity at frequencies of 1 to 80 Hz.

The measurements are carried out at the foundation. Vibrations in the ceiling of the upper most outer walls also provide valuable information for analysis. These detect the horizontal response of the building to the vibration at the foundation. Only the greatest value of both the horizontal components is then used for the analysis.

The standard provides guide values for permissible vibration velocities for short time and sustained vibrations in three types of buildings (Notes from DIN 4150-3 about the guide values is given in Table 1, 2).

Table 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 2: Guide values for continuous vibration

Guide values for vibration velocity v_i 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	-

Vertical continuous vibration with a vibration velocity below 10 mm/s normally do not cause damage to ceilings in houses. For delicate buildings there are no guide values available.

For sustained vibrations on pipelines, the guide values for short time vibrations, reduced by 50%, can be applied.

The following advice is given in DIN 4150-3 for the placement of sensors:

- For foundation vibrations the transducer should be placed on the lowest floor at the foundation or on the outer wall.
- In the upper ceiling level, the sensor should be placed inside or very close to the outer wall.
- For buildings without a basement the measurement location must not be higher than 0.5m above the ground level.
- The measurement location should predominantly be on the side of the building facing the excitation.
- One of the lateral coordinates (X / Y) should be parallel to an outside edge of the building.
- Buildings with larger ground areas should be measured at several points.
- In addition to measuring at the foundation and the upper ceiling, if required, measurements can be carried out in the vertical direction on the ceilings, where the strongest vibrations are to be expected (mostly central).
- When measuring pipelines, where possible, the sensor should be placed on the pipeline itself.



5. Evaluation of Effects of Vibration on Buildings

5.1 DIN 4150-3 Standard

Categorization of buildings: Table 1, 2 contains building categorization determined by DIN 4150, in particular: Category 1: Commercial/Industrial buildings and similar; Category 2: Residential building and similar; and Category 3: Sensitive Buildings.

Short or long vibration: In case of construction of the road as well as in case of road operation, the buildings will be subject to short vibration impacts – impacts that occur for short period of time (e.g. the period of time when roller compactor is working or when a heavy vehicle is crossing in front of an impacted building). Characterization of long (transient) and short vibrations is defined in DIN 4150-3. Nevertheless, only for demonstration purpose, in comparison of modelled vibration impact to the damage thresholds, thresholds for both – short and long vibration impacts for II category buildings assigned to structures have been referred.

5.2 ISO 4866:2010 Standard – Mechanical Vibration and Shock

The principles for carrying out vibration measurement and processing data regarding the effects of vibration on structures are established by the International Standard ISO4866:2010 - “Mechanical vibration and shock, Vibration of fixed structures, Guidelines for the measurement of vibrations and evaluation of their effects on structures”.

The most common and frequent structural damage from man-made sources occurs in the frequency range from 1 to 150 Hz.

Natural sources, such as earthquakes and wind excitation, usually contain damage-level energy at lower frequencies, in the range from 0,1 Hz to 30 Hz.

The classes are defined with reference to a building Unreinforced or light framed structures/ Residential or light commercial type. The reference building shall not have any constructional defects nor shall it have sustained accidental damage. If the construction does not fulfil these requirements, it shall be allocated to a lower class.

5.3 Description of Damage

For the purposes of this International Standard ISO 4866:2010, the damages classified into the following categories:

- **Cosmetic.** The formation of hairline cracks on drywall surfaces (see ISO 4356), or the growth of existing cracks in plaster or drywall surfaces; in addition, the formation of hairline cracks in mortar joints of brick/concrete block construction.
- **Minor.** The formation of large cracks or loosening and falling of plaster or drywall surfaces, or cracks through bricks/concrete blocks.
- **Major.** The damage to structural elements of the structure, cracks in support columns, loosening of joints, splaying of masonry cracks, etc.



6. Vibration Propagation Study

On 01.11 – 30.11. 2024, Vibration survey field works were carried out by the representatives of LLC "Gergili". The research procedure was conducted in accordance with the form approved by the organization. The aim of the study was to assess the impact of vibration generated during construction works on the surrounding buildings. 3 points were defined as the location of the vibrating device:

- 1) Tevdore's Tower- Located near the Khadistskali Gorge. (#10 Tower)
- 2) Lukho (VM#4 – Svianaant Tower);
- 3) Mughure (VM#5 - Cultural Heritage #29);

Figure 5: Study Area





Figure 6: Measurement Point – VM#1 – #10 Tower



Figure 6.1 Vibration monitor SWARM was installed outside on the roof of the Monument





Figure 8: Measurement Point – VM#5 – Cultural Heritage #29



Figure 8.1: Vibration monitor SWARM was installed outside on the wall of the Tower





The tables below show the measurement protocol VM#1, VM#4, VM#5, where the technical details of the measurements are presented. Construction work was intensive while receiving the vibration data. Data collection at point VM#1, VM#4, VM#5, took during 01.11 – 30.11, 30 days continuously.

Measurement protocol VM#1 - #10 Tower	
1. General	
1.1 Person in charge	Irakli Ramishvili - Head of the BBE Science Research Laboratory
1.2 Measurement period	1/11/24 23:54:00 - 30/11/24 23:54:59
2. Kind of vibration	
2.1 Excitation	Construction work
2.2 Operating conditions	Intensive construction
3. Structure	
3.1 Name and address	Tower in Gudauri
3.2 Classification	Sensitive building. According to DIN 4150-3 standard N3 categories of buildings (sensitive buildings)
3.3 Description	Stone building
4. Location and position	
4.1 Source of vibration	- [42.439977, 44.525211]
5. Environmental conditions	Open space, smooth surface.
6. Subjective observations	The vibration of the working specifics affect minor on the general condition
7. Measuring chain	Threshold for measurement storage: 0.2 mm/s Guideline: DIN4150-3 80Hz Measuring interval (seconds): 2 Measurement method: DIN 4150-3; Settings: Long term; Calculate Vmax (Peak vibration velocity): On



		Measurement processing and report generation done with MEMS software.
8. Measurement result		
8.1 Event chart		
Peak vibration velocity/time		
Peak vibration velocity/frequency		
9. Evaluation		Construction vibration does not affect the overall condition
10. Signs		
Signature	Irakli Ramishvili 	



Measurement protocol VM#4 - Svianaant Tower	
1. General	
1.1 Person in charge	Irakli Ramishvili - Head of the BBE Science Research Laboratory
1.2 Measurement period	1/11/24 01:17:00 - 30/11/24 01:18:59
2. Kind of vibration	
2.1 Excitation	Construction work
2.2 Operating conditions	Intensive construction
3. Structure	
3.1 Name and address	Svianaant Tower in Lukho
3.2 Classification	Sensitive building. According to DIN 4150-3 standard N3 categories of buildings (sensitive buildings)
3.3 Description	Stone building
4. Location and position	
4.1 Source of vibration	- [42.451106, 44.534922]
5. Environmental conditions	Open space, smooth surface.
6. Subjective observations	The vibration of the working specifics affect minor on the general condition
7. Measuring chain	Threshold for measurement storage: 0.2 mm/s Guideline: DIN4150-3 80Hz Measuring interval (seconds): 2 Measurement method: DIN 4150-3; Settings: Long term; Calculate Vmax (Peak vibration velocity): On Measurement processing and report generation done with MEMS software.
8. Measurement result	
8.1 Event chart	

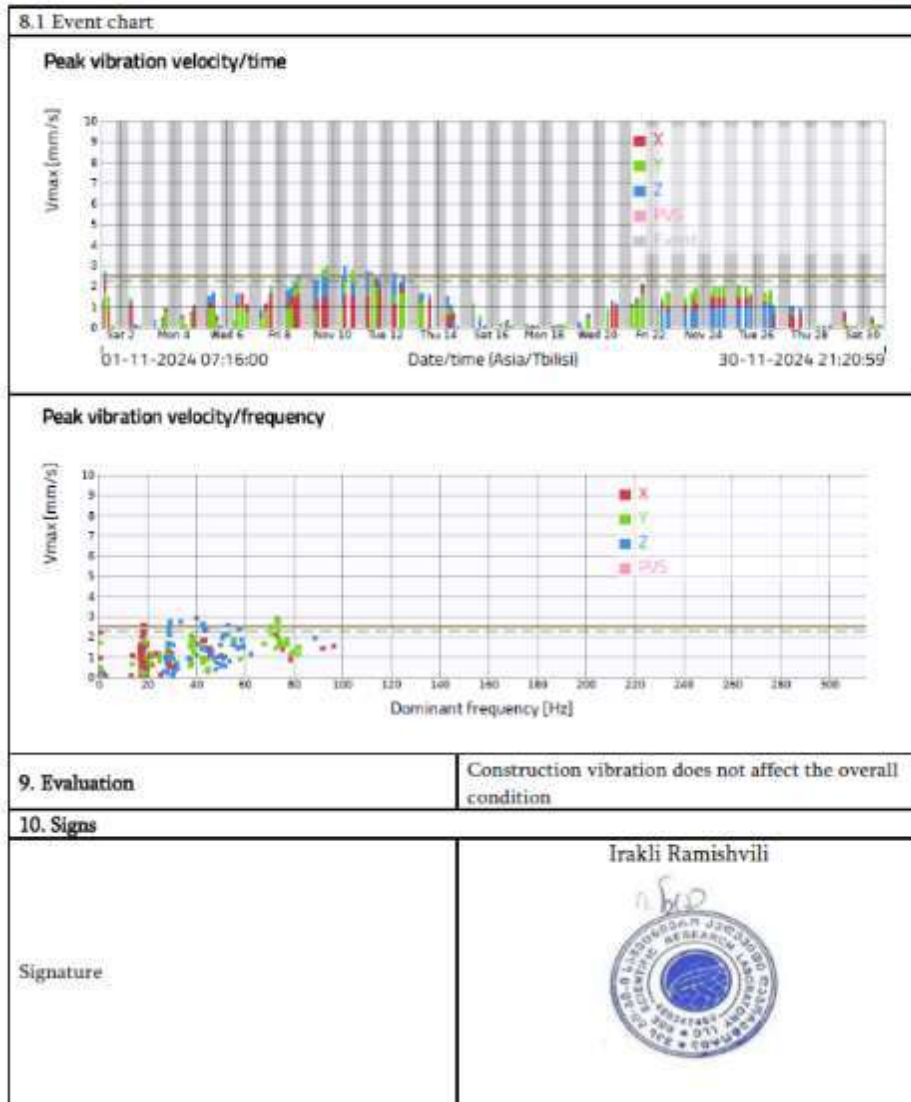
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<p>Peak vibration velocity/time</p>	
<p>Peak vibration velocity/frequency</p>	
<p>9. Evaluation</p>	<p>Construction vibration does not affect the overall condition</p>
<p>10. Signs</p>	
<p>Signature:</p>	<p>Irakli Ramishvili</p>



Measurement protocol VM#5 – Cultural Heritage #29	
1. General	
1.1 Person in charge	Irakli Ramishvili - Head of the BBE Science Research Laboratory
1.2 Measurement period	1/11/24 07:16:00 - 30/11/24 21:20:59
2. Kind of vibration	
2.1 Excitation	Construction work
2.2 Operating conditions	Intensive construction
3. Structure	
3.1 Name and address	Cultural Heritage in Mughure
3.2 Classification	Sensitive building. According to DIN 4150-3 standard N3 categories of buildings (sensitive buildings)
3.3 Description	Stone building
4. Location and position	
4.1 Source of vibration	- [X: 42.47488271 Y: 44.53275790]
	
5. Environmental conditions	Open space, smooth surface.
6. Subjective observations	The vibration of the working specifics affect minor on the general condition
7. Measuring chain	Threshold for measurement storage: 0.2 mm/s Guideline: DIN4150-3 80Hz Measuring interval (seconds): 2 Measurement method: DIN 4150-3; Settings: Long term; Calculate Vmax (Peak vibration velocity): On Measurement processing and report generation done with MEMS software.
8. Measurement result	



Exceedances of vibration levels were observed in November:

1. VM#1 – #10 Tower

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Exceedances						
Date	X Fdat (µg)	X Vmax (mm/s)	Y Fdat (µg)	Y Vmax (mm/s)	Z Fdat (µg)	Z Vmax (mm/s)
Nov. 5, 2024 11:34:59	34.5	1.6363	34.5	2.4176	34.5	1.6771
Nov. 5, 2024 16:24:25	30.0	1.7564	57.0	2.7686	57.0	2.2953
Nov. 6, 2024 18:41:25	20.0	1.6675	20.0	4.0998	20.0	2.6445
Nov. 6, 2024 18:48:59	27.0	2.3037	19.5	6.3360	19.5	4.0029
Nov. 6, 2024 19:03:44	24.0	0.9416	23.5	2.8054	23.5	1.6890
Nov. 12, 2024 19:14:59	12.5	3.8544	12.5	14.8960	12.5	6.6470
Nov. 14, 2024 19:04:59	19.0	0.8890	19.0	3.4794	19.0	1.9084
Nov. 15, 2024 15:09:14	15.5	2.7269	15.5	8.1748	15.5	5.3584
Nov. 16, 2024 19:09:29	17.0	6.5216	17.0	15.7217	16.5	10.4462
Nov. 18, 2024 19:24:44	33.0	1.0683	35.0	2.3643	34.5	1.4786
Nov. 21, 2024 18:30:44	6.5	2.6632	0.5	14.5711	6.5	6.8100
Nov. 21, 2024 18:30:59	9.5	2.3607	0.5	10.4403	9.5	6.5485
Nov. 21, 2024 18:31:14	6.5	2.0791	6.0	8.1624	6.5	5.5919
Nov. 21, 2024 18:48:59	27.0	0.4076	0.5	2.6001	0.5	0.2550
Nov. 21, 2024 18:50:14	6.5	3.3845	0.5	21.5622	6.5	9.6880
Nov. 22, 2024 18:43:29	6.5	8.4152	6.5	26.4324	6.5	15.7758
Nov. 22, 2024 19:07:44	6.5	6.8268	6.0	21.8743	6.5	17.8282
Nov. 22, 2024 19:08:14	8.0	6.1188	1.0	26.1503	8.0	15.0647
Nov. 23, 2024 18:40:14	10.5	6.1105	1.0	19.9313	10.5	15.0712
Nov. 24, 2024 18:46:29	11.0	4.2067	11.0	12.3069	11.0	10.7870
Nov. 25, 2024 19:06:44	5.5	6.4036	5.5	28.5944	5.5	16.7140
Nov. 25, 2024 19:28:14	7.0	2.8980	1.0	19.4134	7.0	6.9481
Nov. 29, 2024 11:50:44	64.0	3.6053	18.0	1.8177	1.0	2.0084

From where, all exceedances observed, we do not have an information on exact reason of the exceedances

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2. Lukho (VM#4 – Svianaant Tower);

Exceedances

Date	X Fdom (Hz)	X Vmax (mm/s)	Y Fdom (Hz)	Y Vmax (mm/s)	Z Fdom (Hz)	Z Vmax (mm/s)
Nov. 5, 2024 12:12:14	3.0	2.6448	3.0	4.1712	3.0	0.4560

3. Mughure (VM#5 - Cultural Heritage #29);

Exceedances

Date	X Fdom (Hz)	X Vmax (mm/s)	Y Fdom (Hz)	Y Vmax (mm/s)	Z Fdom (Hz)	Z Vmax (mm/s)
Nov. 5, 2024 10:24:44	1.0	2.2474	1.0	1.7901	33.5	2.7801
Nov. 6, 2024 17:36:44	15.0	1.3654	76.5	2.0724	28.5	2.9402
Nov. 9, 2024 17:26:14	16.5	1.3352	74.0	2.4689	56.0	1.9429
Nov. 9, 2024 17:26:29	16.5	1.3153	76.0	2.5202	52.0	2.0790
Nov. 9, 2024 17:28:43	16.5	1.2192	73.0	2.4732	52.0	2.0026
Nov. 9, 2024 17:35:20	16.5	1.0731	73.0	2.5348	44.0	1.9258
Nov. 9, 2024 17:39:44	16.8	1.1713	72.0	2.9834	44.0	1.8604
Nov. 9, 2024 17:36:14	15.0	1.1190	73.0	2.4588	53.0	1.6885
Nov. 9, 2024 17:37:44	16.0	1.3115	73.5	2.8390	48.0	1.8431
Nov. 9, 2024 17:38:44	16.5	1.0728	74.0	2.5838	51.0	1.8339
Nov. 9, 2024 17:39:20	16.5	1.2925	72.5	2.5784	50.0	2.0604
Nov. 9, 2024 17:39:44	16.5	1.1372	74.5	2.5918	51.0	1.7707
Nov. 9, 2024 17:40:14	16.5	1.0496	73.0	2.4454	50.5	1.8573
Nov. 9, 2024 17:41:20	16.5	1.1822	72.5	2.7744	41.5	1.7199
Nov. 9, 2024 17:42:49	16.5	1.0103	73.0	2.6803	51.0	1.8733
Nov. 9, 2024 17:43:20	16.8	1.0448	73.0	2.7831	25.0	2.4778
Nov. 9, 2024 17:43:59	16.5	1.2202	72.0	2.6371	51.0	1.8394
Nov. 9, 2024 17:44:14	16.5	1.0030	76.0	2.5808	50.5	1.9001
Nov. 9, 2024 17:44:44	16.5	1.2414	73.0	2.4480	51.0	1.8199
Nov. 9, 2024 17:45:59	16.5	1.3621	72.5	2.7030	48.5	2.0720
Nov. 9, 2024 17:46:20	16.0	0.9545	73.0	2.4451	50.5	1.9023
Nov. 9, 2024 18:05:44	16.0	0.9441	72.0	2.7449	46.0	1.8022
Nov. 9, 2024 18:06:40	16.5	1.1006	71.5	2.7530	51.5	1.8147
Nov. 9, 2024 18:07:14	16.5	1.1000	74.5	2.7954	48.5	1.8443
Nov. 9, 2024 18:07:44	16.0	1.0814	73.0	2.8793	50.5	1.7709
Nov. 9, 2024 18:08:14	16.5	1.1810	73.0	2.6496	51.0	1.8852
Nov. 9, 2024 18:08:44	44.5	1.0009	74.0	2.5889	51.0	1.6780
Nov. 9, 2024 18:09:14	15.0	1.0595	75.0	2.5211	51.5	1.8086
Nov. 9, 2024 18:10:20	16.5	1.1107	71.5	2.8362	50.5	1.7640
Nov. 9, 2024 18:11:53	16.5	1.0899	73.0	2.8952	51.5	2.1140

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Date	X Fdem (Hz)	X Vmax (mm/s)	Y Fdem (Hz)	Y Vmax (mm/s)	Z Fdem (Hz)	Z Vmax (mm/s)
Nov. 9, 2024 19:12:59	18.5	1.3225	72.5	2.7151	51.0	2.0341
Nov. 9, 2024 19:13:29	18.5	1.2881	72.5	2.5376	52.5	1.8360
Nov. 9, 2024 19:14:14	18.5	1.2183	73.5	2.6793	51.5	1.8006
Nov. 9, 2024 19:15:29	18.5	1.2352	73.0	2.8044	52.0	1.8627
Nov. 9, 2024 19:15:44	18.5	1.2799	73.0	2.4493	51.0	1.8236
Nov. 9, 2024 19:16:29	19.0	1.3234	71.0	2.8544	51.0	2.0737
Nov. 9, 2024 19:16:59	18.5	1.3275	72.5	2.7247	50.5	1.9397
Nov. 9, 2024 19:19:59	18.5	1.2796	73.0	2.4986	51.5	1.7877
Nov. 9, 2024 19:20:14	19.0	1.3676	73.0	2.6755	51.5	1.9637
Nov. 9, 2024 19:20:44	19.5	1.1466	74.0	2.4242	50.0	1.7299
Nov. 9, 2024 19:22:14	18.5	1.1936	74.5	2.5914	50.5	1.6292
Nov. 9, 2024 19:22:44	19.0	1.0147	74.0	2.5309	50.5	1.9976
Nov. 9, 2024 19:22:59	18.5	0.9742	73.5	2.6863	51.0	1.5501
Nov. 9, 2024 19:23:14	19.5	1.2720	74.0	2.5226	52.0	1.8838
Nov. 9, 2024 19:23:59	18.5	1.2911	73.0	2.5840	44.5	1.8158
Nov. 9, 2024 19:24:29	18.5	1.3662	73.5	2.9315	29.0	2.4141
Nov. 9, 2024 19:25:14	19.0	0.9924	73.0	2.4428	51.0	1.4248
Nov. 9, 2024 19:26:14	18.5	1.4093	71.5	2.8689	51.0	2.0298
Nov. 9, 2024 19:27:14	18.5	0.9195	74.0	2.4297	29.5	1.3285
Nov. 9, 2024 19:27:59	18.5	0.9754	72.5	2.7976	52.0	1.3991
Nov. 9, 2024 19:28:44	18.5	1.1714	73.5	2.7163	50.5	1.5961
Nov. 9, 2024 19:29:59	30.0	1.1816	73.0	2.4381	52.0	1.5774
Nov. 10, 2024 13:14:14	19.0	1.3546	81.0	1.6320	29.0	2.8822
Nov. 10, 2024 14:26:59	18.0	1.5833	71.0	2.1531	40.5	2.3886
Nov. 10, 2024 16:30:44	13.0	1.3603	75.5	2.4629	29.0	1.9659
Nov. 10, 2024 16:35:44	13.0	1.4085	75.0	2.4303	20.0	1.9217
Nov. 10, 2024 16:38:44	13.0	1.3099	75.0	2.5312	20.0	1.9787
Nov. 10, 2024 16:39:29	13.0	1.4051	74.5	2.4576	20.0	1.8882
Nov. 10, 2024 16:41:14	13.0	1.3149	75.0	2.4248	20.5	1.8347
Nov. 10, 2024 16:47:59	13.0	1.4380	75.0	2.4919	44.5	1.9189
Nov. 10, 2024 16:52:44	13.0	1.4252	75.5	2.5399	20.5	2.0038
Nov. 10, 2024 16:53:14	75.0	1.4274	74.5	2.4929	20.5	1.9543
Nov. 10, 2024 16:55:29	75.5	1.3373	75.5	2.5024	50.0	1.8838

Kvesheti-Kobi Highway Lot 2 Kvesheti – Tskere Section
 Long-term Vibration Monitoring Report – November, 2024



Date	X Fdm (µm)	X Vmax (mm/s)	Y Fdm (µm)	Y Vmax (mm/s)	Z Fdm (µm)	Z Vmax (mm/s)
Nov 10, 2024 16:57:48	75.5	1.6890	76.5	2.8571	26.5	2.0512
Nov 10, 2024 17:01:28	76.0	1.6072	76.0	2.6840	61.0	1.7676
Nov 10, 2024 17:01:58	75.5	1.6087	75.0	2.8057	60.5	1.8102
Nov 10, 2024 17:03:55	76.0	1.2427	75.5	2.4296	62.0	1.8093
Nov 10, 2024 17:04:25	76.5	1.3367	76.5	2.4815	60.5	1.8821
Nov 10, 2024 17:05:58	75.5	1.3818	75.0	2.4882	62.0	1.8372
Nov 10, 2024 17:06:44	73.0	1.6097	76.0	2.6318	61.0	1.8776
Nov 10, 2024 17:09:28	77.5	1.2988	73.5	2.5520	60.5	1.8303
Nov 10, 2024 17:09:58	77.5	1.3356	75.0	2.4517	60.0	1.9911
Nov 10, 2024 17:11:34	77.5	1.2157	75.0	2.4510	61.0	1.8949
Nov 10, 2024 17:11:28	77.5	1.2924	75.0	2.4676	61.5	1.8955
Nov 10, 2024 17:13:58	77.5	1.5223	75.0	2.5038	62.0	1.9182
Nov 10, 2024 17:16:28	77.5	1.5973	76.0	2.7094	61.5	2.0888
Nov 10, 2024 17:17:44	77.5	1.5332	76.0	2.6243	61.0	2.0335
Nov 10, 2024 17:18:44	77.5	1.6305	76.5	2.6442	61.5	1.8722
Nov 10, 2024 17:22:44	80.0	1.5214	75.0	2.4326	62.0	1.8888
Nov 10, 2024 17:41:28	80.0	1.5010	73.0	2.4880	62.0	1.9033
Nov 10, 2024 17:43:44	80.0	1.4869	73.0	2.5212	63.0	1.9247
Nov 10, 2024 17:50:44	80.0	1.4170	73.5	2.5180	63.0	1.9374
Nov 10, 2024 17:52:58	80.0	1.5990	74.0	2.4905	63.0	2.0423
Nov 10, 2024 17:55:44	80.0	1.4857	73.5	2.4682	62.5	1.9968
Nov 10, 2024 17:56:25	80.5	1.2926	73.5	2.4826	64.0	1.8457
Nov 10, 2024 17:56:44	80.5	1.4114	73.5	2.4890	63.5	1.9221
Nov 10, 2024 17:57:58	80.5	1.4725	73.5	2.5520	63.5	1.9291
Nov 10, 2024 17:58:14	80.5	1.5134	73.0	2.8190	62.0	1.9957
Nov 10, 2024 17:58:58	80.5	1.5799	73.0	2.8964	63.0	2.1140
Nov 10, 2024 18:24:44	80.5	1.4841	73.0	2.5211	61.5	2.1281
Nov 11, 2024 11:21:44	83.0	0.6790	20.0	0.8826	63.0	2.4808
Nov 11, 2024 11:34:28	80.5	1.4888	93.5	1.6447	26.5	2.7370
Nov 11, 2024 13:27:28	80.5	1.2606	66.5	2.4647	61.0	2.3178
Nov 11, 2024 13:31:28	80.5	1.5221	66.5	2.6720	44.5	2.3138
Nov 11, 2024 13:31:58	80.5	1.5068	66.5	2.4383	60.5	1.9299
Nov 11, 2024 13:37:14	80.5	1.4452	35.5	2.4919	44.5	2.2883

Date	X Fdm (µm)	X Vmax (mm/s)	Y Fdm (µm)	Y Vmax (mm/s)	Z Fdm (µm)	Z Vmax (mm/s)
Nov 11, 2024 13:50:28	80.5	1.4785	70.0	2.4793	48.0	1.3787
Nov 11, 2024 14:28:28	80.5	2.5772	71.0	2.0079	43.0	2.8416
Nov 11, 2024 15:20:58	80.5	2.4402	68.5	1.7026	42.5	2.3349
Nov 12, 2024 10:02:28	77.5	0.8834	64.5	0.9889	53.5	2.5962

We have only exported the 100 highest exceedances.

From where, all exceedances observed, we do not have an information on exact reason of the exceedances.



7. Conclusion

1. Based on the agreement, dated May 20th, 2024 (No. E/OT/201-2024) and signed between parties LLC "Gergili" and "Constant Department (Branch) of China Railway 23nd Bureau Group Co. LTD", LLC "Gergili" conducted a study on the propagation of vibration in Kvesheti and Gudauri, during construction works of tunnel and bridges.
2. First VM#1 point was selected as vibration location: X: 462145.54 Y: 4697533.05 (about 50 m from the project zone)

 Second VM#4 point was selected as vibration location: 42.451106, 44.534922 (about 124 m from the project zone)

 Third VM#5 point was selected as vibration location: 42.47488271, 44.53275790
3. Vibration survey was performed in accordance with the German standard DIN 4150-3 and the standard of the International Certification Organization ISO 4866:2010, as well as following the procedures of vibration survey developed by the company.
4. Vibration level data were collected:

 VM#1 point -1/11/24 23:54:00 - 30/11/24 23:54:59

 VM#4 point -1/11/24 01:17:00 - 30/11/24 01:18:59

 VM#5 point - 1/11/24 07:16:00 - 30/11/24 21:20:59

 Annex VM#1, VM#4, VM#5, shows the vibration level values in 2-second intervals for VM#1, VM#4, VM#5, point. Exceedance of the reference value of DIN 4150-3 standard at VM#1, VM#4, VM#5, was observed in November, 2024. We do not have an information on exact reason of the exceedances.
5. At the given stage, the construction works are accomplished with heavy vehicles and works done by personnel, so there is no source of a permanent vibration as a result of the construction activities. An analysis of the measurement values at point VM#1, VM#4 VM#5, in November shows that some cases of sharp increases in vibration levels were observed.
6. At the measurement points the vibration data obtained as a result of construction works is significantly minimal than the values provided by the standard during most of the measurement period.

Calibration report

Certificate of Calibration

Certificate number: 20211102717390658069



Manufacturer	Omnidots B.V.
Location of calibration	Industrieweg 98 7903 AK Hoogeveen Nederland
Model	SWARM V2.2c-G
Name	GIZAPE
Date of calibration*	2021-11-02 (YYYY-MM-DD)
Temperature (°C)	20±3°C
Humidity (% RH)	60±30%
Signature:	

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Calibration report

Certificate of Calibration

Certificate number: 20211102717390658069



Calibration procedure

The Swarms are mounted on the calibration mounts. The shaker then targets a speed and keeps the same power for 60 seconds. Over this time measurement samples are logged and compared to the reference sensor.

Calibration report

Certificate of Calibration

Certificate number: 20211102717390658069



Calibration equipment used


Model	Serial number	Description	Calibration certificate
OMNSH01	0001	Horizontal shaker	n.a.
OMNMO01	0001	Calibration mount	n.a.
OMNMO01	0002	Calibration mount	n.a.
OMNMO01	0003	Calibration mount	n.a.
OMNDR01	0001	Shaker driver	n.a.
Epson MA351AU	B0001691	Reference sensor	180911
Swarm	VELOHU	Reference check	2018-02-26
n.a.	8e5aae6	Calibration software	n.a.

Calibration report

Certificate of Calibration

Certificate number: 20211029777374738673

OMNI DOTS

Manufacturer	Omnidots B.V.
Location of calibration	Industrieweg 98 7903 AK Hoogeveen Nederland
Model	SWARM V2.2c-G
Name	MIJIVI
Date of calibration*	2021-10-29 (YYYY-MM-DD)
Temperature (°C)	20±3°C
Humidity (% RH)	60±30%
Signature:	

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Calibration report

Certificate of Calibration

Certificate number: 20211102717390658069



Calibration results after measurement

Axis	Frequency	Reference measurement V_{ref} ($V_{ref} * \text{weighting}(f)$)	Excitation measurement of the device V_{meas}	Deviation 100 X ($V_{meas} - V_{ref}$) / V_{ref}	Result
X	16.0	9.34	9.50	1.66	PASS
Y	16.0	9.98	10.10	1.20	PASS
Z	16.0	9.92	9.86	-0.64	PASS

Name

GIZAPE

Date of calibration*

2021-11-02 (YYYY-MM-DD)

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Calibration report

Certificate of Calibration

Certificate number: 20211029777374738673



Calibration procedure

The Swarms are mounted on the calibration mounts. The shaker then targets a speed and keeps the same power for 60 seconds. Over this time measurement samples are logged and compared to the reference sensor.

Calibration report

Certificate of Calibration

Certificate number: 20211029777374738673



Calibration equipment used

Model	Serial number	Description	Calibration certificate
OMNSH01	0001	Horizontal shaker	n.a.
OMNMO01	0001	Calibration mount	n.a.
OMNMO01	0002	Calibration mount	n.a.
OMNMO01	0003	Calibration mount	n.a.
OMNDR01	0001	Shaker driver	n.a.
Epson MA351AU	B0001691	Reference sensor	180911
Swarm	VELOHU	Reference check	2018-02-26
n.a.	8e5aae6	Calibration software	n.a.

Calibration report

Certificate of Calibration

Certificate number: 20211029777374738673



Calibration results after measurement

Axis	Frequency	Reference measurement V_{ref} ($V_{ref} \cdot \text{weighting}(f)$)	Excitation measurement of the device V_{meas}	Deviation 100 X ($(V_{meas} - V_{ref}) / V_{ref}$)	Result
X	16.0	8.94	8.93	-0.11	PASS
Y	16.0	9.07	9.13	0.66	PASS
Z	16.0	9.18	9.19	0.11	PASS

Name

MIJIVI

Date of calibration*

2021-10-29 (YYYY-MM-DD)

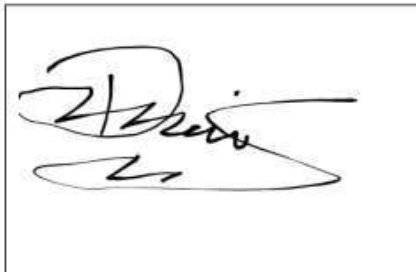
* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Calibration report

Certificate of Calibration

Certificate number: 20211029786572698473



Manufacturer	Omnidots B.V.
Location of calibration	Industrieweg 98 7903 AK Hoogeveen Nederland
Model	SWARM V2.2c-G
Name	NAHETI
Date of calibration*	2021-10-29 (YYYY-MM-DD)
Temperature (°C)	20±3°C
Humidity (% RH)	60±30%
Signature:	

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Calibration report

Certificate of Calibration

Certificate number: 20211029786572698473



Calibration procedure

The Swarms are mounted on the calibration mounts. The shaker then targets a speed and keeps the same power for 60 seconds. Over this time measurement samples are logged and compared to the reference sensor.

<p>Calibration report</p> <p>Certificate of Calibration</p> <p>Certificate number: 20211029786572698473</p>	
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Calibration equipment used

Model	Serial number	Description	Calibration certificate
OMNSH01	0001	Horizontal shaker	n.a.
OMNMO01	0001	Calibration mount	n.a.
OMNMO01	0002	Calibration mount	n.a.
OMNMO01	0003	Calibration mount	n.a.
OMNDR01	0001	Shaker driver	n.a.
Epson MA351AU	B0001691	Reference sensor	180911
Swarm	VELOHU	Reference check	2018-02-26
n.a.	8e5aae6	Calibration software	n.a.

Calibration report

Certificate of Calibration

Certificate number: 20211029786572698473



Calibration results after measurement

Axis	Frequency	Reference measurement V_{ref} ($V_{ref} \cdot \text{weighting}(f)$)	Excitation measurement of the device V_{meas}	Deviation 100 X ($(V_{meas} - V_{ref}) / V_{ref}$)	Result
X	16.0	9.07	9.23	1.83	PASS
Y	16.0	9.18	9.19	0.14	PASS
Z	16.0	8.94	9.01	0.85	PASS

Name

NAHETI

Date of calibration*

2021-10-29 (YYYY-MM-DD)

* Recommended calibration interval is 24 months from first day of use, unless otherwise required by local standards and/or local laws.

Tunnel water kobi test results sample July 2024



LLC BBE Scientific Research Examining Laboratory
Identification Number: 405347400

Report № 060824 - 13

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bbelab2019@gmail.com
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BBE.GE-

Date of Report Delivery –06.08.2024
Sampling Place: well located in kobi, China Railway Tunnel Group Co., Ltd. Territory.
Client Name: Ltd. "Gergili", ID 405353610
Sample name and quantity: Tunnel water, 5 Litres.
Sample was taken by: The sample was taken by the customer.
Sample Received in The Laboratory: 15.07.2024
Sample ID: 150724-13
The Analysis Completed: 22.07.2024
Analysis Done By: The Exam Laboratory of the Scientific Research Laboratory of G.Natadze Sanitation, Hygiene and Medical Ecology Scientific Research Institute.

Parameter	Measurement Unit	Used Method	Result	*Maximum permissible limit according to ordinance #17
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	9.22	6.5-8.5
Total Suspended Solids	mg/L	ISO 11923-1997	105.67	60
Chemical Biological Demand (BOD)	MgO/L	ISO 5815-2:2003	0.64	25
TPH	mg/L	EPA 1664	<1.40	≤0.3

*Maximum Permissible Limit According to Ordinance #17 On the Approval of The Technical Regulations for the discharge of waste water into surface water – 03.01.2014 Tbilisi, Georgia

*Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.
2. The results belong only to an experienced pattern.
3. The sample is taken by client.*

QC Lab Manager: L.kakalashvili

Agreed: Director of Laboratory I. Ramishvili



Treated Water Test Results STP 3 Lot 2 (July 2024)



LLC BBE Scientific Research Examining Laboratory
Identification Number: 405347489

Report № 260824 - 14

Date of Report Delivery – 26.08.2024

Sampling Place: well located in Khada valley

Client Name: Chirsa Railway Zstn Buresa Group Co. LTD (Identification No. 404385385)

Sample name and quantity: Camp-3 biological treatment plant, 5 Liters

Sample was taken by: Rusudani Zedginidze

Sample Received in The Laboratory: 16.07.2024

Sample ID: 160724 - 5

The Analysis Completed: 26.07.2024

Analysis Done By: Prepared by The Exam Laboratory of the Scientific Research Laboratory of G.Natadze Sanitation, Hygiene and Medical Ecology Scientific Research Institute.

Parameter	Measurement Unit	Used Method	Result
Physical-chemical Parameters			
pH	-	SST-ISO 10523:2008/2010	7.65
Total Suspended Solids	Mg/L	ISO 11925-1997	50
Chemical Oxygen Demand (COD)	MgO/L	HACH Method LCK 214	2.00
Biological Oxygen Demand (BOD)	MgO/L	ISO 5815-2:2003	1.47
Total Nitrogen (N)	Mg/L	SOP III- SOP C77	12
Total Phosphorus (P)	Mg/L	ISO 6878-2004	0.025

*Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.
2. The results belong only to an experienced patron.*

QC Lab Manager: L. Kakalashvili 

Agreed: Director of Laboratory I. Ramishvili 



LLC BBE Scientific Research Examining Laboratory


Page 1 of 1

Results of Saviana Rivine July 2024 (Receiving water body from STP 3)

Parameter	Measurement Unit	Used Method	Result
Physical-chemical Parameters			
pH	-	SST ISO 10523:2008/2010	7.61
Turbidity	NTU	ISO 7027-1:2016	14.90
Chemical Oxygen Demand (COD)	Mg0/L	HACH Method LCK 214	1.00
Biological Oxygen Demand (BOD)	Mg0/L	ISO 5815-2:2003	1.39
Conductivity	Ms/cm	SST ISO 7888:1985	0.367
TPH	mg/l.	GI. SOP Wich 73-G-19	<0.05

*Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.
2. The results belong only to an experienced pattern*

QC Lab Manager: L. Kakalashvili 

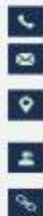
Agreed: Director of Laboratory I. Ramishvili 



Drinking Water Test Results Camp 1 Lot 2 (October 2024)



LLC BBE Scientific Research Examining Laboratory
Identification Number: 405347469



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bbelaboratory](https://www.facebook.com/bbelaboratory)

BBE.GE

Report № 171024 - 13

Date of Report Delivery – 17.10.2024

Sampling Place: well located in Kvesheti.

Client Name : China Railway 23rd Bureau Group Co. LTD (Identification No. 404385385)

Sample name and quantity:, drinking water camp 1, 5 Liters

Sample was taken by: The customer

Sample Received in The Laboratory: 20.09.2024

Sample ID: 200924 – 4

The Analysis Completed: 01.10.2024

Analysis Done By: The Exam Laboratory of the Scientific Research Laboratory of G.Natadze Sanitation, Hygiene and Medical Ecology Scientific Research Institute.

*Microbiological parameters are prepared by Ltd Scientific Research firm

Parameter	Measurement Unit	Used Method	Result	**Maximum permissible limit according to ordinance #58
Physical-chemical Parameters				
pH	-	SST ISO 10523:2008/2010	7.53	6.5-8.5
Turbidity	NTU	ISO 7027-1:2016	0.88	N/A
smell	Bali	Gost 3351-74	0	≤2
Color	degrees	Gost 3351-74	0	not be observed in the water column
taste	Bali	Gost 3351-74	0	≤2
chlorides (Cl ⁻)	Mg/l	Gost 4245-72	8.50	≤250
sulfates(SO ₄ ²⁻)	Mg/l	Gost 4345-74	32.78	≤250
Microbiological Parameters				
*Total Coliforms	Cfu300/ mL	ISO 9308-1:2014/2014	0	not be allowed
*E.coli	Cfu300/ mL	ISO 9308-1:2014/2014	0	not be allowed

**Maximum Permissible Limit According to Ordinance #58 On the Approval of The Technical Regulations against surface water pollution in Georgia – 01.01.2014 Tbilisi, Georgia

Note: 1. It shall be inadmissible to partially reproduce the protocol of the exam without the written permission of the laboratory.

2. The results belong only to an experienced pattern.

QC Lab Manager: R.Zedginidze

Agreed: Director of Laboratory I. Ramishvili



Annex 3: NCR Register

(No NCR Issued during reporting period all non-compliances sent through letters. Details of letter given in Table 8 D)

Lot 1 NCRs issued During the Project Life

Title	NCR #	Type	Status	Date of Issue
Absence of secondary retention	No.0001	NCR2	Closed	04/01/21
Missing medical service with ambulance	No.0002	NCR2	Closed	05/03/21
Electrical Failure	No.0003	NCR2	Closed	05/03/21
Improper refueling process	No.0004	NCR2	Closed	12/03/21
Not performing the sealing shotcrete and fore pole	No.0005	NCR2	Closed	26/03/21
Violation of Working at Height	No.0006	NCR3	Closed	06/04/21
Absence of sedimentation tank	No.0007	NCR2	Closed	06/04/21
Violations on Construction of Emergency Gallery	No.0008	NCR2	Closed	09/04/21
Violation on Backfilling of Voids and Cavities in Emergency Gallery	No.0009	NCR3	Closed	09/04/21
Lack of 2nd Layer of Shotcrete in Emergency Gallery	No.0010	NCR2	Closed	09/04/21
Unsupported Length of Tunnel in Emergency Gallery	No.0011	NCR3	Closed	09/04/21
Related to Main Tunnel	No.0012	NCR2	Closed	17/04/21
Improper storage and usage of oxygen cylinders	No.0013	NCR3	Closed	16/06/21
Improper Storage and Usage of oxygen cylinders	No.0014	NCR3	Closed	8/2/2021
Absence of HS Representative	No.0015	NCR3	Closed	10/1/2021
TBM Excavation	No.0016	NCR3	Closed	10/1/2021
Drainage system of Batching Plant N 2.	No.0017	NCR3	Closed	6/26/2022
Septic System in Tskere	No.0018	NCR3	Closed	6/26/2022
Sludge removal from sedimentation ponds	No.0022	NCR1	Closed	01/12/2022
Oil Spill	No.0021	NCR1	Closed	11/28/2022
Mixed waste at batching Plant in Tskere	No.0023	NCR1	Closed	12/2/2022
Covering of Diesel facility	No.0024	NCR1	Closed	12/2/2022
Improper placement of Used oil drums	No. 0025	NCR1	Closed	17/1/2023
Poorly managed scrap yard in Kobi	No. 0039	NCR1	Closed	20/06/2023

Lot 2 NCRs issued During the Project Life

Title	NCR #	Type	Status	Date of Issue
Absence of secondary retention	No.0001	NCR1	Closed	2/27/2021

Waste Burning on the Site	No.0002	NCR2	Closed	2/27/2021
Waste Disposal Area	No.0003	NCR3	Closed	2/10/2021
Potable Water at Campsite 2	No.0004	NCR 2	Open	6/8/2021
Unsanitary Condition in the Canteen and Kitchen at Campsite 2	No.0005	NCR3	Closed	6/8/2021
Violation of Boundaries	No.0006	NCR2	Closed	7/21/2021
Improper Topsoil Management	No.0007	NCR3	Closed	7/21/2021
Lack of Hazardous Material Management and Spill Management	No.0008	NCR3	Closed	7/21/2021
Improper Storage of Topsoil	No.0010	NCR3	Closed	9/11/2021
Absence of Health and Safety Representatives on Sites	No.0011	NCR3	Closed	9/23/2021
Absence of the and Safety Representatives on Sites	No.0012	NCR3	Closed	9/28/2021
Lack of waste water and waste management	No.0013	NCR3	Closed	11/4/2021
Oil Spill at TUN 1 Exit	No.0035	NCR1	Closed	11/28/2022
Chemical Spill at TUN# 1 Entrance	No.0030	NCR1	Closed	12/2/2022
Oil spill and scattered waste at TUN# 1 exit	No.0060	NCR 1	Closed	20/06/2023

NCR 1: Issue to be consider and take corrective action

NCR 2: Issue with high importance more severe than type 1

NCR 3: Issue with very high importance

Annex 4: Photo evidences of training sessions conducted during the Reporting Period (July-Dec 2024)

Lot-1



INTERNAL. This information is accessible to ADB Management and staff. It may be shared outside ADB with appropriate permission.

Lot-2





Annex 5: Samples attendance sheet of training sessions conducted during the Reporting Period (July – December 2024)

Construction of Kyusheti-Kobi Road Tunnel Section

TOOLBOX REPORT

Date: 02.10.2024 Time: 08:00

Name: CRT of Kyusheti Position: Chief of project

Topic: U.S. office

Location: Nel, Kyusheti site

ATTENDEES

1	<u>[Signature]</u>	<u>[Signature]</u>
2	<u>[Signature]</u>	<u>[Signature]</u>
3	<u>[Signature]</u>	<u>[Signature]</u>
4	<u>[Signature]</u>	<u>[Signature]</u>
5	<u>[Signature]</u>	<u>[Signature]</u>
6	<u>[Signature]</u>	<u>[Signature]</u>
7	<u>[Signature]</u>	<u>[Signature]</u>
8	<u>[Signature]</u>	<u>[Signature]</u>
9	<u>[Signature]</u>	<u>[Signature]</u>
10	<u>[Signature]</u>	<u>[Signature]</u>
11	<u>[Signature]</u>	<u>[Signature]</u>
12	<u>[Signature]</u>	<u>[Signature]</u>
13	<u>[Signature]</u>	<u>[Signature]</u>
14	<u>[Signature]</u>	<u>[Signature]</u>
15	<u>[Signature]</u>	<u>[Signature]</u>
16	<u>[Signature]</u>	<u>[Signature]</u>
17	<u>[Signature]</u>	<u>[Signature]</u>
18	<u>[Signature]</u>	<u>[Signature]</u>
19	<u>[Signature]</u>	<u>[Signature]</u>
20	<u>[Signature]</u>	<u>[Signature]</u>

TOPICS

- ROAD SAFETY
- PERSONAL PROTECTIVE EQUIPMENT (PPE)
- FALL PROTECTION
- EXCAVATION
- TRENCHING
- EROSION CONTROL
- SLOPE PROTECTION
- DRAINAGE
- CONCRETE WORK
- MASONRY
- ROADSIDE SAFETY
- TRAFFIC CONTROL
- ENVIRONMENTAL PROTECTION
- QUALITY CONTROL
- DOCUMENTATION
- COMMUNICATION
- EMERGENCY PREPAREDNESS
- RISK MANAGEMENT
- HEALTH AND SAFETY
- INCIDENT INVESTIGATION
- SITE SECURITY
- WEATHER MONITORING
- EQUIPMENT MAINTENANCE
- MATERIAL HANDLING
- WASTE MANAGEMENT
- WATER MANAGEMENT
- AIR QUALITY
- NOISE CONTROL
- VIBRATION CONTROL
- SOCIAL RESPONSIBILITY
- COMPLAINT HANDLING
- LEGAL COMPLIANCE
- ETHICS

NOTES

checked safety of road work
checked safety of all work
checked safety of all work
checked safety of all work
checked safety of all work

中国铁路

TRAINING ATTENDANCE / 培训出勤单

DATE: 1.10.2024

LOCATION: Village Arakheti

INSTRUCTOR: Tamta Kapanadze

SUBJECT: Environmental education

List of attendees / 出席者名单:

No.	Name and surname	Position	Signature
1	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
2	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
3	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
4	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
5	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
6	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
7	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
8	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
9	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
10	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
11	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
12	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
13	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
14	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
15	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
16	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
17	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
18	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
19	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>
20	<u>[Signature]</u>	<u>[Signature]</u>	<u>[Signature]</u>

中国铁路

TRAINING ATTENDANCE

DATE: 28.08.2024

LOCATION: Village Arakheti, camp 1

INSTRUCTOR: Tamta Kapanadze

SUBJECT: Environmental induction for B3 team

List of attendees:

No.	Name and surname	Position	Signature
1	<u>[Signature]</u>		<u>[Signature]</u>
2	<u>[Signature]</u>		<u>[Signature]</u>
3	<u>[Signature]</u>		<u>[Signature]</u>
4	<u>[Signature]</u>		<u>[Signature]</u>
5	<u>[Signature]</u>		<u>[Signature]</u>
6	<u>[Signature]</u>		<u>[Signature]</u>
7	<u>[Signature]</u>		<u>[Signature]</u>
8	<u>[Signature]</u>		<u>[Signature]</u>
9	<u>[Signature]</u>		<u>[Signature]</u>
10	<u>Olga Tsaridze</u>	<u>Environmental specialist</u>	<u>[Signature]</u>
11			
12			
13			
14			
15			
16			
17			
18			

Сканировано с CamScanner [Signature]

Construction of Kvesheti-Kobi Road Tunnel Section

TRAINING REPORT

Date: 25/09/2024 Time: 12:00

City (if any): CRTC Lifting Co

Location: TIKERE

Training held by: [Signature]

Name: V. Melin

Position: HR manager

Signature: [Signature]

ATTENDEES

Sl. No.	NAME (print & sign)	POSITION (Designation)	SIGNATURE	Sl. No.	NAME (print & sign)	POSITION (Designation)	SIGNATURE
1	[Handwritten Name]	Worker	[Signature]	17			
2	[Handwritten Name]	Worker	[Signature]	18			
3	[Handwritten Name]	Crane operator	[Signature]	19			
4	[Handwritten Name]	Worker	[Signature]	20			
5	[Handwritten Name]	Worker	[Signature]	21			
6	[Handwritten Name]	Worker	[Signature]	22			
7	[Handwritten Name]	Crane Operator	[Signature]	23			
8	[Handwritten Name]	Crane Operator	[Signature]	24			
9	[Handwritten Name]	Worker	[Signature]	25			
10	[Handwritten Name]	Worker	[Signature]	26			
11	[Handwritten Name]	Worker	[Signature]	27			
12	[Handwritten Name]	Worker	[Signature]	28			
13				29			
14				30			
15				31			
16				32			
17				33			
18				34			
19				35			
20				36			

TOPICS

<p>HAND TOOLS</p> <p>FALLING OBJECTS</p> <p>CONFINED SPACE ENTRY</p> <p>HOT WORKS</p> <p>CRANES AND LIFTING</p> <p>RIGID LEADING STRUTS</p> <p>INDUCTIVE AWARENESS</p> <p>CONTROL AND USE OF SCAFFOLDING</p>	<p>ELECTRICAL POWER TOOLS</p> <p>MANUAL HANDLING</p> <p>LIFTING EQUIPMENT CHOICE</p> <p>PRESSURE TESTING</p> <p>WELDING AND PLASMA CUTTING</p> <p>PLANTS TO WORK</p> <p>LATE MEDICAL EMERGENCY RESPONSE</p> <p>DEFENSIVE DRIVING DRIVING RULES</p> <p>POLLUTION PREVENTION</p> <p>TOP SOIL MANAGEMENT</p> <p>ACCESS ROAD MANAGEMENT</p>	<p>SEA BOTTLES</p> <p>FIRE PREVENTION</p> <p>WORKPLACE HOUSEKEEPING</p> <p>HAZARDOUS SUBSTANCES</p> <p>SAFETY AND PARTIAL</p> <p>EMERGENCY EVACUATION</p> <p>EMERGENCY RESPONSE</p> <p>DISPERSE ACTS, UNSAFE BEHAVIOUR, ROAD MISC. REPORTING</p> <p>DISPERSE ACTS, UNSAFE BEHAVIOUR, ROAD MISC. REPORTING</p> <p>DISPERSE ACTS, UNSAFE BEHAVIOUR, ROAD MISC. REPORTING</p>
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NOTES

Safe Lifting, Construction of Crane, working at high

Annex 6: Delivery Notes for Handing Over Hazardous Material

Lot 1

სამხედრო, ფარმაცევტული, საყოფაცხოვრებო, საკონსტრუქციო, დაბრუნებული და სხვა სახეობის და არასასივრავი პროდუქციის (ნარჩენების)

მიღება-ჩაბარების აქტი # 24/07-10

თარიღი 24.07.2024წ

საფუძვლი პროდუქციის (ნარჩენების) მიღება-ჩაბარებაზე ხელშეკრულება

პროდუქციის (ნარჩენების) მიწოდებელი ორგანიზაცია შპს „ჩინეთის სარკინიგზო გვირაბის ჯგუფი კო ფილიალი საქართველოში“

ს/კ. 405333600; მისამართი: ყაზბეგის მუნიციპალიტეტი, სოფ. კობი და იქვე მდებარე მუნიციპალიტეტი, სოფ. წვერე

პროდუქციის(ნარჩენების) გაცემასზე პასუხისმგებელი პირი: ბ-ნ ცენ ფაიონგი

პროდუქციის (ნარჩენების) მიმღები: შ.პ.ს შიდაკავშირის სამსახური ს/კ 3404154590

მისამართი: დ. აღმაშენებლის ხეივანი მუ.კ.კ.მ.

პასუხისმგებელი პირი: მალხაზ აფციაური

განმარტების ბიზნის კამოტახილი იქნა შედეგი სახის პროდუქცია (ნარჩენები).

N	ნარჩენის დასახელება/Name	წონა/Weight	კოდი/Code
1	დაბინძურებული ჩურჩბი/contaminated rug	9მკგ/კგ	15 02 02 *
2	ზეთის ფილტრები /oil filters	80კგ/კგ	15 02 02 *
3	ნავთობ პროდუქტების დაბინძურებული გრუნტი/contaminated soil	100კგ/კგ	17 05 02 *
4	ინფექციური ნარჩენი/medical waste	2კგ/კგ	18 01 03 *

პროდუქციის (ნარჩენების) გატანის ადგილი: ყაზბეგის მუნიციპალიტეტი, სოფ. კობი

ამანქანის სახ # II-124-PP მძღოლი: მალხაზ აფციაური

პროდუქციის(ნარჩენების) მიწოდების ადგილი: გარდაბნის სოფ. მარტყოფი, მ/პროტი: 24.07.2024წ

პროდუქცია (ნარჩენები) ჩააბარა: (ჯვარი, სახელი, ხელმოწერა) 

პროდუქცია (ნარჩენები) მიიღო: (ჯვარი, სახელი, ხელმოწერა) 




(Sample waste transfer notes for Lot 2 during reporting period)

14/06/2024

2024/06/14 10:28:48 AM

1. 2024/06/14 10:28:48 AM

2. 2024/06/14 10:28:48 AM

3. 2024/06/14 10:28:48 AM

4. 2024/06/14 10:28:48 AM

5. 2024/06/14 10:28:48 AM

Waste Description	Quantity	Weight	Volume	Material	Other
Waste Description	Quantity	Weight	Volume	Material	Other
Waste Description	Quantity	Weight	Volume	Material	Other

6. 2024/06/14 10:28:48 AM

7. 2024/06/14 10:28:48 AM

8. 2024/06/14 10:28:48 AM

9. 2024/06/14 10:28:48 AM

10. 2024/06/14 10:28:48 AM

14/06/2024

2024/06/14 10:28:48 AM

1. 2024/06/14 10:28:48 AM

2. 2024/06/14 10:28:48 AM

3. 2024/06/14 10:28:48 AM

4. 2024/06/14 10:28:48 AM

5. 2024/06/14 10:28:48 AM

Waste Description	Quantity	Weight	Volume	Material	Other
Waste Description	Quantity	Weight	Volume	Material	Other
Waste Description	Quantity	Weight	Volume	Material	Other

6. 2024/06/14 10:28:48 AM

7. 2024/06/14 10:28:48 AM

8. 2024/06/14 10:28:48 AM

9. 2024/06/14 10:28:48 AM

10. 2024/06/14 10:28:48 AM

WASTE TRANSFER NOTE

Ref No: 102541

1. WASTE GENERATOR

2. WASTE RECEIVER

3. WASTE DESCRIPTION

4. QUANTITY

5. WEIGHT

6. VOLUME

7. MATERIAL

8. OTHER

9. DATE

10. SIGNATURE

Waste Description	Quantity	Weight	Volume	Material	Other
Waste Description	Quantity	Weight	Volume	Material	Other
Waste Description	Quantity	Weight	Volume	Material	Other

11. DATE

12. SIGNATURE

13. SIGNATURE

14. SIGNATURE

15. SIGNATURE

16. SIGNATURE

17. SIGNATURE

18. SIGNATURE

19. SIGNATURE

20. SIGNATURE

Annex 7: License for Medical Technology



საქართველოს გარემოს დაცვისა და სოფლის მეურნეობის მინისტრი

ბრძანება N 2-714

26/07/2019

ქ. თბილისი

შპს „მედიკალ ტექნოლოჯის“ ნარჩენების განთავსების (ინსინერაციის) საწარმოს მოწყობასა და ექსპლუატაციაზე გარემოსდაცვითი გადაწყვეტილების გაცემის შესახებ

მიმდინარე წლის 17 ივლისს სამინისტროს მომართა შპს „მედიკალ ტექნოლოჯის“ წარმომადგენელმა და ითხოვა გარემოსდაცვითი გადაწყვეტილების მიღება.

2015 წელს სამინისტროს მიერ შპს „მედიკალ ტექნოლოჯის“ „ნარჩენების განთავსების (ინსინერაციის) საწარმოს მოწყობისა და ექსპლუატაციის“ პროექტზე გაიცა №74 (29.12.2015) ეკოლოგიური ექსპერტიზის დასკვნა:

„გარემოსდაცვითი შეფასების კოდექსის“ 48-ე მუხლის მე-4 ნაწილის თანახმად, პირი, რომელზედაც 2018 წლის 1 იანვრამდე გზმ-ის სფეროში გაცემულია შესაბამისი აღმშენებელი ადმინისტრაციულ-სამართლებრივი აქტი, ვალდებულია 2021 წლის 1 იანვრამდე, განცხადების საფუძველზე მოითხოვოს გარემოსდაცვითი გადაწყვეტილების გაცემა. სამინისტრო აღნიშნული აღმშენებელი ადმინისტრაციულ-სამართლებრივი აქტის საფუძველზე, ამ კოდექსით გარემოსდაცვითი გადაწყვეტილების გაცემისთვის განსაზღვრული პროცედურების გარეშე, მარტივი ადმინისტრაციული წარმოების წესით გასცემს გარემოსდაცვით გადაწყვეტილებას.

აღნიშნულის გათვალისწინებით მომზადდა მინისტრის ბრძანების პროექტი, რომლის შესაბამისად გარემოსდაცვითი გადაწყვეტილება გაიცემა 2015 წლის №74 სახელმწიფო ეკოლოგიური ექსპერტიზის დასკვნის პროექტის საფუძველზე და საქმიანობის განმახორციელებელს დაეკისრება ვალდებულება, უზრუნველყოს გარემოსდაცვითი გადაწყვეტილებით განსაზღვრული პირობების შესრულება.

ამავდროულად მალადაკარგულად ცხადდება „შპს „მედიკალ ტექნოლოჯი“-ს ნარჩენების განთავსების (ინსინერაცია) საწარმოს მოწყობასა და ექსპლუატაციაზე ეკოლოგიური ექსპერტიზის დასკვნის დამტკიცების შესახებ“ საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის მინისტრის 2015 წლის 30 დეკემბრის №ი-1037 ბრძანება, თუმცა აღნიშნული გარემოსდაცვითი გადაწყვეტილებით იურიდიულ მალას ინარჩუნებს 2015 წლის სახელმწიფო ეკოლოგიური ექსპერტიზის დასკვნა პროექტზე, რომელიც დანართის სახით თან დაერთვება მოცემულ გადაწყვეტილებას.

ზემოაღნიშნული გარემოებებისა და „გარემოსდაცვითი შეფასების კოდექსის“ 48-ე მუხლის მე-4 ნაწილის საფუძველზე,

ვ ბ რ ძ ა ნ ე ბ ი:

1. შპს „მედიკალ ტექნოლოჯის“ ნარჩენების განთავსების (ინსინერაციის) საწარმოს მოწყობასა და ექსპლუატაციაზე გაიცეს გარემოსდაცვითი გადაწყვეტილება თანდართული ეკოლოგიური ექსპერტიზის დასკვნის საფუძველზე (დასკვნა №74; 29.12.2015);
2. გარემოსდაცვითი გადაწყვეტილების მფლობელი ვალდებულია დაიცვას თანდართული ეკოლოგიური ექსპერტიზის დასკვნის პირობები;
3. ამ ბრძანების პირველი პუნქტით გათვალისწინებული გარემოსდაცვითი გადაწყვეტილება გაიცეს განუსაზღვრელი ვადით;
4. ძალადაკარგულად გამოცხადდეს „შპს „მედიკალ ტექნოლოჯი“-ს ნარჩენების განთავსების (ინსინერაცია) საწარმოს მოწყობასა და ექსპლუატაციაზე ეკოლოგიური ექსპერტიზის დასკვნის დამტკიცების შესახებ“ საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის მინისტრის 2015 წლის 30 დეკემბრის №ი-1037 ბრძანება;
5. გარემოსდაცვითი გადაწყვეტილების სხვა პირზე გადაცემის შემთხვევაში გარემოსდაცვითი გადაწყვეტილების გადაცემა განახორციელოს „გარემოსდაცვითი შეფასების კოდექსით“ დადგენილი წესით;
6. ბრძანება დაუყოვნებლივ გაეგზავნოს შპს „მედიკალ ტექნოლოჯის“;
7. ბრძანება ძალაში შევიდეს შპს „მედიკალ ტექნოლოჯის“ მიერ ამ ბრძანების გაცნობისთანავე;
8. ბრძანების გაცემიდან 3 დღის ვადაში აღნიშნული ბრძანება განთავსდეს სამინისტროს ოფიციალურ ვებგვერდზე;
9. ეს ბრძანება შეიძლება გასაჩივრდეს თბილისის საქალაქო სასამართლოს ადმინისტრაციულ საქმეთა კოლეგიაში (თბილისი, დ. აღმაშენებლის ხეივანი, მე-12 კმ. N6) მხარის მიერ მისი ოფიციალური წესით გაცნობის დღიდან ერთი თვის ვადაში.

ლევან დავითაშვილი



მინისტრი



საქართველოს გაერთიანებული სახელმწიფოს და სოფლის მეურნეობის მინისტრი

ბრძანება N 2-1261

31/12/2020

ქ. თბილისი

შპს „მედიკალ ტექნოლოჯის“ ნარჩენების აღდგენის და განთავსების (ნარჩენების გაუვნებელყოფა-დეტოქსიკაცია, ვერცხლისწყლის შემცველი ნარჩენების დემერკურიზაცია და გამოყენებული ზეთების რეგენერაცია) საწარმოს ექსპლუატაციაზე გადაწყვეტილების გაცემის შესახებ

2020 წლის 10 დეკემბერს სამინისტროს მომართა შპს „მედიკალ ტექნოლოჯის“ დირექტორმა და ითხოვა გარემოსდაცვითი გადაწყვეტილების მიღება.

2017 წელს საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტროს მიერ შპს „მედიკალ ტექნოლოჯის“ ნარჩენების აღდგენისა და განთავსებაზე (ნარჩენების გაუვნებელყოფა-დეტოქსიკაცია, ვერცხლისწყლის შემცველი ნარჩენების დემერკურიზაცია და გამოყენებული ზეთების რეგენერაცია) გაიცა №4 (11.01.2017) ეკოლოგიური ექსპერტიზის დასკვნა და გარემოზე ზემოქმედების ნებართვა.

„გარემოსდაცვითი შეფასების კოდექსის“ 48-ე მუხლის მე-4 ნაწილის თანახმად, პირი, რომელზედაც 2018 წლის 1 იანვრამდე გზმ-ის სფეროში გაცემულია შესაბამისი აღმჭურველი ადმინისტრაციულ-სამართლებრივი აქტი, ვალდებულია 2021 წლის 1 იანვრამდე, განცხადების საფუძველზე მოითხოვოს გარემოსდაცვითი გადაწყვეტილების გაცემა. სამინისტრო აღნიშნული აღმჭურველი ადმინისტრაციულ-სამართლებრივი აქტის საფუძველზე, ამ კოდექსით გარემოსდაცვითი გადაწყვეტილების გაცემისთვის განსაზღვრული პროცედურების გარეშე, მარტივი ადმინისტრაციული წარმოების წესით გასცემს გარემოსდაცვით გადაწყვეტილებას.

აღნიშნულის გათვალისწინებით მომზადდა მინისტრის ბრძანების პროექტი, რომლის შესაბამისად გარემოსდაცვითი გადაწყვეტილება გაიცემა 2017 წლის 11 იანვრის №4 ეკოლოგიური ექსპერტიზის დასკვნის საფუძველზე და საქმიანობის განმახორციელებელს დაეკისრება ვალდებულება, უზრუნველყოს გარემოსდაცვითი გადაწყვეტილებით განსაზღვრული პირობების შესრულება.

ამავდროულად ძალადაკარგულად ცხადდება „ნარჩენების აღდგენის და განთავსების (ნარჩენების გაუვნებელყოფა-დეტოქსიკაცია, ვერცხლისწყლის შემცველი ნარჩენების დემერკურიზაცია და გამოყენებული ზეთების რეგენერაცია) საწარმოს ექსპლუატაციაზე გარემოზე ზემოქმედების ნებართვის გაცემის შესახებ“ საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის მინისტრის 2017 წლის 13 იანვრის №ი-14 ბრძანება, თუმცა აღნიშნული გარემოსდაცვითი გადაწყვეტილებით იურიდიულ ძალას ინარჩუნებს

2017 წლის №4 ეკოლოგიური ექსპერტიზის დასკვნა, რომელიც დანართის სახით თან დაერთვება მოცემულ გადაწყვეტილებას.

ზემოაღნიშნული გარემოებებისა და „გარემოსდაცვითი შეფასების კოდექსის“ 48-ე მუხლის მე-4 ნაწილის საფუძველზე,

ვ ბ რ ძ ა ნ ე ბ :

1. შპს „მედიკალ ტექნოლოჯის“ ნარჩენების აღდგენის და განთავსების (ნარჩენების გაუვნებელყოფა-დეტოქსიკაცია, ვერცხლისწყლის შემცველი ნარჩენების დემერკურიზაცია და გამოყენებული ზეთების რეგენერაცია) საწარმოს ექსპლუატაციაზე გაიცეს გარემოსდაცვითი გადაწყვეტილება თანდართული ეკოლოგიური ექსპერტიზის დასკვნის საფუძველზე (დასკვნა №4; 11.01.2017);
2. გარემოსდაცვითი გადაწყვეტილების მფლობელი ვალდებულია დაიცვას თანდართული ეკოლოგიური ექსპერტიზის დასკვნის პირობები;
3. ამ ბრძანების პირველი პუნქტით გათვალისწინებული გარემოსდაცვითი გადაწყვეტილება გაიცეს განუსაზღვრელი ვადით;
4. ძალადაკარგულად გამოცხადდეს „ნარჩენების აღდგენის და განთავსების (ნარჩენების გაუვნებელყოფა-დეტოქსიკაცია, ვერცხლისწყლის შემცველი ნარჩენების დემერკურიზაცია და გამოყენებული ზეთების რეგენერაცია) საწარმოს ექსპლუატაციაზე გარემოზე ზემოქმედების ნებართვის გაცემის შესახებ“ საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის მინისტრის 2017 წლის 13 იანვრის №ი-14 ბრძანება;
5. გარემოსდაცვითი გადაწყვეტილების სხვა პირზე გადაცემის შემთხვევაში გარემოსდაცვითი გადაწყვეტილების გადაცემა განხორციელდეს „გარემოსდაცვითი შეფასების კოდექსით“ დადგენილი წესით;
6. ბრძანება დაუყოვნებლივ გაეგზავნოს შპს „მედიკალ ტექნოლოჯის“;
7. ბრძანება ძალაში შევიდეს შპს „მედიკალ ტექნოლოჯის“ მიერ ამ ბრძანების გაცნობისთანავე;
8. ბრძანების გაცემიდან 5 დღის ვადაში აღნიშნული ბრძანება განთავსდეს სამინისტროს ოფიციალურ ვებგვერდზე;
9. ბრძანება შეიძლება გასაჩივრდეს თბილისის საქალაქო სასამართლოს ადმინისტრაციულ საქმეთა კოლეგიაში (თბილისი, დ. აღმაშენებლის ხეივანი, მე-12 კმ. N6) მხარის მიერ მისი ოფიციალური წესით გაცნობის დღიდან ერთი თვის ვადაში.

ლევან დავითაშვილი



მინისტრი

Annex: 8: Preconstruction Ecological and Cultural Heritage Survey Audit Report of Area Near Lake Lot 2

Date: 04.11.2024



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Environmental and biodiversity pre-construction survey for lake surrounding territory at Plateau

Prepared by

CRCC 23rd Bureau Group

Ecological Clerk of Work

Tamta Kapanadze

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Aleks Akhvediani

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Overview

This document below represents an expression of good will within the project Kvesheti-kobi road lot N2. The point is that surroundings of road project area some local land owners has requested the contractor for Lot-2 CRCC (china railway 23rd company group) to excavate their private land. Their request was to cut land section due to unusable relief of existing land, which they could use for personal needs. Mentioned land is distributed at territory with cadastral code: 71.62.60. 856 (with total area: 12026 m²). CRCC kindly agreed on that request and contractor company itself will use spoil from cut section as backfilling material for planned project road. According to the local owner request and agreement between CRCC and land owner, in totally will be excavated 50 000 m³ of spoil. After the excavation this land will be in flattened shape leveled with top soil, difference will be 1m between existing road and mentioned land plot levels. It is noteworthy that private land is distributed near artificial lake and it is also noteworthy that lake itself won't have any damage because of planned excavation, also territory won't be cut near depth of lake.

It is noteworthy that top soil is distributed in fragments and its 7cm thick. According to this and area of the place – in total will be generated 8418 m³ top soil, which itself will be stored at top soil storage area near Batching plant N2.

After excavation will end mentioned area will be recultivated via using removed top soil.

According to that CRCC prepared relevant pre-construction survey document, please see details below.

Introduction

The environmental and biodiversity report given represents preconstruction situation for Dusheti municipality village Jagmiani private land situation, which is situated on the plateau (cadastral code: 71.62.60. 856), for situational scheme and its reflecting photo material see figure N1.

Excavation of the private land slope is intended for material to be used for the backfilling of road. In total there is planned to excavate 50 000m³ of material.

Research was done in October 2024, and it contains field work and relevant review of literature.

The main aim during field work was to reveal sensitive habitats, identify and inventorize flora, fauna and ornithofauna species as well to assess geological condition of given area.

During the field work it became clear, that selected territory for lake surroundings territory is less sensitive area, there is not any regional red list plant species growing here.



Field work results in terms of habitats and biodiversity

Review of literature and field work has shown that lake surroundings area is crossing habitat, which accordingly from EUNIS classification is:

- E5.1 Anthropogenic herb stands + F2.3 Subalpine deciduous scrub (see reflecting photo material in table N1)

This mentioned habitats is characterized as follows:

E5.1 Anthropogenic herb stands - Stands of herbs developing on abandoned urban or agricultural land, on land that has been reclaimed, on transport networks, or on land used for waste disposal.

F2.3 Subalpine deciduous scrub - Subalpine scrubs of [Alnus], [Betula], [Salix] and Rosaceae ([Amelanchier], [Potentilla], [Rubus], [Sorbus]), less than 5 m tall, often accompanied by tall herbs that in the absence of scrub would be classified as E5.5. Excludes dwarf [Salix] scrub (F2.1), which is composed of species that rarely exceed 1.5 m in height, and scrub on waterlogged soils (F9.2).

Table N1. Reflecting photo materials of habitats given at surrounding lake area



Below in table N3 is represented consistence of plant species for selected territory of surroundings lake area. It is noteworthy, that here isn't exists any plant specie which is protected by regional red list of Georgia.

Also it should be noticed that in the table N3 is represented coverage of plant species which is assessed according to universal scaling system of Braun – Blanquet (detailed information about scaling system see in table N2.).


Table 2. Cover scale and their relation to species-cover indicated in percentage used for recording vegetation according the traditional Braun - Blanquet scale.

Range of cover	Braun-Blanquet
Single individual	r
Sporadic or few	+
0–1%	1
1–2%	1
2–3%	1
3–5%	1
5–10%	2
10–25%	2
25–33%	3
33–50%	3
50–75%	4
75–90%	5
90–95%	5
95–100%	5

It should be noted that selected territory for surroundings of lake area is under high anthropogenic impact (it is used as pastures and as roads for tourist movements via quad bikes and horses), also near this territory is secondary road which is being used for the contractor to acces campsite 2 and project site in plateau.

Plants

Table N3. Consistence of plant species in territory of lake surroundings area

Habitat type: E5.1 Anthropogenic herb stands + F2.3 Subalpine deciduous scrub Whole vegetation coverage in the selected area: 10%			
Scientific name of species	Species coverage (%)	Red list of Georgia status	IUCN red list status
<i>Carlina vulgaris</i>	2	-	-
<i>Pyrus caucasica</i>	1	-	-
<i>Corylus avellana</i>	2	-	LC
<i>Rhododendron flavum</i>	2	-	LC
<i>Pimpinella rhodantha</i>	1	-	-
<i>Crataegus kyrtostylla</i>	1	-	-
<i>Prunus divaricata</i>	1	-	LC
<i>Centaurea sp.</i>	1	-	-
<i>Daucus sp.</i>	1	-	-
<i>Rosa canina</i>	1	-	LC
<i>Urtica dioica</i>	2	-	LC
<i>Euphorbia sp.</i>	2	-	-
<i>Leucanthemum vulgare</i>	3	-	-
<i>Scabiosa sp.</i>	2	-	-
<i>Lotus corniculatus</i>	3	-	-
<i>Cichorium intybus</i>	2	-	LC
<i>Carex sp.</i>	3	-	-
<i>Ranunculus repens</i>	2	-	LC
<i>Trifolium pratense</i>	2	-	LC

IUCN – International Union for Conservation of Nature

LC – Least concern
DD – Data deficient

More than 35 species of mammals, up to 180 birds, 10 reptiles, 6 amphibians, mollusks and various invertebrates have been identified in and around the whole project corridor.

It is noteworthy that surroundings of selected area is not any living areas for bats.

Mammals

According to the available sources and the characteristics of the habitats, the list of mammal species in the project area is given below in table N4.

Table N4. Mammal species for selected area.

Scientific name of species	Protection status	
	IUCN red list status	Red list of Georgia status
<i>Apodemus mystacinus</i>	LC	-
<i>Canis aureus</i>	LC	-
<i>Canis lupus</i>	-	-
<i>Capreolus capreolus</i>	LC	-
<i>Chionomys roberti</i>	LC	-
<i>Crociodura gueldenstaedti</i>	LC	-
<i>Crociodura leucodon</i>	LC	-
<i>Dryomys nitedula</i>	LC	-
<i>Erinaceus concolor</i>	LC	-
<i>Felis silvestris</i>	-	-
<i>Glis glis</i>	LC	LC
<i>Lepus europeus</i>	LC	-
<i>Lynx lynx</i>	LC	CR
<i>Martes martes</i>	LC	-
<i>Meles meles</i>	LC	-
<i>Microtus arvalis</i>	LC	-
<i>Microtus socialis</i>	LC	-
<i>Mus musculus</i>	LC	-
<i>Mustela nivalis</i>	LC	-
<i>Rattus norvegicus</i>	LC	-
<i>Rattus rattus</i>	LC	-
<i>Sciurus anomalus</i>	LC	VU
<i>Sciurus vulgaris</i>	LC	-
<i>Sorex satunini</i>	LC	-
<i>Sorex volnuchini</i>	LC	-
<i>Sus scopa</i>	LC	-
<i>Sylvaemus uralensis</i>	LC	-
<i>Talpa caucasica</i>	LC	-
<i>Talpa levantis</i>	LC	-
<i>Terricola majori</i>	LC	-
<i>Ursus arctos</i>	LC	EN
<i>Vulpes vulpes</i>	LC	-

IUCN – International Union for Conservation of Nature

mission.

LC – Least concern
DD – Data deficient
EN – Endangered
VU – Vulnerable
CR – Critically endangered

As its visible from table N4 in the area is spread 4 specie protected of Regional red list of Georgia, although it doesn't mean that these species are living here and they have constant living places here. Listed species (*Glis glis*, *Lynx lynx*, *Sciurus anomalus*, *Ursus arctos*) are using selected area as place for migration.

Reptiles

The study area is not reach by the diversity of reptiles and the level of endemism. In the project area or near it can exist/appear of 10 species of reptiles.

The list of reptile species in and around the project area is given below in table N5.

Table N5. Reptiles

Scientific name of species	Protection status	
	IUCN red list status	Red list of Georgia status
<i>Anguis colchica</i>	LC	
<i>Coronela austriaca</i>	LC	-
<i>Darevskia caucasica</i>		-
<i>Darevskia derjugini</i>	NT	-
<i>Darevskia rudis</i>	LC	-
<i>Lacerta media</i>	LC	-
<i>Lacerta strigata</i>	LC	-
<i>Natrix natrix</i>	LC	-
<i>Natrix tessellata</i>	LC	-
<i>Vipera dinniki</i>	EN	EN
IUCN – International Union for Conservation of Nature		
LC – Least concern		
EN – Endangered		

Only one of the listed species is protected by the Regional (Georgian) red list. It should be noted that although habitat in the project area is acceptable for this specie, its arrival (*Vipera dinniki*) at work site is not expected as it normally avoids areas under anthropogenic load.

Aves

According to various sources, out of 403 species of birds in Georgia, about 180 species of birds is spread in the project area. Out of this, 35 species were also observed during the field survey. Most of the recorded birds are species related to shrubs, rocks, fields and water. This applies to both resident and nesting birds. However, the activity to be carried to level the ground will not disturb the birds.

It's notable that the project area is not an important bird area (IBA) and / or a special bird protected area (SPA) whose function is to protect and monitor bird nesting populations in Georgia.

Also, its important that no nests were observed in the selected project area.

The list of aves species in and around the project area is given below in table N6.

Table 6. Aves

Scientific name of species	Seasonality of migration	Protection status	
		IUCN red list status	Red list of Georgia status
<i>Accipiter brevipes</i>	BB,M	LC	VU
<i>Accipiter gentilis</i>	M	LC	-
<i>Accipiter nisus</i>	YR-R	LC	-
<i>Aegithalos caudatus</i>	YR-R	LC	-
<i>Alauda arvensis</i>	M	LC	-
<i>Anthus cervinus</i>	M	LC	-
<i>Anthus trivialis</i>	BB	LC	-
<i>Apus apus</i>	BB	LC	-
<i>Aquila nipalensis</i>	M	EN	-
<i>Buteo buteo</i>	YR-R, M	LC	-
<i>Buteo rufinus</i>	YR-R, M	LC	VU
<i>Carduelis carduelis</i>	YR-R	LC	-
<i>Carduelis chloris</i>	YR-R	LC	-
<i>Carpodacus erythrinus</i>	BB	LC	-
<i>Certhia familiaris</i>	M	LC	-
<i>Clanga clanga</i>	WV, M	VU	VU
<i>Clanga pomarina</i>	BB,M	LC	
<i>Columba livia</i>	YR-V	LC	-
<i>Columba oenas</i>	M	LC	-
<i>Columba palumbus</i>	M	LC	-
<i>Corvus corax</i>	YR-V	LC	-
<i>Corvus corone</i>	YR-R	LC	-
<i>Crex crex</i>	BB	LC	-
<i>Cuculus canorus</i>	BB	LC	-
<i>Delichon urbicum</i>	YR-V	LC	-
<i>Dendrocopos leucotos</i>	YR-R	LC	-
<i>Dendrocopos major</i>	YR-R	LC	-
<i>Dryobates minor</i>	YR-R	LC	-
<i>Emberiza cia</i>	YR-R	LC	-
<i>Erithacus rubecula</i>	YR-R	LC	-
<i>Falco columbarius</i>	M	LC	-
<i>Falco peregrinus</i>	YR-R, M	LC	-
<i>Falco tinnunculus</i>	M	LC	-
<i>Fringilla coelebs</i>	YR-R	LC	-
<i>Fringilla montifringilla</i>	WV	LC	-
<i>Galerida cristata</i>	M	LC	-
<i>Garrulus glandarius</i>	YR-R	LC	-
<i>Grus grus</i>	BB, M	LC	EN
<i>Haliaeetus albicilla</i>	YR-R	LC	EN

on.

<i>Hippolais caligata</i>	M	LC	-
<i>Hirundo rustica</i>	BB,M	LC	-
<i>Ixobrychus minutus</i>	BB, M	LC	-
<i>Jynx torquilla</i>	BB	LC	-
<i>Lanius collurio</i>	BB,M	LC	-
<i>Lanius minor</i>	M	LC	-
<i>Leiopicus medius</i>	YR-R	LC	-
<i>Luscinia luscinia</i>	BB,M	LC	-
<i>Luscinia megarhynchos</i>	BB	LC	-
<i>Miliaria calandra</i>	BB	LC	-
<i>Milvus migrans</i>	M	LC	-
<i>Monticola saxatilis</i>	BB	LC	-
<i>Motacilla alba</i>	YR-R	LC	-
<i>Motacilla cinerea</i>	M	LC	-
<i>Motacilla flava</i>	M	LC	-
<i>Muscicapa striata</i>	BB, M	LC	-
<i>Neophron percnopterus</i>	BB,M	EN	VU
<i>Oenanthe oenanthe</i>	BB, M	LC	-
<i>Oriolus oriolus</i>	M	LC	-
<i>Otus scops</i>	BB	LC	-
<i>Parus ater</i>	YR-R	LC	-
<i>Parus caeruleus</i>	YR-R	LC	-
<i>Parus major</i>	YR-R	LC	-
<i>Passer domesticus</i>	YR-R	LC	-
<i>Passer montanus</i>	M	LC	-
<i>Pernis apivorus</i>	BB,M	LC	-
<i>Petronia petronia</i>	BB, M	LC	-
<i>Phoenicurus ochruros</i>	BB	LC	-
<i>Phoenicurus phoenicurus</i>	BB,M	LC	-
<i>Phylloscopus collybita</i>	BB	LC	-
<i>Phylloscopus trochilus</i>	BB	LC	-
<i>Pica pica</i>	YR-R	LC	-
<i>Porzana porzana</i>	YR-R, M	LC	-
<i>Prunella modularis</i>	BB	LC	-
<i>Pyrrhonorax graculus</i>	YR-R	LC	-
<i>Pyrrhonorax pyrrhonorax</i>	YR-R	LC	-
<i>Saxicola torquatus</i>	BB	LC	-
<i>Saxicola rubetra</i>	BB	LC	-
<i>Sylvia atricapilla</i>	BB	LC	-
<i>Sylvia communis</i>	BB,M	LC	-
<i>Sylvia nisoria</i>	BB	LC	-
<i>Troglodytes troglodytes</i>	YR-R	LC	-
<i>Turdus merula</i>	YR-R	LC	-
<i>Turdus philomelos</i>	M	LC	-
<i>Turdus pilaris</i>	WV,M	LC	-
<i>Turdus viscivorus</i>	M	LC	-
<i>Upupa epops</i>	M	LC	-

ion.

IUCN – International Union for Conservation of Nature

LC – Least concern

EN – Endangered

Seasonal period of species life in a given area:

YR-R = It nests here in Georgia all year round and multiplies; YR-V = Is a visitor to these areas; Does not multiply, but is here all year round; BB = Enters the area only for breeding;

M = Migrant; During migration (autumn and spring) may reach this area

Geological assessment

Excavation of the slope is intended for material of the backfilling. Earth-cut works is in progress next to the artificial lake. The lake itself is fed mainly by surface water and atmospheric precipitation. The slope which is under excavation is above the lake, and its top elevation is high compared to the lake. In the excavation area there is no evidence and outlet of the ground water to the surface. Hence the ground water from slope side does not participate in supplying the lake. It cannot be said whether there is spring or inflow of the ground water under the lake, generally, it is thought that the lake depends on water collected above the surface of the ground during the atmospheric precipitation. Considering that excavation is going on the upper levels compared to Lake Surface, it cannot create any path out for the water and it will not cause drying. Generally, excavation is progressing in quaternary agglomerates, glacial sediments with inclusions of boulders, and Basic Rock quaternary volcanic Andesite-Basalts that is weathered and fractured, which does not contain ground water in excavation area (see some relevant pictures in table N7). Mentioned all above it can be said that excavation will not affect negatively the lake.

Table N7. Some layers of excavation area and location of the lake



Conclusions and mitigation measures

- Mentioned excavation process of private land plot is an expression of good will within the project Kvesheti-kobi road lot N2 between local land owners and CRCC
- Selected area of surroundings of lake can be assessed as having a low sensitivity
- Selected lake surroundings area is crossing habitat -E5.1 Anthropogenic herb stands + F2.3 Subalpine deciduous scrub
- In the territory of selected lake surroundings area is not growing any plant species which is protected by red list of Georgia
- The selected area can be used by 4 specie of mammals which are protected by Regional red list of Georgia, although it doesn't mean that this species are living here and they have constant living places here. Mostly, listed species (*Glis glis*, *Lynx lynx*, *Sciurus anomalus*, *Ursus arctos*) are using selected area as place for migration

sion.

- In and surroundings area of lake in not noticed any bat living areas. There is no any big diameter trees which can have cavity (which is characterized to use as living area) or any abandoned buildings or caves.
- One specie of reptiles (*Vipera dinniki*) which is protected by the Regional (Georgian) red list is spreaded in this region, but It should be noted that although habitat in the project area is acceptable for this specie, its arrival (*Vipera dinniki*) at work site is not expected as it normally avoids areas under anthropogenic load.
- 7 specie (*Accipiter brevipes*, *Buteo rufinus*, *Clanga clanga*, *Grus grus*, *Heliaetus albicilla*, *Neophron percnopterus*) of aves can appear near and in the selected lake surroundings area, which are protected by red list of Georgia. Although, they have no nests in this territories, selected area of surroundings of lake can be used by them as migration (flying route)
- The selected area is not an important bird area (IBA) and / or a special bird protected area (SPA) whose function is to protect and monitor bird nesting populations in Georgia
- Impacts on the selected areas and the surrounding species will be related to noise, vibration, changes in the lighting background during the works. Physical impact is unlikely
- In the excavation area there is no evidence and outlet of the ground water to the surface. Hence the ground water from slope side does not participate in supplying the lake
- In total there is planned to excavate 50 000m³ of material.
- Top soil is distributed in fragments and its 7cm thick. According to this and area of the place – in total will be generated 8418 m³ top soil, which itself will be stored at top soil storage area near Batching plant N2
- Considering that excavation is going on the upper levels compared to Lake Surface, it cannot create any path out for the water and it will not cause drying
- Mentioned all above it can be said that excavation will not affect negatively the lake
- Silt fence will be provided around the lake to avoid sediments runoff entering in to the lake.

Some picture of flora and fauna species for lake surroundings area





Corylus avellana



Rhododendron flavum



Rosa canina







Carlina vulgaris



Daucus sp.



Leucanthemum vulgare

	
<p><i>Cichorium intybus</i></p>	<p><i>Scabiosa sp.</i></p>
	
<p><i>Lanius collurio</i> (Red backed shrike)</p>	<p><i>Turdus merula</i> (Common black bird)</p>
<p>Note: some of the pictures used in this table are from previous seasonal biodiversity monitoring surveys</p>	

Annex: 9: Taxation Notes for handing over wood logs to NFA Lot-2

სა-ტყის წარმოების დოკუმენტი
№ 1000902193

1. ხე-ტყის მფლობელი: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"

2. დოკუმენტის გაცემის საფუძველი: *ქაბე 2-ის კადასტრული ნაკვეთი № 11/29/01*
საბურთალოს რაიონის სასაფლაოების განყოფილება *22.01.2024*

3. (სა-ტყეობა (არამომრეცხველი) ხე-ტყის მოკვეთისა და ჯიშის შესახებ)

1	ხე-ტყის სახე	<i>კენჭი</i>	<i>7</i>	<i>7</i>	<i>7</i>
2	ხე-ტყის მოკვეთის	<i>100%</i>			

4. მონაცემები მრეცხველი მოგვლი ხე-ტყის (ძირის) შესახებ:

№	მონაცემის ტიპი	1	2	3	4	5	6	7	8
1	ფართობის ნაშთი								
2	ჯიშის								
3	მონაცემის სახე	საფარი (მ)							
	დაბალი	შისვლი (მმ)							
	მოკვეთის სახე	წილი (მმ)							
4	მონაცემის მოკვეთის								
5	მონაცემის ტიპი								
6	ჯიშის								
7	მონაცემის სახე	საფარი (მ)							
	დაბალი	შისვლი (მმ)							
	მოკვეთის სახე	წილი (მმ)							
8	მონაცემის მოკვეთის								

5. დამხატვის ადგილი: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"
ბუჩქების №

6. სატრანსპორტო ხაზი: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"

7. დანიშნულების ადგილი: *ქაბე 2-ის კადასტრული ნაკვეთი № 11/29/01*
საბურთალოს რაიონის სასაფლაოების განყოფილება

8. ხე-ტყის გადამხადავი პირი: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება" *№ 16001008880*

9. დოკუმენტის შეესების დრო და თარიღი: *15* ხა *00* წი *"15"* "სექტემბერი" 2024 წ.

10. დოკუმენტის შეესებაზე პასუხისმგებელი პირის სახელი *გვარამია გიორგი*
გვარამია გიორგი
თანამდებობა: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"
ხელმოწერა: *გ. გვარამია*

დამხატველი: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
დამხატვის ადგილი: *სსიპ "საბურთალოს რაიონის სასაფლაოების განყოფილება"*
საბურთალოს რაიონის სასაფლაოების განყოფილება № 01-5083

ნა-ტმის წარმოშობის დოკუმენტი ფაქობნძე გ.ბ.ძ
 №1000902191 15:00 სთ 27

1. ხე-ტყის მოსარგებელი: *სსიპ ვაზისფენი სოფ. სარგისი*
ს/ს 204576281

2. დოკუმენტის გაცემის ხელშეწყობი: *სსიპ ვაზისფენი სოფ. სარგისი* *ფაქობნძე გ.ბ.ძ №11/2901*
27.01.2024წ

3. მონაცემების (არა-მარკირებული) ხე-ტყის მოცულობისა და ჯიშის შესახებ:

ხე-ტყის ჯიშის	<i>ყვითელი</i>	<i>ყვითელი</i>	<i>ბუნური</i>	<i>2</i>
ხე-ტყის მოცულობა	<i>403</i>	<i>503</i>	<i>123</i>	

4. მონაცემები მარკირებული მრავალი ხე-ტყის (მორის) შესახებ:

N	მორების ტიპი	1	2	3	4	5	6	7	8	
1	ფორმის ნომერი	<i>[Handwritten scribble]</i>								
2	ჯიშის	<i>[Handwritten scribble]</i>								
3	მორების სიგრძე (მ)	<i>[Handwritten scribble]</i>								
	დაიშვება მრავლობის შესახებ	<i>[Handwritten scribble]</i>								
	წილი (მ)	<i>[Handwritten scribble]</i>								
4	მორის მოცულობა	<i>[Handwritten scribble]</i>								
5	მორების რაოდენობა	<i>[Handwritten scribble]</i>								
6	ფორმის ნომერი	<i>[Handwritten scribble]</i>								
7	ჯიშის	<i>[Handwritten scribble]</i>								
8	მორების სიგრძე (მ)	<i>[Handwritten scribble]</i>								
	დაიშვება მრავლობის შესახებ	<i>[Handwritten scribble]</i>								
	წილი (მ)	<i>[Handwritten scribble]</i>								
9	მორის მოცულობა	<i>[Handwritten scribble]</i>								

5. დამზადების ადგილი: *სსიპ ვაზისფენი სოფ. სარგისი*
 ტყეების №

6. სატრანსპორტო საშუალება: *სავალი CC 7104C*
 სატრანსპორტო საშუალების ნომერი

7. დანიშნულების ადგილი: *სსიპ ვაზისფენი სოფ. სარგისი*
 ხე-ტყის ნომერი

8. ხე-ტყის გადაშინდავი პირი: *სსიპ ვაზისფენი სოფ. სარგისი*
 ხე-ტყის ნომერი

9. დოკუმენტის შევსების დრო და თარიღი: *17 სთ 13 წთ 17 თებერვალი 2024წ*

10. დოკუმენტის შევსებაზე პასუხისმგებელი პირის სახელი: *ვახაგუშვილი გვარამი*

თანამდებობა: *სსიპ ვაზისფენი სოფ. სარგისი*
 ხელმოწერა: *[Signature]*

დამზადებულია შპს კაბადონი+
 დასკვნის სხვა ვარიანტის სატყეო სააგენტო
 ხე-ტყის შეფასებისათვის 20 01-5683

ხმ-ტყის წარმოშობის დოკუმენტი
№ 1000902194

1. ხე-ტყის მფლობელადგ *ქ. ვაჭანიანი ლეო ხაჭავაძე*
ს/გ 209178381

2. დოკუმენტის გაცემის საფუძველი: *ქ. ვაჭანიანი ლეო ხაჭავაძის ს/გ №11/2921*
ს/გ-ის მფლობელის მოწმობის დაკარგვის მოტივით 01.01.2024წ.

3. მონაცემები (არამარკირებული) ხე-ტყის მოცულობისა და ჯიშის შესახებ:

1	ჯიშის დასახელება	<i>პიჩხა</i>	<i>პიჩხა</i>	<i>2</i>	<i>2</i>
2	ხე-ტყის მოცულობა	<i>803</i>	<i>203</i>		

4. მონაცემები მარკირებული მრგვალი ხე-ტყის (მორის) შესახებ:

№	მორების რაოდენობა	1										
		1	2	3	4	5	6	7	8			
1	ფორმის ნომერი	<i>(Crossed out)</i>										
2	ჯიში											
3	მორების სიგრძე, დიამეტრი, მოცულობის მახასიათებელი									სიგრძე (მ)	შესვლი (სმ)	წონილი (სმ)
	4									მორის მოცულობა		
	10	მორების რაოდენობა	1	2	3	4	5	6	7	8		
1	ფორმის ნომერი	<i>(Crossed out)</i>										
2	ჯიში											
3	მორების სიგრძე, დიამეტრი, მოცულობის მახასიათებელი									სიგრძე (მ)	შესვლი (სმ)	წონილი (სმ)
	4									მორის მოცულობა		
	10	მორების რაოდენობა	1	2	3	4	5	6	7	8		

5. დასახელების ადგილი: *ქ. ვაჭანიანი ლეო ხაჭავაძის მფლობელობა*
ქ. ვაჭანიანი ლეო ხაჭავაძის მფლობელობა
ბუჩქნარის №

6. სატრანსპორტო საშუალება: *ვანოვა 5C 17332*
სატრანსპორტო ნომერი

7. დანიშნულების ადგილი: *ქ. ვაჭანიანი ლეო ხაჭავაძის მფლობელობა*
ს/გ № 003-000-000017
ს/გ-ის ნომერი

8. ხე-ტყის გადამხდავი პირი: *ლევან ქიქოძე*
ს/გ № 16001010013
ს/გ-ის მფლობელის მოწმობის ნომერი

9. დოკუმენტის შევსების დრო და თარიღი: *16 სექ 00 წწ "17" სექტემბერი 2024წ.*

10. დოკუმენტის შევსებაზე პასუხისმგებელი პირის სახელი *ლევან ქიქოძე* გვარი *ქიქოძის*
თანამდებობა *ფინანს-მართვის ხელმძღვანელი*
ს/გ-ის მფლობელის მოწმობის ნომერი

ხელმოწერა *ლევან ქიქოძე*

დაამუშავდა: შპს კადასტრი
დასკვათ: სსიპ ქვემო ქართლი სახელმწიფო სააგენტო
საბჭო-ს რეგისტრაციის № 01-5683

**Annex 10: Autumn Fish Monitoring Report for River Khadistiskali and Aragvi River
(Sample Report)**

Kvesheti-Kobi Road Project

Ichthyological Monitoring Report

20 November 2024

Prepared by Ichthyologist:
Giorgi Eptashvili

Tbilisi

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1. Introduction

This report presents the results of the ichthyological monitoring carried out on the Khadistskali River in Dusheti municipality, which took place on November 20, 2024. The study area included the Khadistskali River, in the project area of Kvesheti-Kobi Road. The Khadistskali River is left tributary of the Tetri (Mtiuleti) Aragvi River. The mentioned river is characterized by fast flow and oxygen-rich water, which is a natural habitat for some fish species, including Caspian trout – *Salmo caspius* Kessler, 1877. According to previous studies (EIA document) and summer monitoring results, several fish species are common in the Khadistskali River (Tab. 2.3). Accordingly, the purpose of the field monitoring was to study fish diversity in the river and to assess the impact of the ongoing construction of the road on the ichthyofauna and fish habitats and also, to verify the available information.

2. Methods and Results of Ichthyological Research

On the Khadastskali River, ichthyological research was conducted at six study points (Tab. 2.1), which are located from the confluence of the Khadistskali – Tetri Aragvi rivers to the village Tskere (see. Situational chart. 2.1). A frame net and electro fishing device were used during the study. Electric fishing in Georgia is regulated by the Government Resolution N 423 (2013), which states that use of electro fishing equipment for the scientific studies is allowed if the appropriateness of fishing with a specific type of electrical equipment (electrofishing device that does not harm the fish) is justified and also, the safety of using a specific type of electrical equipment is substantiated and its description is presented. Also, during the field work, we were guided by the order of the Minister of Environmental Protection of Georgia No. 21 on the approval of fishing rules for scientific research purposes.

The caught material was identified and photographed in the field, after which all fish individuals were returned to the river (catch-and-release principle).

Fishes were examined in the field using standard methods of morphological research in ichthyology. In particular, the following parameters were measured:

- A) Total length;
- B) Standard length;
- C) Head length;
- D) Eye diameter;
- E) Number of scales in lateral line;

F) The number of rays in the dorsal fin;

G) The number of rays in the anal fin;

H) Greatest height;

I) Smallest height; (Kottelat & Freyhof 2007).

In total, up to 5 individuals of one fish species were recorded within the scope of the research (Tab. 2.2). At each study location, a 100 to 200 meter-long section of the river was studied. The research continued throughout the day.

Situational Chart 2.1. Kvesheti-Kobi Road project area. Research points are marked in yellow.



Table 2.1. Observation points selected in the research area of the Khadistskali River

N	X	Y	Altitude	Date
Point 1	461880.82 m E	4702954.24 m N	1820	20/11/2024
Point 2	461260.92 m E	4700330.79 m N	1557	20/11/2024
Point 3	461150.24 m E	4699365.16 m N	1491	20/11/2024
Point 4	462419.61 m E	4698202.97 m N	1401	20/11/2024
Point 5	462907.40 m E	4697893.18 m N	1360	20/11/2024
Point 6	463195.62 m E	4697578.80 m N	1337	20/11/2024

Table 2.2. Fish species and their quantity in the Khadistskali River according to research points

N	Caspian Trout - <i>Salmo caspius</i>	X	Y	Date
1	-	461880.82 m E	4702954.24 m N	20/11/2024
2	-	461260.92 m E	4700330.79 m N	20/11/2024
3	-	461150.24 m E	4699365.16 m N	20/11/2024
4	3	462419.61 m E	4698202.97 m N	20/11/2024
5	2	462907.40 m E	4697893.18 m N	20/11/2024
6	-	463195.62 m E	4697578.80 m N	20/11/2024

The first fishing attempt was carried out near the Tskere village (Fig. 2.1) (coordinates: X - 461880.82 - Y - 4702954.24). No trout were found in this location. The river was very clean and transparent at this section. Below this point, a bridge (N 6) is under construction, which periodically causes the river to become muddy.



Second fishing attempt carried out near the bridge (Fig. 2.2). On this section, small unnamed stream joins Khadistskali River from the left side, which has waterfall (Fig. 2.3) (coordinate: X – 461260.92 – Y - 4700330.79). For the reason mentioned above, the river in this section was muddy. Neither fish nor macroinvertebrate organisms were observed in this location.



Figure 2.3. Left unnamed tributary of the Khadistskali River with waterfall, second fishing point.



Figure 2.4. Placement area of bridge (N 3), third fishing point.

A third fishing attempt was carried out in the area of the project bridge (N 3) where a temporary passage is arranged over the river for construction works (Fig. 2.4) (coordinate: X - 461150.24 - Y - 4699365.16). No fish were observed in this section.



Figure 2.5. River at the fourth survey point by 11 A.M.



Figure 2.6. River at the fourth survey point by 12 A.M.

At the fourth fishing point (Fig. 2.5 & 2.6) (coordinate: X – 462419.61 – Y - 4698202.97), 3 adult individuals of Caspian trout – *Salmo caspius* were seen (Fig. 2.7). After morphological research, all of them were returned to the river (Fig. 2.8). It is noteworthy that at the time of the survey, the river was clean by 11 a.m. (Fig. 2.5). However, in about 1 hour, its condition deteriorated sharply and became muddy (Fig. 2.6), which is likely caused by ongoing construction works.



Figure 2.7. Caspian trout – *Salmo caspius*, fourth fishing point.



Figure 2.8. Releasing trout into the river.

Fifth fishing point is located near the village Bedoni (Fig. 2.9.) where two juvenile trout were seen during the survey (Fig. 2.10).



Figure 2.9. The Khadistskali River near village Bedoni, fifth fishing point.



Figure 2.10. Juvenile trout from the fifth fishing point.

Sixth fishing point is located near the confluence of the Khadistskali – Tetri Aragvi rivers (Fig. 2.11 & 2.12). No fish were observed at this point.



Table 2.3. Fishes of the Khadistskali River and their protection statuses in the project area of influence

N	Common name	Scientific name	IUCN	RLG	Fishes of the Khadistskali River	Species observed during the survey
I	Caspian trout	<i>Salmo caspius</i> Kessler, 1877	NE	VU	✓	✓

2	Kura spirlin	<i>Alburnoides eichwaldii</i> (De Filippi, 1863)	LC	NE	√	
3	Khramulya	<i>Capoeta capoeta</i> (Güldenstädt, 1773)	LC	NE	√	
4	Kura barbel	<i>Barbus cyri</i> De Filippi, 1865	NE	NE	√	
5	Kura chub	<i>Squalius agdamicus</i> Kamensky, 1901	NE	NE	√	
IUCN - The categories are formulated as follows:						
EX - Extinct; EW - Extinct in the Wild; CR – Critically Endangered; EN – Endangered; VU – Vulnerable; NT – Near Threatened; LC – Least Concern; DD – Data Deficient; NE – Not Evaluated						

3. Conclusion & Recommendations

It should be noted that in the Kvesheti-Kobi Road project area, the Caspian trout – *Salmo caspius* observed during the survey, is widely distributed in the upper basin of the Tetri Aragvi River and its tributaries. In recent years, several field works were carried out in the mentioned river basin, where the trout was recorded. Most likely, trout lives in the project area throughout the year and spawning here. During summer monitoring, Kura spiralin – *Alburnoides eichwaldii* was also observed in the project area which was not seen this time.

In general, the Khadistskali River is poor in terms of fish species diversity and population density.

Construction works of mentioned road are in active phase. Periodically, there is muddy water in the river bed, which was also observed during the survey. Consequently, the anthropogenic pressure on the Khadistskali River and its ichthyofauna is still high. Field monitoring has shown that during the late autumn, trout are found in the middle and lower sections of the river. At the headwaters, near the Tskere, where the water is the cleanest, the trout has not been observed. The reason for this may be that the river below the Tskere is mostly muddy and also, temporary water-conducting pipes (Fig. 2.4) hinder the movement of trout in the river.

In order to reduce the impact on the Khadistskali ichthyofauna, it is important to take the following measures:

- In the process of construction works in the river bed, appropriate measures should be taken to prevent significant damage to the river bed, which will worsen the existing ecological conditions and fish habitats;
- During construction works, waste should not be placed in the river bed and on the banks;
- During construction works, waste should not be dumped / spilled into the river. Also, the river bed must be cleaned from the waste. Materials must be located where there isn't a risk of them being washed into waterways or drains. Cover up all drains to prevent waste from ending up in the water. The road and footpath must be kept clean to the site at all times.
- During the construction of bridge piers, the discharge of muddy water into the river should be minimized as much as possible.
- All construction works must be carried out in full compliance with building regulations and safety requirements;

Further research and monitoring in other seasons will be important to collect complete data on the ichthyofauna distributed in the project area, after which it will be possible to assess the negative impact caused by the construction and operation of the road and to develop appropriate mitigating measures.

4. References

1. Kottelat, M. & Freyhof, J. (2007). Handbook of European freshwater fishes. Berlin, Germany: Kottelat, Cornol and Freyhof.
2. Kuljanishvili, T., Epitashvili, G., Freyhof, J., Japoshvili, B., Kalous, L., Levin, B., Mustafayev, N., Ibrahimov, S., Pipoyan, S. & Mumladze, L. (2020). Checklist of the freshwater fishes of Armenia, Azerbaijan and Georgia. *Journal of Applied Ichthyology*, 36 (4): 501-514.
3. Order of the Minister of Environmental Protection of Georgia No. 21 on the approval of fishing rules for scientific research purposes - <https://matsne.gov.ge/en/document/view/1493693?publication=0>
4. Regarding the approval of the technical regulation of fishing and protection of fish stock - <https://matsne.gov.ge/en/document/view/2187155?publication=0>

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ილიას სახელმწიფო უნივერსიტეტი
ILIA STATE UNIVERSITY

მაგისტრის დიპლომი
MASTER'S DIPLOMA

ISU № 001373



საბუნებისმეტყველო მეცნიერებებისა და საინჟინრო ფაკულტეტის
2015 წლის 30 ივლისის №9 გადაწყვეტილებით
By decision №9 of the School of Natural Sciences and Engineering
on this 30th day of July, 2015

გიორგი ეპიტაშვილს
დაბადებული 15.05.1991
Giorgi Epitashvili
Born on 15.05.1991

მეცნიერება
მეცნიერების მაგისტრის აკადემიური ხარისხი
ბუნებათმცოდნეობაში
შასაც ვადასტურებთ უნივერსიტეტის ბეჭდით და ჩვენი ხელმოწერებით
was conferred

**THE DEGREE OF MASTER OF
SCIENCE IN NATURAL RESOURCES**

in witness thereof our signatures and the seal of the University are affixed

გიგა ჯედანია
Giga Zedania

რექტორი
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Date 07.12.2015