

Post-Construction Environmental Audit Report

Attachment 1

Loan Number: 2655-GEO (SF)

July-December, 2017

GEORGIA: GEORGIAN SUSTAINABLE URBAN TRANSPORT INVESTMENT PROGRAM, Tranche 1

(Financed by the Asian Development Bank)

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December, 2017

Post-Construction Environmental Audit Report

ABBREVIATIONS

ADB	Asian Development Bank
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EIP	Environmental Impact Permit
EMP	Environmental Management Plan
EPSM	Engineering Procurement and Construction Management
GoG	Government of Georgia
SUTIP	Georgian Sustainable Urban Transport Investment Program
IA	Implementing Agency
IEE	Initial Environmental Examination
MDF	Municipal Development Fund
MFF	Multi-tranche Financing Facility
MoENRP	Ministry of Environmental and Natural Resources Protection
MoRDI	Ministry of Regional Development & Infrastructure
SSEMP	Site-Specific Environmental Management Plan

Post-Construction Environmental Audit Report

TABLE OF CONTENTS

1. PART I. INTRODUCTION	4
1.1. GENERAL INFORMATION ABOUT THE PROGRAM/PROJECT	4
1.1.1 Program Background	4
1.1.2 Program Area and project background.....	4
1.2. IMPLEMENTED CONSTRUCTION ACTIVITIES AND INSTALLATION WORKS	5
1.2.1 Civil Works	5
2. PART II: PROJECT ORGANIZATION AND ENVIRONMENTAL MANAGEMENT TEAM	8
2.1. AGENCIES INVOLVED IN INVESTMENT PROGRAM IMPLEMENTATION	8
2.2. RELATIONSHIP WITH CONTRACTORS, OWNER, LENDER ETC.	8
3. PART III: ENVIRONMENTAL AUDIT. GOALS AND METHODOLOGY	10
3.1. AUDIT GOALS AND OBJETIVES	10
3.2. METHODOLOGY	10
4. PART IV: PROJECT SITE ENVIRONMENTAL AUDIT AND FINDINGS	11
4.1. ENVIRONMENTAL MANAGEMENT PLANS.....	11
4.2. SITE INSPECTION AND AUDITS	12
5. PART V: CONCLUSIONS AND RECOMMENDATIONS.....	23
A N N E X E S.....	24
ANNEX 1: POST CONSTRUCTION ENVIRONMENTAL AUDIT CHECKLIST.....	25

Post-Construction Environmental Audit Report

1. PART I. INTRODUCTION

1.1. General information about the program/project

1.1.1 Program Background

1. Upgrading and improvement of local transport and transport-related infrastructure plays a significant role in the development of Georgia infrastructure. To this effect a number of important activities have been implemented and financed from the budget of Georgia and from other sources. Recently several significant programs, financed through state budget, loans and grants, have been implemented with this regard.
2. On 05 August, 2010 MFF - Sustainable Urban Transport Investment Program Tranche 1 Loan and Project agreements were signed between Georgia and Asian Development Bank. MFF-Sustainable Urban Transport Investment Program – Tranche 1 (SUTIP T1) includes (i) Transport Infrastructure Improvement; (ii) Institutional Capacity Development and (iii) Project Management Facility components.
3. The program will provide efficient, reliable and affordable urban transport infrastructure and services, thereby increase economic growth potential and competitiveness of urban communities, and improve livelihoods of over 1.5 million people (approx. 35% of Georgian population). The program will also: (I) improve urban, environment and communities' access to economic opportunities and to public and social services; (II) promote efficient and sustainable urban transportation; and (III) generate income and employment opportunities.
4. The environment classification for Tranche 1 is Environmental Category B, as all subprojects under SUTIP 1 were classified as category B which will not have significant irreversible or permanent negative environmental impacts during or after construction and requires preparation of Initial Environmental Examination (IEE). The environmental categorization of subprojects was conducted using ADB's Safeguard Policy Statement (2009). Required environmental assessments of sub-projects (SPs) are conducted and IEEs are prepared in accordance with Environmental Assessment and Review Framework approved for SUTIP 1 in May, 2010 and updated in April, 2015.

1.1.2 Program Area and project background

5. Sustainable Urban Transport Investment program Tranche 1 includes several projects in the different municipalities of Georgia. Program aims efficient, reliable and affordable urban infrastructure development and service improvement. In effect, urban transport service will be improved, and the level of different types of public and social services will be increased.
6. Part of the loan was for financing the Tbilisi Metro Line 2 Extension Project and the Creation of the University Station. The Implementing Agency for the Tbilisi Metro line 2 Extension Project is the Municipal Development Fund of Georgia (MDF).

Post-Construction Environmental Audit Report

7. Euroestudios was awarded to date July 11, 2012, the Contract: Engineering, Procurement, Construction Management and Supervision for the Extension of Tbilisi Metro Line 2 and Creation of University Station - SUTIP1/C/QCBS/4, separated into two stages: Stage I - Preparation of Detailed Design and Bidding Documentation, produced by Euroestudios and approved on March 31, 2014. Stage II - Construction Management and Supervision for the Extension of the Tbilisi Metro Line 2 and Creation of University Station Project.
8. The Construction Works of the Extension of Tbilisi Metro Line 2 and Creation of University Station, Contract No: P42414-SUTIP1-ICB-1.05-1, were awarded to the Contractor: Joint Venture of Cobra Instalaciones y Servicios, S.A., Spain, Lead partner, and Assignia Infraestructuras, S.A. Spain. The agreement was signed on March 26, 2015, between LEPL Municipal Development Fund of Georgia ("the Employer"), and the Joint Venture of Cobra Instalaciones y Servicios, S.A. Spain, Lead partner, with Assignia Infraestructuras, S.A. Spain ("the Contractor"). The total budget for this Contract was: GEL 83,000,670.45 (Eighty three million six hundred seventy and 45/100 Georgian Lari).
9. The Commencement Date of Works was established, on June 20, 2015. Some issues to get the permission to access the Site from the authorities delayed the effective access to and possession of the Site. Time for Completion was expected to be 630 days / Defects Notification Period 730 days.
10. The expected Completion Date by the Contract was March 11, 2017. Due to the delay in getting the Right of Access to the Site that prevented the effective Commencement Date of the Works, it was approved an Extension of Time of 33 days until April 13, 2017. However, due to some requests of the Tbilisi Transport Company (TTC), some modifications of the Project and some delays not attributable to the Contractor it was required to extend the Contract several times until the Final Completion Date of the Works that was set as September 05, 2017.
11. The Taking Over of the Works has been signed on September 05, 2017, after confirming that the Contractor has completed all relevant duties and obligations under the Contract, except some minor outstanding works and defects which did not substantially affect the use of the Works for their intended purpose and that have been completed and resolved during the month of September 2017.
12. Finally, the official Opening Ceremony has been held on October 16, 2017. After that, operations in the metro line have been started successfully.

1.2. Implemented Construction activities and installation works

1.2.1 Civil Works

13. The main executed Civil Works under this Project have been the following:
 - **Demolition Works**
 - **Earthworks**
 - **Concrete Structure:**
 - Pedestrian Accesses
 - Concourse Hall
 - Platform
 - Pump Sump 2

Post-Construction Environmental Audit Report

- Substation
- Technical Rooms
- Emergency Exit
- Unfinished or damaged Tunnel Vaults
- Counter Vaults
- Foundation for Escalators

- **Steel Structure:**
 - Structural Beams and Columns
 - Canopies of Pedestrian Accesses
 - Emergency Exit Stairs

- **Waterproofing and drainage – Civil Works**

- **Landscaping Works**
 - Urbanization works in upper station: pavements, road signs and road marking.
 - Underground Civil Works:
 - Injections
 - Lining
 - Anchorages
 - Cleaning and repair of Delisi-Vazha-Pshavela right tunnel

- **Superstructure:**
 - Sewage Network
 - Drinking water network
 - Street lighting network
 - Electricity network
 - Communication network.

- **Architecture Works:**
 - **Masonry and Cladding**
 - Flooring: tile floors, technical floor, epoxy flooring
 - Wall Finishes: VITREX panels, gypsum board walls, painted walls
 - Ceilings: VITREX panels, false ceilings, painted ceilings
 - Carpentry
 - Metal Works

14. The two most critical activities related to the Civil Works during the construction period were the injections works, especially in the area of cast-iron segments in both tunnels and the cleaning and treatment of metal segments, where the Contractor faced many problems and that incurred in remarkable delays, thus interfering and delaying subsequent activities, as installations. However, both activities were mainly completed in April 2017.

15. Additionally, another event that is worth to mention is that the Emergency Exit that according to the Project was planned to be executed under Vazha-Pshavela Boulevard has been modified. The new

Post-Construction Environmental Audit Report

solution for the Emergency Exit that has been executed has used the existing ventilation tunnel and the shaft N51, adapting them for both ventilation and emergency exit.

1.2.2. Installation works

16. The main executed Installation Works under this Project have been the following:

- **Electromechanical Installations:**
 - Escalators
 - Electrical System
 - Communication System
 - Air Conditioning and Ventilation
 - Plumbing System
 - Fire Fighting System
 - Fire Detection System
 - Control and Management of Facilities
 - Emergency Signaling
- **Waterproofing and Drainage – Installation Works**
 - Pump Sump 1 (Dead End Chamber)
 - Pump Sump 2 (University Station)
 - Pump Sump 3 (Upper Station)
 - Pump Sump 4 (Electrical Substation)
- **Electric Substation:**
 - Electrical Equipment
 - Cables and Ducting
 - Command and Control
 - HV Line
- **Communication and Signaling:**
 - Command and Control Panel
 - Interlocking and Blocking
 - Signals
 - Track Circuits and ATP
 - Cabins and Connection Boxes
 - Track Mechanism
 - Cables and Connections
 - Power Supply
 - Fixed Communications:
 - SDH Communications Equipment
 - Optical Fiber Network
 - Operation Telephony
 - Radio Communications System (TETRA System)
 - Chronometry
 - Electrification – Contract Rail

Post-Construction Environmental Audit Report

2. PART II: PROJECT ORGANIZATION AND ENVIRONMENTAL MANAGEMENT TEAM

2.1. Agencies involved in investment program implementation

17. The MDF is the projects' executing, implementing and disbursing agency. MDF has overall responsibility for the projects' management - including environmental, planning and supervision. New Executive Director of MDF Galaktion Buadze was assigned on November 30, 2016 by the Georgian Prime Minister's Decree.
18. MDF is responsible for general implementation of all safeguards tasks and guarantee that potential adverse environmental impacts arising from the Projects are minimized by implementing mitigation measures presented in the environmental impact assessment ("EIA") or Initial Environmental Examination (IEE), as applicable.
19. Management of safeguards issues is carried out by the MDF through Environmental and Resettlement Unit, established in October 2014. From that time, number of Environmental and Resettlement team members has increased from 6 to 13 and currently consists of: Head of Unit, 4 environmental safeguards specialists, one social and gender specialist, 5 resettlement specialists. There are also two ADB's individual consultants – one on environmental safeguards and one on resettlement issues.
20. The Environmental and Resettlement Unit is involved in addressing of environmental and social safeguard issues throughout the entire projects' cycles. The Environmental and Social Specialists of the MDF, are responsible for management of the environmental and social aspects associated with development of all donor funded projects for which MDF is the responsible Executing Agency (EA). Local Environmental Consultant –Nino Nadashvili, was recruited in September 2015 and designated to supervise ADB projects, review the IEEs/EIAs, EMPs, and SSEMPs of projects and carry out supervision of the construction performance based on approved EMPs, EIAs, and environmental standards in accordance with ADB "Safeguard Policy Statement" (2009) requirements' and acting Georgian Legislation.

2.2. Relationship with contractors, owner, lender etc.

21. The main institutions involved in IEEs/EMPs/SSEMPs implementation and monitoring, are the executing agency (EA) - MDF, the Supervision Consultants' (SC), the Construction Contractors' and to a lesser extent the Ministry of Environmental and Natural Resources Protection and Municipal Authorities. EA (MDF) and SCs are responsible for ensuring monitoring of the projects' implementation at the construction stage. Ministry of Environmental and Natural Resources Protection has the authority for periodic audits but should not be considered as a party responsible for monitoring according to this IEE and EMPs.
22. As it was mentioned above, MDF is responsible for general implementation of all safeguards tasks. EA (MDF) and SC (Euroestudios) were responsible for ensuring monitoring of the project implementation at the construction stage, while Tbilisi Metro - for monitoring at the metro operation stage.
23. MDF, through local environmental consultant, ensured availability of all environmental information and facilitated environmental supervision of the project.

Post-Construction Environmental Audit Report

24. The supervisor company (SC) of works commissioned by MDF was responsible to establish strong field presence in the Project area and keep a close eye on the course of works. Along with ensuring consistency with the design and ensuring quality of works, the supervisor is mandated to track implementation of EMP by the contractor and reveal any deviations from the prescribed actions.
25. The SC had a national environmental specialist –Sandro Abzianidze and an international environmental expert – Paula Fernandez to assist the EA supervise and monitor implementation of the EMP during construction activities.
26. A Non-Compliance Notice were issued to the contractor if the SC required action to be taken. The contractor was required to prepare a corrective action plan which was to be implemented by a date agreed with the SC.
27. Construction Supervision Company was preparing quarterly progress reports which covered the implementation of the SSEMP, discrepancies from the SSEMP and list all HSE relevant incidents and accidents that occur during the implementation; Submits periodic reports based on the monitoring data and laboratory analysis.
28. Construction contractor was obligated to follow EMP and good construction practice. In order to meet this obligation, a contractor had established environmental management team and procedures. The Contractor had appointed a full time Environmental Manager (EM) – Natia Karkuzaeva which was a senior member of the construction management team based on site for the duration of the contract.
29. Key responsibilities of the Contractor were to prepare the Site-Specific Environmental Management Plan (SEMP) for approval by the Employer (EA) prior to the Contractors taking possession of the construction site; Ensure that the SSEMP is implemented effectively throughout the construction period; Carry out the monitoring and mitigation measures set forth in the IEE/EMP/SSEMP; Establish an operational system for managing environmental impacts; Allocate the budget required to ensure that such measures are carried out. Construction contractor was responsible to prepare monthly progress reports on SSEMP implementation, which should contain information on the main types of activities carried out during the reporting period, status of any clearances/permits/licenses which were required for carrying out such activities, mitigation measures applied, and any environmental issues that have emerged in relations with suppliers, local authorities, affected communities, etc.
30. The Contractor was submitting reports of the carrying out of such measures to the employer on a monthly basis; Coordinating community relations issues through acting as the Contractor's community relations focal point (proactive community consultation, complaints investigation and grievance resolution); Establishing and maintaining site records of:
 - Weekly site inspections using check-lists based on SEMP;
 - Environmental accidents/incidents including resolution activities;
 - Environmental monitoring data;
 - Non-compliance notifications issued by the SC;
 - Corrective action plans issued to the SC in response to non-compliance notices;
 - Community relations activities including maintaining complaints register;

Post-Construction Environmental Audit Report

- Monitoring reports;
- Routine reporting of SEMP compliance and community liaison activities;
- Adhoc reporting to the Employer's Engineer of environmental incidents/spillages including actions taken to resolve issues.

3. PART III: ENVIRONMENTAL AUDIT. GOALS AND METHODOLOGY

3.1. Audit goals and objectives

31. This Post-Construction Environmental Audit Report is being prepared by Environmental Specialists of Supervision Company (Euorstudios) – Paula Fernandez (international) and Alexandre Abzianidze (National), with cooperation and assistance of MDF's local environmental Consultant Nino Nadashvili. The report was prepared in order to comply with the 2009 ADB's SPS and Georgian legislation, including Safeguards Requirement and aims to identify past and present concerns from the production and business activities of Project Company that related to impacts on environment. The specific objectives of the audit can be summarized as follows:

- Determine and verify whether all environmental requirements, criteria and constraints, prescribed in IEE, SEMP and the Concessionaire's Environmental Policy have been adhered to during the construction phase.
- Determine and verify whether the mitigation actions and rehabilitation requirements contained in the SEMP have been appropriate and successful to prevent or control environmental pollution and/or damage.
- Ensure that an appropriate environmental monitoring and control program exists to follow up on mitigation and rehabilitation works completed during the construction phase.
- Ensure that appropriate environmental monitoring and control program exists for monitoring of all environmental aspects during the operational phase.
- To identify any shortcomings in the SEMP and EMS system implemented during the construction phase and to recommend alterations to the EMS applicable to the operational phase.

3.2. Methodology

32. The compliance environmental audit has been done in several stages:

- **At stage one** so called desk-top audit was conducted and the available materials were studied. The following documents were studied and analyzed at the given stage:
 - Initial Environmental Examination (IEE) for the subprojects;
 - EMP/SSEMPs;
 - Monthly environmental monitoring reports prepared by CC; Quarterly Environmental Reports developed by the Supervision Consultant, Bi-Annual

Post-Construction Environmental Audit Report

- Environmental Monitoring Reports prepared by MDF's local environmental Consultant;
 - Records of environmental monitoring conducted by CC, SC and MDF. It should be noted that for the monitoring of air, noise, water and other parameters, during measurements, standards, provided by the Decree 297/N on "Approval of norms on environmental quality conditions" elaborated by the Minister of Labor, Health and Social Affairs of Georgia (16. 08. 2001) were used, as mentioned decree determines and approves quality norms of environmental conditions, in order to ensure the safe environment for human health.
 - Check of the non-compliances and their statuses.
- **At stage two**, meetings with the Project participants with different degrees of responsibility for meeting the environmental requirements and monitoring were held. The meetings were organized with the following environmental specialist:
- Environmental Specialist of the CC;
 - Supervisor's environmental specialist;
 - MDF's environmental Consultant;
 - ADB's RETA environmental Consultant.
- **At stage three**, visit to the site and collection of evidences was accomplished.
- Environmental monitoring started immediately after the commencement of civil works. Environmental safeguard monitoring was performed as it was required in the SSEMP/EMP.

4. PART IV: PROJECT FINAL ENVIRONMENTAL AUDIT and FINDINGS

4.1. Environmental Management Plans

33. Following the award of the contract and prior to construction commencing the Contractor has reviewed the EMP and developed this into a detailed Site-Specific Environmental Management Plan (SSEMP) that amplifies the conditions established in the EMP that are specific for the project, the tasks involved and schedule of construction activities. The draft version of SSEMP was prepared by the Contractor and sent to Supervision Consultant (SC) for endorsement on 20.06.2015. SSEMP has been further reviewed and commented for improvement by the MDF's Local environmental Consultant and ADB RETA National Environmental Consultant. It was approved by PIU/MDF in September 2015. SSEMP document was sent to ADB as well, on October, 23, 2015, according to ADB requirement (Aid Memoire' (8 - 18 September 2015), Chapter IV. Follow-Up Actions, paragraph (xiv)). Table 1 below presents the information on statuses of managements' plans.

Post-Construction Environmental Audit Report

Table 1: Status of Management Plans

Management Plans	Status
1.SSEMP	Submitted, approved
2. Spoil disposal management plan	Has submitted as part of SSEMP of waste
3. Emergency Response Plan	Submitted, approved
4. Evacuation structure plan	Submitted, approved
5. Company Waste Management Plan (according to GEO legislation)	Submitted
6. SSEMP for wastes	Has been prepared by the Contractor and several times revised, approved
7. Information regarding Wastes demanded by the new Waste Code of Georgia	Prepared and submitted by the contractor

4.2. Site Audit

34. Final environmental audit was conducted by Supervision Company's International Environmental Specialist Paula Fernandez and Local environmental Specialist Alexandre Abzianidze, in July 2017.
35. Site inspections, conducted by above mentioned environmental stuff, have been implemented at the following areas: Emergency exit, Shaft 51, Shaft 50, inside the Tunnel (Platform, Cross over) outside the tunnel (Pedestrian passages 1,2,3,4) and the site camp territory as well. The following issues have been monitored:

➤ Camp Site

36. Buildings used for camp site and offices were existed at the territory (owner of the area and buildings located on it is the GOG- Ministry of Economy and Sustainable development), before project was started. They were not built by CC. Existing buildings were only renovated and repaired for the project use by CC and SC. That's why there was no need of demolishing them.
37. Currently all buildings are empty and no offices are existed there any more. Surrounding area is cleaned and no project related waste is remained there.

Post-Construction Environmental Audit Report



➤ Biodiversity and tree cutting

38. **Vegetation:** 2 ordinary trees have been cut according to the official permits from MoENRP. No more trees have been cut since July 2016: The change about taking advantage of the existing emergency exit, instead constructing a new one, avoided the cutting of 12 trees additionally. Picture below represents greenery activities implemented at the affected areas:



Post-Construction Environmental Audit Report



Picture 1. Vegetation and restoration of the affected areas

- 39. **Soil:** There was no top soil in the areas where the contractor had to work. These areas were already free of topsoil. Therefore, no measures were needed to be taken regarding soil protection.
- 40. **Fauna:** Fauna values in the project area were very low. No significant impacts were identified to a range of common urban fauna species (mostly birds).
- 41. Limitation of the dust and emissions from construction machinery/vehicles especially near street trees and the parkland/green recreation area in the middle of Vaja Pshavela were used to control and reduce risks and hazards.

Post-Construction Environmental Audit Report

42. According to the IEE, a wintering colony of the Greater Horseshoe Bat (*Rhinolophus ferrumequinum*) consisting of up to 500 individuals was found in the tunnel, from the University station side in October 2012. This species is listed as “Least Concern” on the IUCN Global Red List and it is not included in the Red List of Georgia. It is however considered as “Near Threatened” in the European regional assessment.
43. Works were scheduled to start in 2015 and in August 2015 when works did start, no bat colony was seen or detected by CC in the tunnel before and during construction activities. It was unclear as to whether the roost had been permanently abandoned or as it is mentioned in IEE, the roost was only a wintering colony and bats had left the tunnel when winter has finished. For whichever reason, when construction activities started, there was no bat colony in the tunnel, no direct harm occurred to any bats and no specific mitigation measures were required to protect this species. If the bats had returned during a further winter period, due to the noise, light and human presence, this would have caused the bats to abandon the tunnel and search for an alternative roost site to spend the winter time.
44. Given the historic presence of bats within the project site a walk over survey was undertaken within the tunnel network by zoologist (bat specialist) on December 7, 2017, to identify if any of the other tunnels are being used as a winter roost for bats.
45. No wintering colony was detected during the survey. Taking into consideration the fact that currently there are no favorable conditions for Horseshoe Bats (*Rhinolophus Ferrumequinum*) colony in the tunnel network – high temperature, noise and vibration caused by operation of metro line – existence of wintering colony in the tunnel is less probable.



Post-Construction Environmental Audit Report



Picture 2: Current situation in tunnels

➤ **Hazardous and Non-hazardous Waste and Spoils**

46. Construction works generate different types of wastes starting from garbage, recycle waste, household waste and construction and demolition debris, including, small quantities of hazardous waste generated mainly from the vehicle maintenance activities (liquid fuels, lubricants, hydraulic oils, chemicals and etc).
47. The most significant solid waste from the project were the construction and demolition debris, followed by spoil from excavations, which were removed from site by an approved waste management contractor.

Post-Construction Environmental Audit Report

48. Non-hazardous waste, household and solid waste were disposed to official dump site, particularly Gldani dump area by contractor “Cobra Assignia” and its sub-contractor – “Prime Concrete” Ltd., based on the contract signed by all parties (contractor, sub-contractor and solid waste company). According to the contract signed on 09.11.2015 Solid Waste Company of Georgia was serving contractor in two points (shaft 51 and shaft 50) twice a week;
49. Hazardous waste residuals such as oil, solvent, and materials used in oil spill cleanups and etc. were collected and stored on separate place with appropriate covered skips. Time to time, (approximately once in three month) it was passed to a licensed operator Company “Sarini”, which has the permit on operation of the hazardous waste. Contract N 25022016 with Company “Sarini” was signed in February, 2016.
50. All relevant Contracts with mentioned companies were presented in previous EMRs.
51. During inspection some construction related waste was identified at surrounding area of the Camp site.



52. This waste, as it was mentioned above, was removed from the area, after completion of the project.

➤ **Pollution**

53. Monitoring (air, groundwater, dust, vibration): Based on the contract 3/60 (between Contractor and National Environmental Agency) contractor requested to take monthly measurements of air, water and noise in different points. According to the results provided, the condition of site is acceptable.

➤ **Social affections**

54. No complaints have been raised and registered during the evolution of the works. The disturbances produced by the transit of heavy vehicles on the works was minimal to the community facilities.

➤ **Water quality**

55. The principal source of construction impacts on ground and water was related to the groundwater. As the project involved only very limited drilling works the main potential impact to these elements was that the underlying ground water and soils might be affected during the construction phase.

Post-Construction Environmental Audit Report

56. The contractor conducted the underground water chemical and microbiological tests periodically and was monitoring groundwater inflow if is necessary.

➤ **Cultural heritage**

57. No cultural affections have been detected.

➤ **Vibration**

According to IEE there is no requirement to perform vibration measurements, but CC took responsibility to measure it on a quarterly bases.

The following non-compliances were fully corrected

Date of submission	Description of Non-Compliance	Area	Corrective action required	Performance Date of Corrective actions
29.02.2016	There is the plenty of dust in the tunnel. No good ventilation, no working of the existing several fans during construction works.	Site working area	Additional fans to be provided especially in the tunnel and the operating are mandatory all of them all times when construction works are carrying out, PPE Equipment: (respirators, eye goggles).	Closed (The Contractor improved the situation fans are working, No Dust) ; response (S 92.1 Date: 14.04.2016



Post-Construction Environmental Audit Report

29.02.2016	Asbestos waste is dumped near the shaft 51, It seems the broken roof sheets and inside the tunnel some demolished asbestos pipes as well. No covering, no plastic bags packaging, no temporary designated secure place storage, no sign to identify as hazardous waste and free access for tampering by unauthorized persons.,.	Site working area	Appropriate PPE (Respirators (negative pressure, P100 equivalent particulate filter, half-face or full-face, overalls,), protective gloves, soap, using HEPA Vacuum , air filters, providing of 6-mil plastic bags for putting the asbestos wastes there and human resources (hired some qualified sub-contractor or performing the works by the trained competent people)	Closed (The Contractor removed the asbestos waste from the site as per hazardous wastes removal procedures (dated: 25.08.2016) provided (delivery act, photos). Response (S -162 date: 02.09.2016)
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Post-Construction Environmental Audit Report

30.03.2016	Spoil and stones were dumped on the pine tree located near the shaft 51, No tree protection there.	Near the shaft 51 area	Removing of the spoil and stones from the tree and make the tree proper protection. Contractor should see the Project Supervisor „Euroestudios” Ltd Biannual Environmental Monitoring Report (August-December 2015) Item 2.1.3 Vegetation and soil (recommendation to use tree physical protection).	Closed (The Contractor provided the physical protection method (by wooden planks, metal wires) ; response (S 0083.2 Date: 14.04.2016)



Post-Construction Environmental Audit Report

Affected Pine Tree!



30.03.2016

Mixed wastes (Construction, wood, empty cement bags, etc.) and spoil were dumped near the shaft 50 area and inside the tunnel as well. Nowadays they are removed but No any transfer Notes, No evidences to dispose on Gldani Municipality construction wastes landfill ...


Near the shaft 50 area and inside the tunnel as well

Contractor should provide the Wastes Transfer Notes, report with attached the wastes disposing photos.

Closed
(The Contractor provided the transfer notes; response S 0084.1 Date: 05.04.2016)



Post-Construction Environmental Audit Report

Date of submission	Description of Non-Compliance	Area	Corrective action required	Performance Date of Corrective actions
25.08.2016	Household wastes are scattered in the shaft 51 area, shaft 50 yard, near temporary facility for Contractor JV Cobra Assignia personnel located in 50 shaft yard.	Shaft 51 area, shaft 50 yard, near temporary facility for Contractor JV Cobra Assignia personnel located in 50 shaft yard.	Using of appropriate PPE: (respirators, Overalls, Protective gloves) Collecting, sorting, and putting into the waste containers for temporary disposal, providing of the housekeeping on the site. It is recommended to take one waste container from the site office territory and put near the temporary facility located in shaft 50 yard.	<u>CLOSED</u>
				

Post-Construction Environmental Audit Report

30.03.2017	Smoking in the tunnel. IT is strictly forbidden for security reasons. Violations are found in the tunnel and Pictures are attached for easier reference.	Inside the tunnel	Collecting the rest of cigarettes existed in the area. New detection of cigarettes in the area would involve the incomppliance of this requirement	<u>CLOSED</u>
06.04.2017	Small amounts of broken asbestos sheets pieces are scattered near shaft 51 and site camp storage area as well. No plastic bags packaging, no temporary designated secure place storage (as hazardous wastes), free access for tampering by project stakeholders personnel	Near shaft 51, and site camp storage area as well.	Proper collection, storage and removal	<u>CLOSED</u>

5. PART V: CONCLUSIONS AND RECOMMENDATIONS

58. All fixed non-compliances were managed and closed. No pending non-compliances have been identified.

Annexes

Post-Construction Environmental Audit Report

Annex 1: Post construction Environmental Audit Checklist 1

Required mitigation measures of enviromental impact	Measures implemented				Comment
	yes	partially	no	N/A	
Site territory fenced fully	x				The surface affected area totally fenced with a metal mesh.
Topsoil placed at original location				x	There was no need for this, there was hardly no mineral soil in the affected areas
Vegetation cover reinstated	x				The reinstatement works are accomplished satisfactorily.
Trees replanted as needed				x	Trees required were cut and compensated with revegetation
Construction waste and surplus/waste soil removed completely and disposed properly	x				The construction waste is completely was removed from the construction site. Non-compliance was closed.
Hazardous waste removed and disposed properly	x				The hazardous waste was removed. Non-compliance was closed.
Fuels and lubricants spills eliminated	x				Spills has been eliminated
Contractor equipment and machinery removed	x				The construction equipment and machinery was removed by the Contractor.

Post-Construction Environmental Audit Report

Demolition of camp site facilities			x		There was no need for demolishing of the camp site facilities as these buildings were existed on the territory before project starts.
All temporary facilities removed and cleaned up	x				
Streets with installed network reinstated to pre-construction or better conditions	x				The affected streets are fully and satisfactorily reinstated.
Post-Construction territory reinstated to pre-construction or better conditions	x				The site is fully and satisfactorily reinstated.

Post-Construction Environmental Audit Report

Post-Construction Environmental Audit Checklist 2

N	Activity	Impacts	Measure/s suggested as per	Check	Measures Implemented
1.	Project site use	Change of land cover, erosion resulting from the construction activities	Plantation and vegetation measures (trees, grass etc.) The trees that are not going to be cut should be protected. Less trees are going to be affected due to the change in the emergency exit.	During the construction period	Landscape was reinstated and area greeningg done. Trees were protected
		Cut trees and trees that need to be protected			
		Archaeological affections	Verified protocol for conducted excavation work, to ensure that any chance finds were recognized and measures were taken to ensure they are protected and conserved.	During the construction period	The measure suggested
2.	Demolition of not useful infrastructures	Exposure to Asbestos dust causes cancer	Asbestos containing roofing materials not broken, removed in sealed packages and disposed in designated sites (under control of PIU and supervision consultant)	During the construction period	Dismantled materials stored in designated areas.
			Other construction debris removed	During the construction period	The procedure for storage and carried removal of construction waste
3.	Machinery and earth movement	Air pollution Health and disturbance problems	Atmospheric air test, visual controls, checking for water spraying. noise level measurement at all sites, Use of a ventilation system Materials transported to site covered/ wetted down to reduce dust. monitored and upgraded to ensure air flows are always provided to the workplace,	During the construction period	All the measures suggested

Post-Construction Environmental Audit Report

			monitoring air flows for explosive gases and atmosphere contaminants regularly,		
		Vibrations and noise Health and disturbance problems	<p>Inspection at arrival of tools and machineries, noise measurement, used hearing protection (inside tunnels and shafts), silenced engines to achieve a noise level not exceeding LAeq 85 dbA,</p> <p>Monitoring by Georgia National Environmental Agency include on a quarterly basis Noise testing.</p>	During the construction period	All the measures suggested
		Possibility of disturbance of fauna (specially bats)	Monitoring of the presence of bats	During the construction period	No bats colonies have been found during and after the construction stages
		Traffic congestion and access problems	<p>Checked signs which are installed to control traffic to avoid traffic congestion at streets or near sites,</p> <p>Checked adequate lightening is provided at all sites and at road diversions.</p>		
4.	Waste management of the solid wastes (construction wastes including hazardous wastes, and domestic waste) including 4,250.00 m3 of different types of materials will be generated as a result of the demolition activities	<p>Waste accumulation, air and soil pollution</p> <p>Health problems for hazardous wastes</p>	<p>Collect and disposal all wastes at designated location. Separated solid waste into hazardous, non-hazardous and reusable waste streams and store temporarily on site in secure facilities with weatherproof flooring, security fencing and access control and drainage/wastewater collection system. All personnel was trained and instructed in waste management practices and procedures as a component of the environmental induction process, maintained all construction sites in a cleaner, tidy and safe condition,</p> <p>Separated hazardous wastes and stored temporarily on site in secure facilities with weather proof flooring, security fencing.</p>	During the construction period	Removal of construction waste and storage at designated area was implemented.

Post-Construction Environmental Audit Report

			Scrap metals properly stored to be sent to designated organization for recycling	During the construction period	Determined the storage place of the old metal structures and its procedure of utilization.
			Constructing Contractor shall collect all hazardous waste residuals, such as oil, solvent, material used in oil spill cleanups... and store them within appropriate covered skips, and pass it to a licensed operator, having environmental permit on operation of the hazardous wastes	During construction period and in case of accident	All the measures suggested
5.	Excavation works (5.247,99 m3)	Spoil generation, building stability impacts, damage to community facilities, historical and archaeological chance finds during excavation	Disposal of the spoils into a landfill (transfer notes provided by the contractor) Monitoring of settlements and damages, inspection of buildings and roads around construction sites	During the construction period	All the measures suggested
6.	Waterproofing and other works with the metal segments inside the tunnels	Possibility of water pollution	Use of materials as less toxic as possible, monitoring of the water quality	During the construction period	All the measures suggested
7.	Machinery movement outside the worksite	Traffic congestion and access problems	Providing sign advising road user that construction is in progress, employment flag persons to control traffic at the station sites for safety reasons when construction equipment is entering or leaving the work area, provide sufficient lighting at night within and in the vicinity of construction sites	During the construction period	All the measures suggested

Post-Construction Environmental Audit Report

UPPER STATION AND PEDESTRIAN ACCESSES



CONCOURSE HALL

Post-Construction Environmental Audit Report



PLATFORM

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TUNNELS & CROSSOVER

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OPENING CEREMONY (16.10.2017)



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