Biannual Environmental Monitoring Report

Loan Number: 3273-GEO (SF)

Reporting period: July-December, 2017

GEORGIA: GEORGIAN SUSTAINABLE URBAN TRANSPORT INVESTMENT PROGRAM - Tranche 4

(Financed by the Asian Development Bank)

Prepared by: Nino Nadashvili, Local Environmental Consultant for ADB projects
Environmental and Resettlement Unit, Municipal Development Fund (MDF)
Tbilisi, Georgia

Endorsed by: Elguja Kvantchilashvili, Acting Head of Environmental and Resettlement Unit
Municipal Development Fund (MDF)
Tbilisi, Georgia

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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

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1. PART I. INTRODUCTION

1.1. Preliminary Information

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. The Sustainable Urban Transport Investment Program (SUTIP) is financed by ADB under a multitranche financing facility (MFF), and is aimed at promoting a sustainable, integrated, socially-affordable and cost-efficient urban transport system in cities of Georgia, to energize the economy and improve the quality of life of citizens. Projects involve rehabilitation and repair of existing infrastructure (mainly roads and the underground railway), provision of new facilities (roads, tunnels, junctions, bridges, a Metro extension and etc) and capacity building.

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 detailed design of the revetment has been started on 2015 following the studies that have been necessary to carry on shifting from a "rigid" solution with groins to a flexible solution mainly based on beach nourishment. After a long process the solution has been approved on 2016. The detailed design was based on the bathymetry dated 2014 after checking that when the detailed design had started, not unexpected changes were occurred since that survey.

5. In the next two years the situation has changed sharply and with intensity that has been completely different form the experience of the last 15 years.

6. On May 2017, based on a specific order by MDF, Technital has presented a report on this extraordinary erosion trying to explain it and proposing the solution to adapt the revetment sections. The different positions of the coastline since 2004 that are presented hereafter have been taken from that report (see Fig. 1).

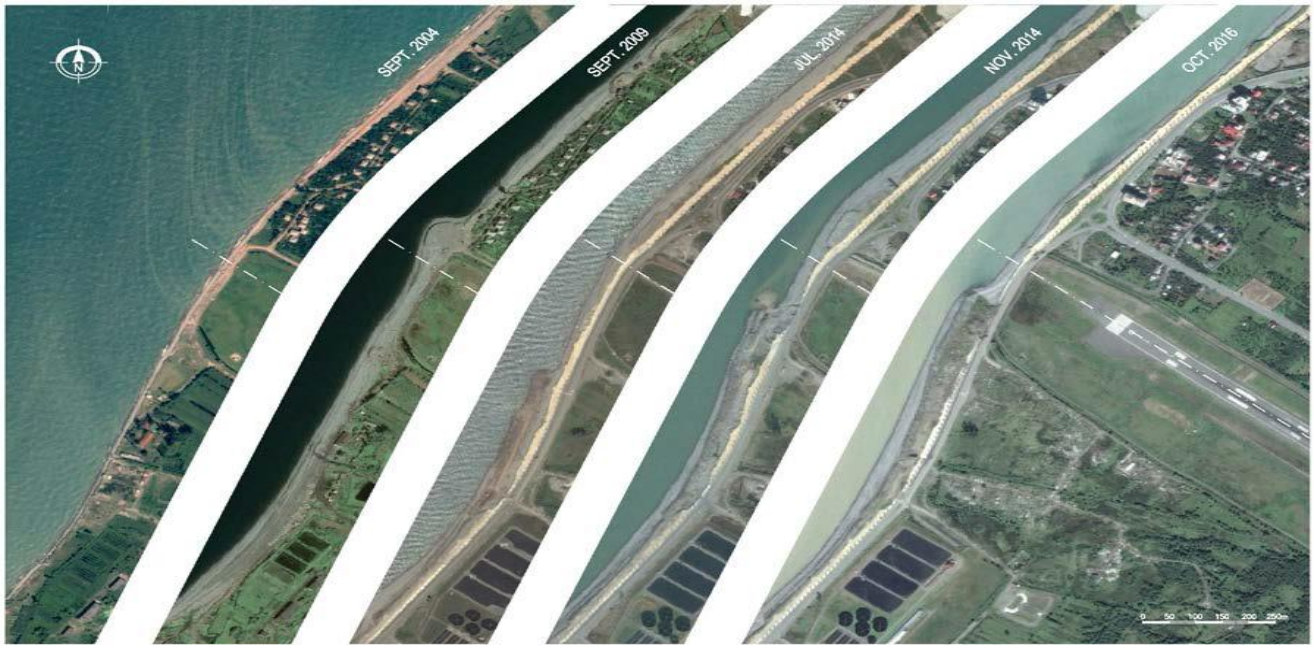


Figure 1.

7. SUTIP - Tranche 4 was developed as the government's response to the transportation problems in urban areas, which include large traffic volumes causing increasing delays, as a result of previous under-investment in infrastructure maintenance and expansion.

8. The MDF is the executing agency of the program, and is responsible for the general coordination and implementation of projects, for negotiating with ADB and with appropriate ministries and agencies of the Borrower. MDF is directly responsible for planning, designing, civil works on construction and rehabilitation of all subprojects in the frame of program.

9. New Detailed design of the revetment was prepared by Technical in December 2017. Project's IEE and SSEMP were approved in February, 2016 (IEE) and June, 2017 (SSEMP), which will be updated as per ADB rules, in January, 2018, accordingly, to SPS 2009.

Program Area

10. SUTIP - Tranche 4 comprises (i) urban infrastructure improvement, including one subproject: Batumi Coastal Protection; (ii) institutional strengthening, including management information system for MDF; and (iii) project management facility, including incremental administration and consulting services for audit, safeguards monitoring, and feasibility studies and detailed engineering design for sustainable urban transport projects. The government, through the Ministry of Finance, has submitted on 15 April 2015 the periodic financing request for Tranche 4, requesting a loan of $20 million from ADB's ordinary capital resources. These investments will improve the urban environment, strengthen economic and tourism development, and regional integration.

11. Sustainable Urban Transport Investment program Tranche 4 was approved on 25 August 2015, signed on 26 October 2015, and declared effective on January 8, 2016. It comprises a loan of

$20 million from ADB's Ordinary Capital Resources. Tranche 4 is scheduled for completion by 31 December 2019, with a loan closing on 30 June 2020. Tranche 4 consists of one subproject and non-physical components.

Batumi Coastal Protection project - overview

12. Coastal improvement is one of the priorities among other infrastructural projects, which will facilitate the future development of the Batumi City and region. The proposed project is aimed at protecting the Batumi coast against erosion, which is affecting the coastline southwest of Batumi, over a length of about 5 km. Along this section a number of properties has been lost already in the past. Without adequate protection measures coastal erosion will continue and as a consequence the investment climate for tourism development could be negatively influenced.

13. The evaluation of the alternatives to protect the coast against the erosion affecting the southern section of the littoral has shown that a soft intervention, featuring recirculation of the sediment between the northern section of the littoral (where it accumulates due to natural transport pattern) and the southern portion (from where it is removed due to erosion), is the most efficient way to protect and restore the beach.

14. Therefore, the main intervention aiming at stabilizing this portion of the Batumi coastline features artificial nourishment in the southern portion of the littoral, just north of the airport, spread over a beach length of approximately 2,000 m, using material taken from the northern part of the coastline (where beach accretion is occurring). The modelling studies have shown that the volume of materials needed to maintain the stability of the southern part of the coastline is 30,000m^3/y.

The following maps show the general location of the Project activities:

Figure 2.

Figure 3. Site location

15. In addition to sediment recirculation, the beach in the South, suffering erosion, will also be protected by a revetment and enlarged over a stretch about 2 km long. Both sediment from recirculation (gravel) and sediment from excavation (needed to build the revetment) will provide nourishment to this southern portion of the littoral. In particular, in this first intervention, the gravel material from recirculation (approximately 30,000 m3) will be used to form the toe of the new enlarged beach.

Figure 4. Site Location with GPS

x=41 37.0371'N, y=41 35.0911'E	x=38.5445'N, y=41 37.1968'E
x=41 37.1117'N, y=41 35.1117'E	x=41 38.5392'N, y=41 37.2038'E
x=41 36.5740'N, y=41 35.0988'E	x=41 38.5427'N, y=41 37.2091'E
x=31 36.5842'N, y=41 35.0637'E	x=41 38.5276'N, y=41 37.2190'E

16. A monitoring program has also been foreseen, to provide the information needed to analyze the possibility to re-orientate the river discharge towards North, in order to minimize the loss in the canyon of the sediments transported by the river Chorockhi.

17. The Environmental Category of the proposed project for Batumi coastal protection is B (ADB's Safeguard Policy Statement, 2009), which refers to projects not having significant irreversible or permanent negative environmental impacts during or after construction. For this category of Projects ADB requires the preparation of Initial Environmental Examination (IEE).

18. On October 16, 2014 the contract between MDF and Technital, regarding the "Consulting services for- Batumi Coastal Improvement project", was signed. The Contract Agreement for Civil works, with Struijk Group as Construction Contractor, was signed on 15 November 2016.

19. Commencement date for civil works is defined as February 1, 2017. Before starting any construction activities, Construction Contractor was required to develop Site Specific Environmental Management Plan (SSEMP), which was developed and approved as by Supervision Company and MDF, as well as by ADB.

20. Emergency works on the damaged boulevard, were requested by MDF to the Contractor, in order to restore the stability of the embankment under and in front of the boulevard. They were outside the original scope of work of the contractor being outside the contract area.

21. The modifications of the water depth and of the slope of the coastline just after the breakwater in north direction have been very important and were extended for approximately 2 km. The modification has been so important that the original sections could not be done any more and that the new solution should include also the reconstruction of the boulevard. The sudden and unexpected erosion can be described in more detail as follows:

    - The coastal line (the zero line) has been shifted back by approximately 30 meters;
    - Due to the erosion, the water depth at the toe of the original contractual section has been deepened from -0,5 m to more than- 2 meters;
    - The beam supporting the boulevard has been swept away;
    - Almost all the boulevard pavement and the filling material underneath has been also swept away;
    - In this situation waves can easily further attach the land infrastructure damaging also the public road.

22. In order to avoid any further damages, the Engineer, in agreement with the Client and his consultant, took the decision that it is immediately necessary to bring new material in the eroded portion of the coastline approximately equal to the volume lost in the past two years. This volume that is composed by gravel and sand with the grain size distribution defined by the Engineer has been dumped in the period between beginning of June and end of August 2017.

23. In parallel the Engineer has proposed a final solution. The Client on May 17th 2017 requested to the Engineer to develop the detailed design of this solution. The solution has been further discussed with MDF, Consultant and with the Construction Contractor and the details have been agreed on the meeting held in Batumi on September 22nd, 2017.

24. The urgent works to restore the boulevard have been implemented. The MDF asked to Technital to revise the original design in order not only to restore the protective function of the revetment but also to incorporate the actual embankment as integral part of the design. For this reason the design revision, have taken into account the revetment, nourishment and boulevard.

25. On 6th of December 2017 the Amendement N3 has been signed between Technital and MDF with the approval of the "Adaptation design for Batumi coastal protection".

26. The present detailed revised design adaptation is therefore relevant for to the revetment and also for the reconstruction of the boulevard. The scope of works includes, but not be limited to, the following activities:

- Procurement, supply and placing of all materials;
- Construction of a flat embankment along the coast, around 50 m wide (from the limit of intervention – the seaside edge of the bike path), at elevation of about +1.25 m MSL;
- Excavation of approximately 275,000 m3 along 1,750 m of beach for the construction of the revetment (the material could be used to build a work track, seaward side of the foundation trench, at suitable elevation over the MSL to allow a good maneuvering of equipment).
- Construction of an approximately 1,750 m long stone revetment with cross section extending from -4.50 m MSL (foundation level) to + 4.5 m MSL;
- Construction of a seawall at the top of the revetment;
- Repositioning of the remained sand and pebbles mixture from the work track for beach nourishment (this is the first re-nourishment for the construction of the beach that will be completed flat and 20 m wide, from the armour layer at +1 m MSL to the sea level. From the edge of the beach, the emerged and submerged slopes, will subjected to the waves and will assume the natural steepness. Second and third component of the entire nourishment is respectively the dredged material from the northern beach -30,000 m3, and the yearly nourishment maintenance – up to 50,000 m3);
- Demolishing the broken and ruined boulevard (boulevard and greenery, without cycle path) for the same length of the revetment and reconstruction of the boulevard with precast concrete blocks paving and greenery with the same previous scheme; nourishment maintenance – up to 50,000 m3);
- Construction of 10 beach accesses along the shoreline with interruption of the revetment. In these cases, the stability is assured by a proper retaining structure consisting in an approx. 4 m reinforced concrete wall founded on steel sheet-piles, placed along the crown wall line;
- Construction of suitable artefacts in correspondence of outfalls 2, 3 and 4 (where 3 accesses are foreseen in parallel);
- Construction of a continuous drainage system;
- Execution of all finishing works required by the Engineer,
- Preparation of "as built" Drawings;

- The study, monitoring and model activities of Chorokhi River to understand the present situation of the river and the possible evolution of the morphology.

27. Due to the adaptation of the detailed design (to the unexpected erosion of the coastline) CC revised his “work execution plan and method statement, dated the 22nd of April 2017”. In the following paragraphs the proposed method for the construction of the coastal protection in Batumi is described in detail.

28. An artificial nourishment of about 143,000 m^3 of sand and pebble mixture, along a stretch of the coast between CH 1,000 and CH 2,000 have been taken place in order to supply a volume of material of the same order of magnitude of that eroded in the last years.

29. Under these conditions the detailed design properly defined the type of construction and the dimensions of each component in order to guarantee the stability. The dumped total volume until August 2017 survey is about 143,000 m^3 and the actual profile of the beach is represented by the dotted line below:

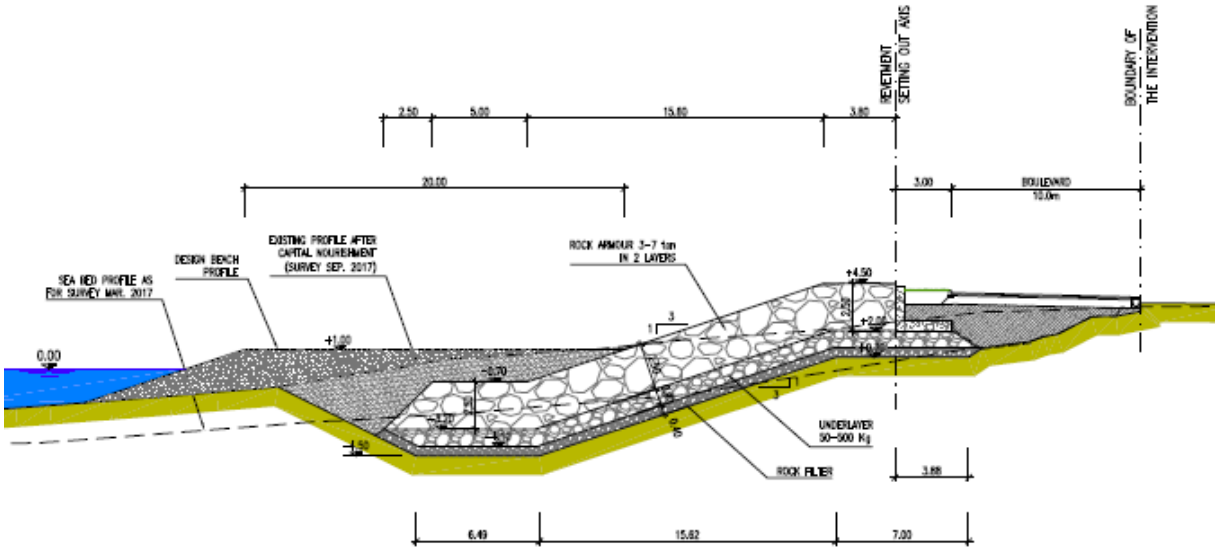


Figure 5.

30. The Revetment will be built for a length of 1,750 m. The Revetment as described in figure above, features a rock armour consisting of a double layer of 3,000-7,000 kg rocks, slope 1/3, with a thickness of 2.50 m placed upon an underlayer made of a double layer of 50-500 kg rocks with a thickness of 0.90 m.

31. In order to prevent migration of underlying fine material, a rock filter layer 0.40 m thick, is

positioned between the under layer and the natural soil. The section continues from the top flat elevation at +4.5 m (3 stones) to the crest depth of the toe at -0.70m. The toe is 5 m large at the crest (4 stones). The total thick of section and toe is 3.8 m which implies excavation depth at 4.5 m. The revetment is completed with a crown wall; crest level +4.35 m MSL.

32. As it was mentioned above, New Detailed design of the revetment was prepared by Technical in December 2017. After changes in Detailed Design, according to ADB SPS 2009, it is necessary to updated IEE and SSEMP, thus, project's IEE and SSEMP will be updated as per ADB rules, in January, 2018.

1.2.Construction activities and projects' progress during the reporting period

Civil works at Batumi Coastal Protection

33. As it was mentioned above, the commencement date of works was established on February 1th 2017. Contractor was requested to mobilize all necessary equipment on-site. Estimated time for the completion of works is 600 days.

34. Emergency works on the damaged boulevard, were requested by MDF to the Contractor, in order to restore the stability of the embankment under and in front of the boulevard. They were outside the original scope of work of the contractor being outside the contract area.

35. On 6th of December 2017, as it was mentioned above, the Amendment N.3 has been signed between Technital and MDF with the approval of the "Adaptation design for Batumi coastal protection".

36. During the period October-December 2017, no construction activities have been performed at Batumi coastal protection project. During July-September the nourishment of beach and backfilling of eroded area of the boulevard (additional works) with sand and pebble mixture were finalized. A general supervision and continuous cleaning of the area was performed (taking away debris).

37. Construction activities performed during July-September 2017, are as follows:
    - Nourishment beach and backfilling of eroded area of the boulevard (additional works) with a quantity of 38.140 cm of sand and pebble mixture.
    - Taking away debris up to ch. 1.100 and placing in stockpile.
    - Levelling of the backfilling material up to +1.50, in the meantime topo and bathymetric survey has been done all over the involved area.
    - From the 15 of September no site activities has been carry on.

1.3. Changes of project organization and environmental management team

38. 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.

39. 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 Initial Environmental Examination (IEE) or SSEMP, as applicable.

40. 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 12 and currently consists of: Head of Unit (Existing Head of the Unit - Giga Gvelesiani has left his position in November, 2017 and currently, acting Head - Elguja Kvantchilashvili is appointed), 4 environmental safeguards specialists, one social and gender specialist, 4 resettlement specialists. There are also two ADB's individual consultants – one on environmental safeguards and one on resettlement issues, who are the members of Environmental and Resettlement Unit. Until October 2014, Environmental and resettlement safeguards team was consisting of 3 environmental safeguards and 2 resettlement specialists, one of which was the ADB's national consultant on resettlement issues. Environmental and Social Safeguards team had a Team Leader who was an advisor to Executive Director of MDF on environmental and social safeguards issues.

41. 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 of the MDF supervises ADB projects, review the IEEs/EIAs, EMPs, and SSEMPs of projects and carrys 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.

1.4. Relationship with contractors, owner, lender etc.

42. The main institutions involved in IEEs/EMPs/SSEMPs implementation and monitoring, are the executing agency (EA) - MDF, the Supervision Consultant (SC)- Technital, the Construction Contractors -Struijk 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.

43. The supervisor company (SC), or consultant staff, of works commissioned by MDF is 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/SSEMP by the contractor and reveal any deviations from the prescribed actions.

44. The Consultant's staff, as outlined within the Consultant's proposal, consists of an international Project Team, formed by TECHNITAL and a national team of experts, formed by Saunders Group Ltd.

45. With respect to this stage, the Supervision Team falls conveniently into two groups as follows:

International	National
Coastal Management Specialist/Team Leader	Coast Protection Engineer/Deputy TL
Coast Protection engineer	Hydraulic engineer
Geotechnical Engineer	Geotechnical Engineer
Environmental specialist	Sea Hydrologist
	Environmental specialist
	Quantity surveyor

46. The Consultant's main technical departments involved in the execution of this project are: Marine & Coastal Engineering, Hydraulic Engineering, Geotechnical Engineering, Environmental Engineering, Quality Assurance and Quality Control, and Construction supervision.

47. Each of the above departments provides assistance in its specific field by mobilizing qualified short term experts at the request of the Team Leaders.

48. Backstopping is ensured by Italian headquarter of TECHNITAL, which can provide substantial support through its own organization and resources. Short term experts to assist the Project Team will be drawn within these resources.

49. The local support staff includes also Junior Engineers, CAD experts, drivers and secretarial staff, translator/interpreter, and any other staff deemed necessary for the efficient operation of the site office (quantity surveyor, inspectors, technicians, etc.).

50. The key experts mobilized for the supervision stage are listed in following Tables.

International Key expert for the supervision Stage		
K1	Fernando Bersano	Tem Leader/Senior civil engineer
K2	Luca Beghini	Coastal Protection Engineer
K3	Cristina Zago	Environmental Specialist
National Key expert for the supervision Stage		
K4	Eldar Menagarisvhili	Deputy resident/Coast protection engineer
K5	Andrew Webb	Quantity Surveyor
K6	Alexandre Abzianidze	Environmental specialist
K7	Malkhaz Vardosanidze	Site Inspector/Quality Control specialist

51. As foreseen by the Contract No. SUTIP2/C/QCBS/7-2013 between MDF and Technital, dated October 16th 2014, for the Environmental supervision for the construction site (4.2 Construction Supervision, (a) International Team, Non Key Experts, Environmental Specialist) the following tasks and responsibilities are requested:
    - Coordination and liaison with Government/Employer;
    - Reports preparation;
    - carry out environmental monitoring and management of project implementation;

- help ensure the implementation of environmental management practices at each stage of the construction;
- develop an environmental auditing protocol for the construction period, regularly supervise the environmental monitoring;
- submit periodic reports based on the monitoring data and laboratory analysis reports;
- implementation of environmental mitigation measures during construction period.

52. Construction Supervision Company is preparing quarterly progress reports, which cover 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.

53. A Non-Compliance Notice has to be issued to the contractor if the SC requires action to be taken. The contractor is required to prepare a corrective action plan which needs to be implemented by a date agreed with the SC.

54. Construction contractor is obligated to follow EMP/SSEMP and good construction practice. In order to meet this obligation, a contractor has established environmental management team and procedures. The Contractor has appointed an Environmental Manager (EM) – Mamuka Shaorshadze, which is a member of the construction management team based on site for the duration of the contract.

55. Duties and responsibilities of the Environmental Manager of the Construction Contractor are:

- To Identify all Environmental Impacts for each activity;
- To ensure compliance with all project standards, statutory requirements and permit conditions
- To liaise with government authorities on environmental issues;
- To coordinate Environmental information flow between Client and Suppliers/Sub-Contractors.
- Implementation of, and adherence to, all pre-construction, pollution prevention, waste management, water supply, aggregates, fauna and visual management requirements outlined in this plan;
- Ensuring relevant permits are in place for site specific activities;
- Implementation and supervision of the monitoring program;
- Record keeping and reporting on a daily basis to the Project Manager
- Maintenance of records;
- Ensure Training Department presents well founded and appropriate environmental training
- To plan and ensure implementation of all monitoring activities and evaluates results;
- To ensure any corrective or preventative action is implemented in wise time;
- Keep Project personnel fully informed of all environmental concerns and issues;
- Close supervision of Sub-Contractors.

56. Thus, key responsibilities of the Contractor are preparation of the Site-Specific Environmental Management Plan (SSEMP) 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 is 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 are 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.

57. The Contruction Contractor submits 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;
- 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.

58. MDF ensures availability of all environmental information and facilitates environmental supervision of the project. The MDF's local environmental specialist's responsibilities in respect of implementation of the IEE/SSEMP, are to: ensure that all relevant IEE/SSEMP requirements (including environmental designs and mitigation measures) are duly incorporated into the project bidding documents; Assist Contractors to obtain necessary permits and/or clearance, as required, from any relevant government agencies (NEA, etc); Ensure that all necessary regulatory clearances are obtained before commencing any civil work on the project; Ensure, that contractors have access to the EMP and IEE report and understand their responsibilities to mitigate environmental problems associated with their construction activities and facilitate training of their staff in implementation of the EMP; Approve the Site-Specific Environmental Management Plan (SEMP) prepared by the Contractor before he takes possession of construction site; Time-to time monitor the contractor's implementation of the SEMP in accordance with the environmental monitoring plan by conducting site monitoring visits; The MDF through its Local Environmental Consultant, reports to the ADB in every 6 months on the status of environmental compliance of construction works by preparing semi-annual Environmental Monitoring Reports. In case unpredicted environmental impacts occur during the project implementation, prepare and implement as necessary an environmental emergency program in consultation with relevant government agencies and ADB.

2. PART II: ENVIRONMENTAL MONITORING

59. With reference to MFF Sustainable Urban Transport Investment Program – Tranche 4 Environmental Assessment and Review Framework (EARF) is stated that an IEE/EMP will be a part of the overall project monitoring and supervision and will be implemented by the Contractor with oversight from the Supervision Consultant (the Engineer) and MDF.

60. IEE/EMP is an integral part of construction contracts. MDF requires the Construction and its Supervision Companies to implement construction activities in accordance with the environmental management plan, according to which SSEMP was developed.

61. Based on the EMP/SSEMP requirements, monitoring measures of projects includes construction site supervision, verification of permits, monitoring of compliance of the contractors' performance and specific monitoring of environmental impacts like noise, dust, soil contamination, landscape structure, construction waste, radiation, flora and fauna, water pollution, air emissions and etc. conducted by Contractor's and Engineer's environmental management specialists.

62. The objects of monitoring, the sampling points, techniques, frequency of measurements and, targets, as well as entity responsible for monitoring, as indicated in SSEMP, are described in Annex 1.

63. Construction site is not surrounded by agricultural land of locals. However dust generation control measures should be followed along the roads and spaces near the lands adjacent to the open greening areas. Avoidance damage to trees, palms will be strictly observed.

64. Baseline campaigns and measurements for obtaining of baseline data, as it is required by IEE/SSEMP, were implemented. Information regarding conducted baseline campaigns is provided below:

Baseline Campaigns

65. Georgia/international threshold limits are indicated in the Table 1 below:

Environmental Aspect	Parameter	Performance Indicator		Legislation
Air Emission	Nitrogen (IV) Dioxide (NO2)	0.04(mg/m^3) (0.026ppm) annual	0.2 (mg/m^3) (0.11ppm) hour	The Georgian decree of the Minister for Health, Labor and Social Affairs (297n of August 16, 2001) (as amended by the Order No 38/n of the same Ministry of 24.02.2003)
	Sulphur Dioxide (SO2)	0,05 (mg/m^3) Daily Average	0,5 (mg/m^3) max	
	Carbone Monoxide (CO)	3 (mg/m^3) Daily Average	5 mg/m^3 max	
Dust	PM 10	0.02 mg/m^3 annual mean	0.5 mg/m^3 24 - hour mean	
Noise	Noise levels for residential (Hotels, Schools, Hospitals) areas	55 Indicative level La dBA - 70 Maximum Admissible level La max dBA (7am-11pm)	45 Indicative level La dBA - 60 Maximum Admissible level La max dBA (11pm-7am)	Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments"

Water Turbidity	Weighted particles	25 mg/l 100 mg/l 200 mg/l 400 mg/l	100 mg/l low risk 200 mg/l moderate risk 400 mg/l high risk 400 < mg/l unacceptable risk	UKTAG proposed standard for suspended solids, August 2007

Table 1: Georgia/international threshold limits

66. The selected instrumentations for monitoring are provided under the table 2:

Table 2: Selected instrumentations for monitoring

Matrix	Instruments	Approved	Action required/notes
Turbidity	HACH TSS portable instruments	yes	calibration test is approved
Noise	PCE 322A	yes	calibration certificate is approved
Meteorological station	-----	-----	device installed by local government is used
Air gases and dust	Casella CEL-712 Micro dust Pro Dust Monitor Gas Alert Micro 5 PID Multi Gas Detector	yes	National Environmental Agency will conduct permanent measurements first week of each month.

67. Instrumentations selected and approved for the next monitoring phase are in Attachment 5.

68. The baseline survey accounted for measurements of air (CO, CO2, NOx and PM10), noise level and water turbidity were conducted by CC before starting of 'extra works'. Measurements were implemented by National Environmental Agency (NEA) on March 3, 2017. Results are under WB Guidelines and Georgian established standards. Information about Conducted measurements and their parameters and results are provided under Attachment 1-4.

69. Thus, a first baseline survey of the noise was performed on 23rd February 2017 by the National Environmental Agency (NEA) of the MENRP Georgia, after strong windy day,thus because of waves the sound level was high, which influenced on the results of measurements

    Therefore, CC has decided to conduct the additional noise baseline measurements, which were carried out from 04.24. 2017 to 04.28.2017, by Contractor "Struijk" Group itself. Obtained data resulted in accordance with Georgian standards for gases and PM10, but a little bit above the threshold limits for noise. (School-lyceum "Taoba" – **57.6dBA**; Hotel "Magnolia" – **55.8dBA**; Shota Rustaveli University – **62.6dBA**, because of ongoing renovation and construction activities

(not under the project) at the nearby areas. However, at the monitoring stage, all noise levels near receptors are below the Georgian standards. (Please see CC monitoring noise level reports.) As for water turbidity obtained data show a range of suspended solid between 9.6 mg/l at Alphabet Tower up to 54.4 mg/l close to the airport. Values typical of a coastal environment.

70. Noise level results, acquired on the 23.02.2017, were in the range from 76.4 dBA at Alphabet tower to 86.3 dBA at restaurant BUM BUM sampling point (map and coordinates are provided below). No meteorological data were acquired. Without meteorological data it was impossible to understand the reason of the exceedance of the threshold limit (wind and waves could account for that values but meteo data need to be acquired simultaneously).

71. A second noise baseline campaign was held by Mamuka Shaoshadze from 24.04.2017 to 28.04.2017. Three samplings for each day were performed at morning, noon and evening and at 3 sampling points School Liceum Taoba, hotel Magnolia, Shota Rustaveli University were monitored. A Sound Level Meter PCE 322A was used. Sampling was instantaneous (three time spot/day) and not time continuous during the sampling campaign as foreseen in IEE. No meteorological data were acquired. Noise levels resulted in the range 50.1 dBA (at School Liceum Taoba, the 25.04 at noon) – 68.8 dBA (at Shota Rustaveli University, the 24.04 in the morning). Again, recorded noise levels, even if in a lower range compared to the previous sampling campaign, are above the threshold limits for noise (55 dBA Maximum Admissible Level, 7 am-11 pm). Due to the absence of meteo data it is not possible to correlate obtained values to meteorological conditions.

72. Considering that the two baseline campaigns were conducted with time spot of measures, and looking at obtained data, it was preferable for the next sampling campaigns to perform 1 week of continuous monitoring and collect simultaneously meteorological data as foreseen by IEE.

73. Environmental Manager of CC conducted (third time) noise measurements during 5 days in order to identify and quantify noise level of workplace for community. The sampling took place at 3 (three) locations, three times a day (morning, noon and evening) at all sections there the activities were in progress. Locations: 1 - School lyceum “Taoba”; 2 - Hotel “Magnolia”; 3 - Shota Rustaveli University. During measurements Device: Sound Level Meter PCE-322A was used. Measurement data are provided under the Attachment 2.

74. In accordance with the ‘Law on public health’, the environmental qualitative norms are

approved by Decrees of the Minister of Labor, Health and Social Security of Georgia (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003,251/N of 09.15.1006, 351/N of 12.17.2007).

75. Based on the IEE requirements, monitoring measures included specific monitoring of noise, dust and gases, terrestrial habitats, water turbidity.

76. During reporting period (July-December 2017) the following monitoring campaigns, for the above environmental aspects, were conducted by Constructor and supervised by SC and MDF:

- **Walkover surveys** were implemented on: 10.07.2017; 10.08.2017; 04.09.2017; 10.10.2017, 12.11.2017 and on 13.12.2017 by Jimsher Mamuchadze for existing terrestrial fauna species and by Nino Memiadze for flora species. Results of measurements are presented in Attachment 3. In the case of birds, there are no protected species recorded. No one from identified spices are doing the breeding and nestling near the project working areas

  As for the Emerald and IBA sites, in that case this status is not oriented towards any of individual species and is rather more focused on the territory, which is important for the birds. Chorokhi delta site is protected under both statuses, however, the affected project area is only bordering on the location, which is significant for Chorokhi birds and it is not located within its bounds.

- Environmental Manager of CC conducted **noise measurements** during 5 days in order to identify and quantify noise level of workplace for community on: 13-17.07.2017;10-14.08.2017;11-15.09.2017; 09-13.10.2017, on 07-11-11-2017 and 11-15.11.2017. Results of measurements are presented in Attachment 1. Based on the results of the tests conducted near the project receptors, monitoring noise levels are in norm of Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments and IFC/WB limits. During the monitoring period no working activities were conducted;
- **Turbidity measurements** were conducted by Mamuka Shaorzadze on: 14.07.2017; 11.08.2017 and on 11.09.2017; Results of measurements are presented in Attachment 2.
- National Environmental Agency conducted **air measurements** on: 14.07.2017; 10.08.2017 ; 13.09.2017; 13.10.2017, 15.11.2017 and on 18.12.2017. Results of measurements are presented in Attachment 4. Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO2) and Sulfur Dioxide (SO2) measurements are in norm (The Georgian decree of the Minister for Health, Labor and Social Affairs (297n of August 16, 2001) (as amended by the Order No 38/n of the same Ministry of 24.02.2003);

77. Calibration Certificate for noise measurement device (PCE-322A) was provided. Certificate for water turbidity measurement device was provided as well. Results of monitoring campaigns are provided under Attachments 1-4.

Currently, no species have been seen breeding and nesting near the project working areas.

Cultural Heritage

78. Contractor “Strujik” Group Georgia attention is directed to the Georgian Ministry of Culture and Monument Protection of Georgia, which provides for the preservation of potential historical

architectural, archaeological or cultural resources. Contractor "Strujik" Group Georgia will conform to the applicable requirements of as it relates to the preservation of cultural resources.

79. Permanent supervision will be provided while excavation activities will be in progress.

Vegetation and soil

80. There is no top soil in the areas where the contractor has to work. These areas are already free of topsoil.

No trees will be cut.

Hazardous and Non-hazardous Waste and Spoils

81. Constructions works generate different type wastes starting from garbage, recycle waste, house hold 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).

82. Waste Management Plan was approved by "Saunders Group" Ltd, MDF (Municipal Development Fund) and director of construction contractor "Struijk Group Georgia LLC". There were installed three different waste bins in the temporary waste area. Proper signs are Installed: Hazardous waste, General waste, paper waste, plastic waste, smoking area, temporary hazardous waste area, grievance box, do not burn, WC, keep area clean and etc. Temporary hazardous waste area has been arranged with two layers of Polyethylene. Area is fenced with metal fence and locked.

83. The Construction Company collects hazardous waste at the temporary storage sites and pass it to the licensed operator Sanitary LTD having environmental permit on operation of the hazardous wastes. The contract with "Sanitary" Ltd was signed on 07 April, 2017.

84. The first part of the waste material was transported by licensed company Sanitary LTD (11.11.2017). A second portion is to be transported to Sanitary LTD after 15 February 2018.

85. **Household waste** - Contractor "Struijk Group Georgia" Ltd is conducting household waste segregation: Plastic, Paper and General Waste. On disposal of household waste a letter was provided by Batumi Municipality on: 29 May, 2017. Based on letter one waste bin was provided by city and once in a two weeks waste is taking out from the site by them to the municipal landfill).

PPE

86. In general terms, personnel wear adequate PPE during the working process as per the project HSE requirements.

Choroki river monitoring

87. Choroki river monitoring, as described in Technical Specification of the Detailed design (May 2016), foresee to understand if it is possible to shift northwards the mouth of the river, in order to enhance the supply of sediment available for the beaches. For this purpose it is important to

achieve a good knowledge of the behaviour of the Chorokhi River, therefore it is envisaged to investigate the nature of sediment transport and the sediment transport capacity in natural condition and in the presence of dams.

88. Targets of this study are:

- Understand the present characteristics and behaviour of the river, in terms of geology of the riverbed, hydrology of the watershed, flow capacity, transport capacity, topography;
- Determine the type of sediment transport;
- Determine the morphological and morphodynamics effects of the renovation work.

89. In order to reach the targets of the study, the following steps shall be undertaken:

- Data Collection: collection of geological information of the region, hydrological data concerning the river and its catchment, available data on water and sediment discharges.
- Integration of the data collected: in particular a geotechnical survey, shall be provided at the beginning of the work, to understand to define the characteristics of the soil and in particular the material forming the riverbed, and sediment load.
- Monitoring activities: a topographic survey, water level measurement and bedload survey in different periods of the year shall be provided to understand the river morphology and its evolution, and to estimate the sediment load of Chorokhi river.
- Validation: implementation of a 2D model for the validation of assumptions made regarding the morphological behaviour of the river by means of numerical models.
- Identification of possible interventions: identification of a solution to increase the supply of sediment from the river, towards north, to replace the original role of the river to the sediment balance. The study shall provide at least 3 options of intervention, and include but not limit, the analysis of various options (in terms of directions and widths), to redirect the Chorokhi outfall more towards North, in order to avoid that a large part of the sediments transported by the river is lost in the deep canyon located in front of the river mouth.
- 3D Model (if nessessary): implementation of a 3D model of the river mouth, to model in particular the interventions identified and proposed.

90. Once the morphological behavior of the Chorokhi River and its influence over the equilibrium of the littoral zone has been understood, possible interventions aiming to reduce the negative effects of the anthropic interference on the river system and restore the original role of the river in the coastal sediment balance can be investigated.

91. The evaluation of morphological and morphodynamic effects of any interventions proposed on the river system can be carried out by means of numerical and physical models.

92. Contractor found a possible surveyor “GeoconsultingLTD, City map LTD and Hydrocenter LTD” and on 30.06.2017 in the person of Nika Beruchashvili.

93. Several meetings were held in June and July (as described in the previous Quarterly Report #2) to evaluate the capacity of the consultants to conduct the Chorocki river study.

94. At the end of July MDF’s local environmental Consultant Nino Nadashvili advised Consultants by mail that Chorokhi Delta was officially nominated as candidate Emerald Sites (October 2016). In August, after a brief consultation with MDF and Contructor, Consultation supervisor SC (Cristina Zago) has instructed the Contractor to immediately begin river monitoring as per the original

Technical Specifications and send as soon as possible the Method of Statement for the Chorocki River. With a letter dated 30.08.2017 Contractor indicated the Organization chart attached in Annex 10 including Nika Beruchashvili.

95. On 27.09.2017 a first scheme of monitoring activities to be performed was sent by CC to SC and MDF. The scheme was revised by SC and on 28.11.2017 the Method of Statement was sent by CC to SC and MDF for revision. Comments were sent by SC to CC and revision is underway.

96. As stated by CC during weekly meetings with SC, preliminary activities such as collection of historical data have commenced in December 2017. Sampling activities are starting in January 2018.

97. As regards modelling activities, on 02.11.2017 Contractor informed that Hydroc GmbHLtd was selected and the company profile of Hydroc was sent to MDF and SC for approval On 08.11.2017 SC responded that, before final approval of the Istitute, HydroC has to furnish the name of the possible firm/university/company who will perform 3D model.

3. PART III: ENVIRONMENTAL MANAGEMENT

3.1. The environmental management system, site-specific environmental management plan (SEMP) and work plans

98. 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.

Detailed information on management plans and their statuses is provided in the table 3 below:

Table 3: Statuses of Management Plans

Plans/Reports	Status	Date of Submission	Comments
SSEMP Draft 1	Submitted	20.02.2017	Under Review
SSEMP Draft 2	Submitted	27.02.2017	Under Review
SSEMP Draft 3	Submitted	14.03.2017	Under Review
SSEMP Draft 4	Submitted	24.03.2017	Under Review
SSEMP Draft 5	Submitted	03.04.2017	Under Review
SSEMP Draft 6	Submitted	28.04.2017	Under Review
SSEMP Draft 7	Submitted	12.05.2017	Under Review
SSEMP Draft 8	Submitted	22.05.2017	Under Review

SSEMP Final	Submitted	06.06.2017	**Approved**
Emergency Situation Response Plan D1	Submitted	20.02.2017	Under Review
Emergency Situation Response Plan D2	Submitted	07.04.2017	**Approved**
Waste Management Plan D1	Submitted	27.02.2017	Under Review
Waste Management Plan D2	Submitted	23.05.2017	**Approved**
Site-Specific Health and Safety Management Plan D1	Submitted	28.02.2017	Under review
Site-Specific Health and Safety Management Plan D2	Submitted	10.04.2017	**Approved**
Health, Safety, Environment & Social Training	Submitted	09.03.2017	Conducted
Health, Safety, Environment & Social Training	Submitted	06.04.2017	Conducted
Health, Safety, Environment & Social Training	Submitted	06.06.2017	Conducted
Baseline Test Results (Air, Noise, Water turbidity)	Submitted	27.03.2017	Conducted
Baseline test for Noise	Submitted	24.04.2017 - 28.04.2017	Conducted
Site re-entry walk over survey_01	Submitted	23.03.2017	Conducted
Site re-entry walk over survey_02	Submitted	01.06.2017	Conducted
Method statement of Chrokhi river investigation D1	Submitted	28.11.2017	Under review
Method statement of Chrokhi river investigation D2	Submitted	07.12.2017	Under review
Method statement of Chrokhi river investigation D3	Submitted	20.12.2017	Under review

3.2. Site Inspection and audits

99. Site supervision and inspections, as well as monitoring of compliance of construction activities are important aspects to ensure the proper implementation of EMP/SSEMP requirements. Environmental management team of Construction and Supervisor Companies carry out permanent supervision activities and monitoring of the project performance in regular base. Time to time, MDF's environmental specialist - Local Consultant and Regional Environmental Consultant of ADB (under RETA 8663), are performing site monitoring visits as well. Basically, in every two month ADB review missions are conducted also.

100. The schedule of conducted audits and monitoring implemented by CC and SC environmental specialists, during the reporting period, is given in the Table 4, below:

Table 4: The schedule of conducted audits and monitoring during the reporting period

Date of Site visits	Organization		Comments
	CC (Totally visits)	SC (Site visits)	
01.07.2017 - 30.07.2017	8 days	8 days	-

01.08.2017 - 31.08.2017	8 days	9 days	-
01.09.2017 - 30.09.2017	8 days	8 days	-
01.10.2017 - 31.10.2017	8 days	8 days	-
01.11.2017 - 30.11.2017	8 days		- No site visits, as man months fixed under the contract were expired

101. MDF's local environmental consultant is ensuring that the Contractors understand what is to be done and how to rectify and address any environmental issues raised during project implementation process.

102. MDF's local environmental consultant Nino Nadashvili has been regularly performed monitoring of ongoing activities with close cooperation with env. specialist of SC and CC companies, by mailing them and by meetings. Coordination with the Contractor and SC has been performed by checking the Reports (SSEMP, monthly reports, HSE Reports) and following the baseline monitoring and selection of monitoring instrumentation.

103. Briefing on concept of GRM for CC and SC was conducted on September, 6 in Batumi by Nino Nadashvili. Meeting was attended by CC, SC and MDF's relevant staff. By PPT was presented the information on the concept of GRM in general and its scope. Also, information was provided about the differences between the grievances that should be handled by CC and grievances, which should be directed to MDF, and how the grievances should be differentiated.

104. Reporting issues were also clarified and agreed with CC and SC. It was agreed that detailed information on the status of grievances will be shared with MDF immediately and later it will be reflected in monthly progress reports. Also, CC will ensure to conduct the same sessions on GRM for their Sub-contractors. CC will conduct the same sessions of GRM at summer season.

105. The international environmental expert of SC has implemented site inspection and audit quarterly. She has done quarterly visits and prepares the quarterly reports. Her last visit was implemented from 31.07 to 05.08.2017. The international expert receives regularly mails, reports, memo and when necessary she cooperate with MDF's local consultant (Nino Nadashvili), SC (Alexandre Abzianidze) and CC (Mamuka Shaorshadze).

106. Environmental Specialist of Construction Company – Mamuka Shaoshadze was hired on 10.02.2017. He is permanently on site and implementing daily inspections of construction activities in regular basis. Inspection is carried out by Environmental Specialist in accordance to SSEMP and special check-lists. Completed check-lists are available at camp site. He prepares monthly reports and submits to MDF and SC.

107. Local environmental specialist Alexandre Abzianidze was recruited by the SC in February, as well. He conducts site-monitoring visits 2 times per week and supervise and monitor implementation of the SSEMP during construction activities.

108. Nika Beruchashvili was hired to perform the monitoring of the Chorocki river study.

3.3. Non-compliance notices and corrective actions

109. Identification of problematic issues and non-compliance notice during site inspections is the responsibility of Environmental Specialists of Construction and Supervision Companies. During reporting period the number of site visits has been implemented by environmental specialists of Construction and Supervision Companies in order to check environmental compliance of construction works.

110. In case of any deviations of EMP/SSEMP requirements corrective actions and mitigation measures are applied. All mitigation measures during pre- and construction phases of SPs are implemented by construction contractors according to EMP/ SSEMP.

111. Non-compliances observed during the reporting period, corrective actions required and their current statuses are provided below in the Table 5.

Table 5: Non-compliance notices and corrective actions

Date of submission	Description of Non-Compliance	Area	Corrective action required	Performance Date of Corrective actions
03.08.2017	During site inspections, it was discovered that Contractor "Struijk Group" provided two tanks for refueling near the beach. It was discovered that hazardous wastes (contaminated sand-pebbles beach materials with oil) are accumulated.	Batumi camp area	Contractor "Struijk Group" should apply the statement to Ministry of Environment and Natural Resources Protection of Georgia for permit of arrangement as per standards and conditions. It is recommended to remove them, order Contractor licensed waste management company for dispose/treat on timely.	Improved improved on 09.09.2017
31.08.2017	During site camp inspection, it was discovered that some wastes were scattered in the camp site territories. Poor Housekeeping		Site Manager was instructed to remove all wastes and dispose in the designated, temporary waste storage area	improved on 29.09.2017
09.09.2017	During site camp inspection, it was discovered that No CC Social manager and Focal point Contacts were on the sign on the camp site office.		Contractor was instructed to provide their Social manager andFocal point Contacts as well on the sign posted on the camp site office	Improved
29.09.2017	During site camp inspection, it was discovered that small capacity drip tray was provided for the generator.		Drip tray should be sized to hold110% of the maximum capacity of the generator.	

20.10.2017	During site inspections, it was discovered that Contractor "Struijk Group" provided two tanks for refueling near the beach. It was discovered that	Batumi camp area	Contractor "Struijk Group" should apply the statement to Ministry of Environment and Natural Resources Protection of Georgia for permit of arrangement as per standards and conditions.	Still Pending (from August) A first part of the waste

	hazardous wastes (contaminated sand-pebbles beach materials with oil) are accumulated. During site inspection it was discovered that the grievance box was broken. During site inspection it was discovered that Demolished Concrete (debris) are disposed along the beach. During site camp inspection, it was discovered that roof of the hazardous wastes area was damaged and rainwater was on its top. During site inspections, it was discovered that Household wastes (plastic signs, cellophanes, plastic glasses) were scattered on the camp site back territory		It is recommended to remove them, order Contractor licensed waste management company for dispose/treat on timely. Contractor "Struijk Group" should replace with new one. Contractor "Struijk Group" should get the permit from the local municipality structures for final disposal of them on the construction wastes landfill. Roofing for temporary hazardous waste disposal area to be improved and drip tray to be provided for hazardous wastes as well. Site Manager was instructed to remove all wastes and dispose in the designated, temporary waste storage area	material was transported to Sanitary LTD (11.11.2017). A Second portion is to be transported to Sanitary LTD after 15 January 2018.. Improved on 25.10.2017 Improved Improved on 25.10.2017 (a metal roof was arranged on the temporary wastes disposal area) Improved on 30.10.2017
25.10.2017				

3.4. Actions taken to reflect the findings of ADB mission during reporting period

ADB Mission conducted on 30 September 2017

112. On September 30, ADB review mission, presented by Mr. Duncan Lang and Mrs. Keti Dgebuadze, was conducted at Batumi coastal protection project. The following Comments and recommendations were given to the Contractor:

- To replace of the drip tray of the generator, providing the bigger one instead of the existing;
- Drill on Environmental emergency situation (oil spill occurs) was conducted on October 25, at the site;
- To record, take photos on the rout from the quarry to the site for purpose to assess the situation as pre-construction action;

- Providing the drip tray for hazardous wastes as well;
- Preparing the Health& Safety plan for the future, next year probably fence opening the same sections.

113. Contractor has considered ADB recommendations and implemented the following corrective actions:

- Contractor is going to supply electricity from Batumi City power station to Camp site and any diesel generator will not be needed any more;
- The drill of Environmental emergency situation was conducted on 25.10.2017, report was provided to SC;
- The routs from the three quarries were assessed as pre-construction (took photo materials, made records) as per new design (Akhalsheni quarry - 25.10.2017; Chinkadzeebi Quarry - 07.11.2017; Dologani (Sand-Pebble) Quarry - 07.11.2017) and provided to SC. Detailed information will be reflected in the updated SSEMP.6
- Contractor is going to provide 40 ft. steel container (beginning of the next year) for hazardous wastes temporary storage;
- Contractor prepares the Health& Safety plan/method statement for probability fence opening section and submit next year (2018) to SC.

114. Representatives of the ADB Mr. James Hutchison (writer) and Avtandil Tskhvitava (Senior Project Officer Georgia Resident Mission) have visited on site at 13 December, 2017, regarding collection all necessary information about project aim and future plans for regular yearly magazine. They attended stakeholder monthly regular meeting.

115. MDF's Environmental Safeguard Consultant (Nino Nadashvili) has conducted GRM training for Construction Contractor (Struijk Group Georgia), SC Saunders group and MDF's staff on September 6, 2017.

3.5. Consultation and Complaints

Grievance Redress Mechanism

116. During the projects implementation several issues, related to the environmental and socials safeguards and disputes on entitlement processes', might be occur due to the Projects activities. For example, intensive schedule of construction activities, inappropriate timing of construction vehicle flow, waste, noise and air pollution from construction activities, ecological disturbances, cultural conflicts between migrant workers, are some of the environmental and social safeguard issues that are likely to be raised from the Project activities.

117. In order to provide a direct channel to the affected persons for approaching project authorities and have their grievance recorded and redressed in an appropriate time frame, Grievance Redress Mechanism was established with efforts of MDF within the projects.

118. Complaints' registration journal is created and available at construction sites. The copy of journal with mobile numbers of relevant persons Grievance Focal Pointes - Social Manager of

SC Maia Khandurdieva and Kakhaber Beridze (local resident) is placed at local Municipality as well. Complaints' from the people, regarding the environmental safeguard issues in case of their disturbance and inconvenience, because of improper or inadequate implementation of SSEMP, can be accepted in both places. Complaints' will be registered in database system, assigning compliant number with date of receipt. Complaints' will be investigated and complainant will be informed about time frame in which the corrective action will be undertaken, in case if the raised problem is realistic.

119. Register and resolve grievances that fall under direct responsibility of Contractor (CC) and can be effectively addressed at level of CC and Supervision Consultant (SC), without involvement of MDF or latterly the ADB.

120. Grievances to be handled at the level of CC or SC include:
    - Social concerns related to contractor activity;
    - Environmental management;
    - Community safety.

121. MDF, as EA, facilitates the grievance resolution by implementing a project-specific Grievance Redress Process (GRP). It will deliver grievances to relevant authorities, in case if such grievances are sent to MDF. The official administrative bodies are obliged to respond to the grievances that have been received from population or other interested parties in accordance with the requirements of the Administrative Code of Georgia.

122. According to the existing legal and administrative system in Georgia, there are several entities responsible for addressing environmental complaints of population and interested parties. The administrative bodies directly responsible for environmental protection within the projects area are: MoE, municipal offices (gamgeoba) and Tbilisi and Batumi City Halls. The affected population and stakeholders may send their grievances, related to the project-induced environmental impacts directly to the mentioned administrative bodies responsible for environmental protection. There were not any environmental grievances.

123. For effective implementation of grievance redress mechanism (GRM), every month Stakeholders Engagement Meetings are held at project area with participation of GFPs and CC and SC stuff. During the meetings several different issues are being discussed and considered by participants.

124. Meetings with local residents were conducted on 24.10.2017, 27.11.2017 and 13.12.2017 in city Batumi, Sherif Khimshiashvili Street No 91(see Annex 5). The main issues raised during meetings were as follows:
    - Local residents asked for general contract details and deadline: CC gave all information the need and the project was introduced to local residents.
    - Local residents also asked info on the temporary suspension of works: CC replied that the suspension was due to the conclusion of the extra works and to the ongoing revision of the previous design
    - Local residents asked info about the situation of the next summer season. They stressed the importance for then to have beach access open during the summer season. Locals informed CC, that if the beach area will be closed during touristic season 2018 year, they will ask for economic compensation.

125. On the meeting of 13.12.2017, ADB representatives, Avtandil Tskhvita and James Hutchison , were also presented.

126. Detailed information about conducted stakeholders engagement meetings is provided under the table 6, provided below:

Table 6: Information about stakeholders engagement meetings

	Meeting highlighted issues	Solutions for the raised concerns on the meeting
July **(25.07.2017)**	– Additional banner with final image of the beach at the site; – Access road near Bam-Barum (destroyed café); – Open second entrance for the tourists.	– Additional banner with final image of the beach was installed; – Access road near Bam-Barum was made; – Second entrance was opened for the tourists, safety warning signs were installed, area was cleaned from iron and concrete debris; – Please be informed that, local residents and tourists are satisfied by arranged issue.
August **(22.08.2017)**	– Request regarding fence on site not to close beach (Bam-Barum) area till the end of September.	– When Contractor was instructed from MDF regarding closing the fence, during this action local residents visit site, who were against closing the fence during summer season (till the end of the September); – In the present time fence is not opened and contractor still waiting instructions.
September **(25.09.2017)**	– Negotiations regarding opened fence on site close to (Bam-Barum) beach area, which had to be closed in the end of September; – Questions regarding to sewerage system on site.	– After discussing about closing fence on site, local residents don't have any complains and they agreed to close the fence 2 of October, next Monday, because summer season had gone; – Regarding to sewerage system on site, question is open, we are waiting for instructions; – Please be informed that, the local residents are satisfied by arranged issue.
October **(25.10.2017)**	– Local residents requesting the general contract details, in particular: when the project will be finished? – Introducing the project for the local residents. – Why there are no any activities on site, while the weather is sunny? – What kind of situation will be on the site next summer season? – It's very important for the local population to have beach access open during the summer season.	– Struijk Group – as the contractor waiting for the further instruction.

	Locals informed us, that no one will allowed to close beach area during touristic season 2018 year, otherwise all of them will request compensation in exchange; – Focal Point (Kakhaber Beridze) advice us to request the existing underground communication plan/project for the further works.	
November **(27.11.2017)**	– Local residents requesting the general contract details, in particular: when the project will be finished? – Introducing the project for the local residents; – Why there are no any activities on site, while the weather is sunny? – What kind of situation will be on the site next summer season? – It's very important for the local population to have beach access open during the summer season. Locals informed us, that no one will allowed to close beach area during touristic season 2018 year, otherwise all of them will request compensation in exchange.	– Struijk Group – as the contractor waiting for the further instruction.
December **(22.12.2017)**	– Focal Point and local residents requesting the general contract details, in particular: when the project will be finished? – Introducing the project for the local residents. – Why there are no any activities on site, while the weather is sunny? – What kind of situation will be on the site next summer season? – It's very important for the local population to have beach access open during the summer season. Locals informed us, that no one will allowed to close beach area during touristic season 2018 year, otherwise all of them will request compensation in exchange.	– Struijk Group – as the contractor waiting for the further instruction.

4. PART IV – ACTION PLAN FOR THE NEXT PERIOD

127. During the next reporting period the following activities will be performed:

128. **Reporting:** New monthly and quarterly reports will be prepared and submitted to the MDF –– Q1-Q2-2018;

129. **Implementation of Monitoring Program:** Monitoring measurements of air, water and noise will be conducted during Q1-Q2-2018.

130. IEE and SSEMP will be updated. Updated IEE and SSEMP will be presented by the SC to the MDF within Q1, 2018.

131. Monitoring program will be implemented in accordance to updated SSEMP. Schedule reflecting planned monitoring activities during Q1 and Q2 , 2018 is provided at the tables 6 and 7 below:

Table 5: Schedule of dates for conducting of monitoring activities during Q1, 2018

Weekly schedule of dates for conducting of monitoring tests (Air, Noise, Water Turbidity), walk over survey

January, 2018

#	Test date	Reporting date	Test description	Devices during Baselines	Devices during monitoring	Location
1	First week of Month	Second week of Month	**Atmospheric air samples for chemical analysis** - conducting by ENV Agency	Casella CEL-712 Microdust Pro Dust Monitor	Casella CEL-712 Microdust Pro Dust Monitor	1 - School lyceum "Taoba" 2 - Hotel "Magnolia" 3 - Shota Rustaveli University
				GasAlertMicro 5 PID Multi Gas Detector	GasAlertMicro 5 PID Multi Gas Detector	
2	First week of Month	Second week of Month	**Noise measurement** - Construction Contractor "Struijk Group Georgia"	PCE-322A	PCE-322A	
3	First week of Month	Second week of Month	**Water Turbitity test** - Construction Contractor "Struijk Group Georgia"	Laboratory (ISO 11923:2007)	TSS Portable handheld measurement instrument for turbidity/solids	Site Beach areas (Where activities will be carried out - Dredging/Excavation)
4	First week of Month	Second week of Month	**Walk over survay**	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	From the Chorokhi delta to Alphabet Tower along the beach

February, 2018

#	Test date	Reporting date	Test description	Devices during Baselines	Devices during monitoring	Location
1	First week of Month	Second week of Month	**Atmospheric air samples for chemical analysis** - conducting by ENV Agency	Casella CEL-712 Microdust Pro Dust Monitor	Casella CEL-712 Microdust Pro Dust Monitor	1 - School lyceum "Taoba" 2 - Hotel "Magnolia" 3 - Shota Rustaveli University
				GasAlertMicro 5 PID Multi Gas Detector	GasAlertMicro 5 PID Multi Gas Detector	
2	First week of Month	Second week of Month	**Noise measurement** - Construction Contractor "Struijk Group Georgia"	PCE-322A	PCE-322A	
3	First week of Month	Second week of Month	**Water Turbitity test** - Construction Contractor "Struijk Group Georgia"	Laboratory (ISO 11923:2007)	TSS Portable handheld measurement instrument for turbidity/solids	Site Beach areas (Where activities will be carried out - Dredging/Excavation)
4	First week of Month	Second week of Month	**Walk over survay**	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	From the Chorokhi delta to Alphabet Tower along the beach

March, 2018

#	Test date	Reporting date	Test description	Devices during Baselines	Devices during monitoring	Location
1	First week of Month	Second week of Month	**Atmospheric air samples for chemical analysis** - conducting by ENV Agency	Casella CEL-712 Microdust Pro Dust Monitor	Casella CEL-712 Microdust Pro Dust Monitor	1 - School lyceum "Taoba" 2 - Hotel "Magnolia" 3 - Shota Rustaveli University
				GasAlertMicro 5 PID Multi Gas Detector	GasAlertMicro 5 PID Multi Gas Detector	
2	First week of Month	Second week of Month	**Noise measurement** - Construction Contractor "Struijk Group Georgia"	PCE-322A	PCE-322A	
3	First week of Month	Second week of Month	**Water Turbitity test** - Construction Contractor "Struijk Group Georgia"	Laboratory (ISO 11923:2007)	TSS Portable handheld measurement instrument for turbidity/solids	Site Beach areas (Where activities will be carried out - Dredging/Excavation)
4	First week of Month	Second week of Month	**Walk over survay**	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	From the Chorokhi delta to Alphabet Tower along the beach

Table 7: Schedule of dates for conducting of monitoring activities during Q2

Weekly schedule of dates for conducting of monitoring tests (Air, Noise, Water Turbidity), walk over survey

April, 2018

#	Test date	Reporting date	Test description	Devices during Baselines	Devices during monitoring	Location
1	First week of Month	Second week of Month	**Atmospheric air samples for chemical analysis** - conducting by ENV Agency	Casella CEL-712 Microdust Pro Dust Monitor	Casella CEL-712 Microdust Pro Dust Monitor	1 - School lyceum "Taoba" 2 - Hotel "Magnolia" 3 - Shota Rustaveli University
				GasAlertMicro 5 PID Multi Gas Detector	GasAlertMicro 5 PID Multi Gas Detector	
2	First week of Month	Second week of Month	**Noise measurement** - Construction Contractor "Struijk Group Georgia"	PCE-322A	PCE-322A	
3	First week of Month	Second week of Month	**Water Turbitity test** - Construction Contractor "Struijk Group Georgia"	Laboratory (ISO 11923:2007)	TSS Portable handheld measurement instrument for turbidity/solids	Site Beach areas (Where activities will be carried out - Dredging/Excavation)
4	First week of Month	Second week of Month	**Walk over survay**	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	From the Chorokhi delta to Alphabet Tower along the beach

May, 2018

#	Test date	Reporting date	Test description	Devices during Baselines	Devices during monitoring	Location
1	First week of Month	Second week of Month	**Atmospheric air samples for chemical analysis** - conducting by ENV Agency	Casella CEL-712 Microdust Pro Dust Monitor	Casella CEL-712 Microdust Pro Dust Monitor	1 - School lyceum "Taoba" 2 - Hotel "Magnolia" 3 - Shota Rustaveli University
				GasAlertMicro 5 PID Multi Gas Detector	GasAlertMicro 5 PID Multi Gas Detector	
2	First week of Month	Second week of Month	**Noise measurement** - Construction Contractor "Struijk Group Georgia"	PCE-322A	PCE-322A	
3	First week of Month	Second week of Month	**Water Turbitity test** - Construction Contractor "Struijk Group Georgia"	Laboratory (ISO 11923:2007)	TSS Portable handheld measurement instrument for turbidity/solids	Site Beach areas (Where activities will be carried out - Dredging/Excavation)
4	First week of Month	Second week of Month	**Walk over survay**	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	From the Chorokhi delta to Alphabet Tower along the beach

June, 2018

#	Test date	Reporting date	Test description	Devices during Baselines	Devices during monitoring	Location
1	First week of Month	Second week of Month	**Atmospheric air samples for chemical analysis** - conducting by ENV Agency	Casella CEL-712 Microdust Pro Dust Monitor	Casella CEL-712 Microdust Pro Dust Monitor	1 - School lyceum "Taoba" 2 - Hotel "Magnolia" 3 - Shota Rustaveli University
				GasAlertMicro 5 PID Multi Gas Detector	GasAlertMicro 5 PID Multi Gas Detector	
2	First week of Month	Second week of Month	**Noise measurement** - Construction Contractor "Struijk Group Georgia"	PCE-322A	PCE-322A	
3	First week of Month	Second week of Month	**Water Turbitity test** - Construction Contractor "Struijk Group Georgia"	Laboratory (ISO 11923:2007)	TSS Portable handheld measurement instrument for turbidity/solids	Site Beach areas (Where activities will be carried out - Dredging/Excavation)
4	First week of Month	Second week of Month	**Walk over survay**	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	Counting of the number of species, located on the beach using by 20-60x60 monocular optical bird watching tripod telescope	From the Chorokhi delta to Alphabet Tower along the beach

Annexes

Annex 1: Monitoring Data

Object of monitoring	Control/Sampling Point	Techniques/ Devices during baselines	Techniques/ Devices during monitoring	Frequency/ Time	Target	Entity responsible for Monitoring
Atmospheric air	• School lyceum "Taoba" • Hotel "Magnolia" • Shota Rustaveli University	• Casella CEL-712 Micro dust Pro Dust Monitor • Gas Alert Micro 5 PID Multi Gas Detector	• Casella CEL-712 Micro dust Pro Dust Monitor • Gas Alert Micro 5 PID Multi Gas Detector	• One time before commencing execution of works • One week per month during execution • During the transportation operations; • In dry weather on a periodic basis	• Ensuring compliance with the established quality norms of ambient air quality; • Minimizing the impact on the population health	SC, MDF, Struijk Group
Noise	• School lyceum "Taoba" • Hotel "Magnolia" • Shota Rustaveli University	• SLM700 Stream Line® Modular Electronic Sounder • PCE-322A	• PCE-322A	• One time before commencing execution of works • One week per month during execution • Regular control (particularly during much "noisy" operations); • Measuring (in case of grievance);	• Ensuring compliance with health and safety norms; • Minimizing the population disturbance	SC, MDF, Struijk Group
Water Turbidity	• Site Beach areas (Where activities will be carried out - Dredging/Excavation)	• Laboratory (ISO 11923:2007)	• TSS Portable handheld measurement instrument for turbidity/solids	• One time before commencing execution of works • One week per month during execution • During dredging/excavation	• Ensuring the protection of the aquatic life and the water quality for recreational use (bathing)	SC, MDF, Struijk Group
Terrestrial Biota	From Chorocki delta to Alphabet Tower along the beach	Counting the number of species located on the beach using b 20-60x60 monocular optical bird watching tripod telescope	Counting the number of species located on the beach using b 20-60x60 monocular optical bird watching tripod telescope	• One time before commencing execution of works • One day per month during execution	Ensuring the protection of terrestrial biota	SC, MDF, Struijk Group

Annex 2: Implementation report on the environmental impact assessment (EIA)/initial environmental examination (IEE)/Site Specific Environmental Management Plan (SEMP) mitigation requirements

Reference	Requirement	Action to date	Action required/comment
Noise	The equipment and vehicles should be maintained in good working order; Driving the vehicles at optimal speeds; Instructing the personnel (particularly, the drivers of vehicles and techniques); Registering and responding to grievances (if any); Driving the vehicles along optimal routes and at optimal speeds; Switching off the vehicle drives or running at minimal speed when the vehicles are not used; Carry out noisy operations during day time; Reaching preliminary agreement with the population living near the road about particularly noisy works.	On site Environmental specialists are conducting control (on regular basis)	Regular monitoring has been carried out to provide guaranteed protection of the noise quality. During the period baselines were performed
Dust	Watering of the non-asphalted ground or bare ground surfaces once in four hours on working days and in dry or windy weather; Observing the rules for storing the fill construction material to avoid their dusting in windy weather;	All vehicles are maintained in good working conditions. Drivers are instructed to follow the limitations of driving speed. All noisy operations have been carried out during day time. No grievance has been detected concerning noisy works.	Monitoring of the construction process noise level has been carried out by contractor environmental specialist on regular basis and by supervising environmental specialist. Regular control (particularly during much "noisy" operations);

	Covering trucks when transporting loose materials, when there is probability of dusting; Taking necessary precautions (e.g. avoiding throwing the materials from heights when unloading them) to avoid excess dust emission during the earthworks and loading and unloading the materials; Driving the vehicles at optimal speeds; Washing the vehicle tires (recommended to use commercial services for this purpose); Instructing the personnel (particularly, the drivers of vehicles and techniques); Registering and responding to grievances (if any); Driving the vehicles along optimal routes and at optimal speeds; Switching off the vehicle drives or running at minimal speed when the vehicles are not used.		during the period baseline was performed Measuring (In case of grievance); During this period no grievance or problems has been detected. Technical check-up of machinery before works. The nearest receptor (residential houses) is approximately 50-500 m away from construction site, drivers are maintaining the safe speed limits 30 km/h on main roads and 10 km/h on construction site, there for no noise complains has been detected.
Air Pollution of emissions	The equipment and vehicles should be maintained in good working order; Driving the vehicles along optimal routes and at optimal speeds; Switching off the vehicle drives or running at minimal speed when the vehicles are not used.	All vehicles are maintained in good working conditions. Drivers are instructed to follow the limitations of driving speed (On construction site 10 km/h, 30 km/h on main roads). All operations have been carried out during day time.	Monitoring of the construction process noise level is been carried out by contractor environmental specialist on regular basis and by supervising environmental specialist. Regular control (particularly during much high traffic operations); during this period

	Instructing the personnel before the start-up of the works.		baseline was performed Measuring (In case of grievance); During this period no grievance or problems has been detected. Technical check-up of machinery before works. The nearest receptor (residential houses) is approximately 50-500 m away from construction site, drivers are maintaining the safe speed limits 30 km/h on main roads and 10 km/h on construction site, there for no noise complains has been detected.
Waste	Visual control of the area; Control over the waste management. Protecting soil and water quality; Reducing the risk of negative visual impact; No dissatisfied population.	Monitoring of waste management issues is being carried out by contractor environmental specialist and by supervising environmental specialist. Regular check-up and inspection; Construction waste is accumulated on construction site in special isolated areas divided by hazardous, domestic and construction waste. Construction company has signed contract with the companies for waste removal. The waste is being removed from construction site buy authorized personal only in accordance of safety regulations.	

Disturbance of the seawater during dredging /excavation	During the works to level the seabed, permanent seawater analyses are needed to identify the degree of the water turbidity; If the degree of the water turbidity is over the thresholds indicated in SSEMP, the works must be stopped and relevant corrective measures must be taken.	Monitoring of the Increased seawater turbidity level is been carried out by contractor environmental specialist on regular basis and by supervising environmental specialist. Permanent visual control;	During dredging/excavation environmental specialists will conduct visual control, taking turbidity analysis. During the period baseline test were performed. No dredging/excavation activities occurred in the period.

Annex 3: Photo

Working area for extra works and filling with materials coming by quarry
And watering the site by water truck

Extra works- restoration of eroded bualvar area; Insalation of site main banners (three); Cleaned camp site teritory

Watering the site and organization chart

Site camp area and singinig

Hazardous waste storing area

Delta of the Choroki River

Chorochi River from the delta toward the first dike


Choroki River immediately up of the first dike

Attachment 1: Noise measurements implemented by Mamuka Shaoshadze

July, 2017

Coastal Protection Batumi
Contract No: P42414-SUTIP4-ICB-01-2016

Report on: Noise Measurement

Monitoring Test

Period of Inspection: 2017/07/13 - 2017/07/17	**Project: Coastal Protection Batumi**	**Location :**	**School-lyceum "Taoba"**

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted noise measurements in order to identify and quantify noise level of workplace for community.

General description

Nowadays, construction activity was carried out only one place near (School Lyceum "Taoba") that is why Contractor "Struijk Group" Ltd performed the noise monitoring test near the mentioned place. Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - noise Levels; the samples have been taken at one location (School Lyceum "Taoba"), three times a day (morning, afternoon and evening).

Device Name: **Sound Level Meter PCE-322A**

Noise Standards: In accordance with the 'Law on public health', the environmental qualitative norms are approved by Decrees of the Minister of Labor, Health and Social Security of Georgia (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007).

Georgian Noise Quality Standards in Residential Areas

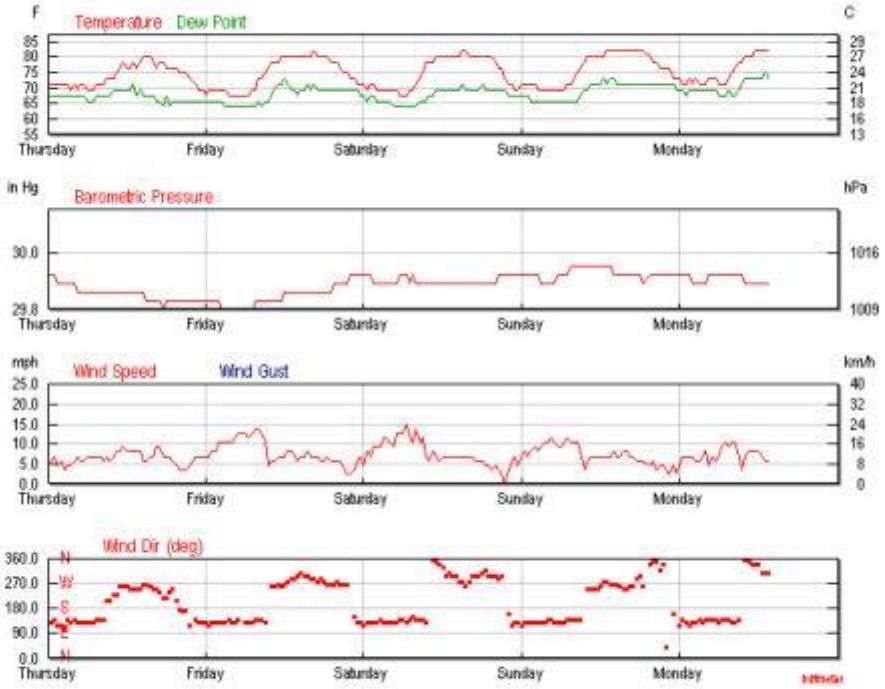
Time	Equivalent Noise Level La eq. dBA	Maximum Admissible Level La max dBA
7am – 11 pm	55	70
11pm – 7am	45	60

Meteorological Data (13.07.2017 - 17.07.2017) Batumi, Georgia

Weather History & Observations

2017	Temp. (°C)			Dew Point (°C)			Humidity (%)			Sea Level Press. (hPa)			Visibility (km)			Wind (km/h)			Precip. (mm)	Events
Jul	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
13	27	23	21	22	20	18	94	80	61	1013	1011	1009	10	10	10	14	10	-	0.00	
14	28	24	20	23	20	18	94	79	65	1013	1011	1009	10	10	10	23	13	-	0.00	
15	28	24	20	22	20	18	94	78	65	1013	1012	1012	10	10	10	24	13	-	0.00	
16	28	24	21	23	21	19	94	79	70	1014	1013	1012	10	10	10	19	13	-	0.00	
17	28	24	22	23	21	20	94	85	74	1013	1013	1012	10	10	10	16	11	-	0.00	Thunderstorm

Weather History Graph



Map with samples points:

Location			Noise (dBA)	Photos of taken during sample	Average Level of Noise (dBA)	
MPC (Maximum Permissible Concentration) for working area			80		Arithmetic average	Total
School-lyceum "Taoba"	Day 1 13.07.2017	Morning (9:37)	44.3		48.7	49.36
		Noon (14:59)	44.3			
		Evening (18:48)	57.7			
	Day 2 14.07.2017	Morning (9:57)	48.8		49.3	
		Noon (15:00)	44.0			
		Evening (19:44)	55.0			

3

	Day 3 15.07.2017	Morning (9:39)	48.4		**48.5**	
		Noon (15:30)	46.0			
		Evening (18:46)	51.1			
	Day 4 16.07.2017	Morning (9:58)	56.0		**51.1**	
		Noon (15:52)	49.1			
		Evening (18:30)	48.2			

	Day 5 17.07.2017	Morning (9:48)	42.3		49.2	
		Noon (3:16)	51.8			
		Evening (18:51)	53.6			

Conclusion:

Based on the results of the tests conducted in one place (School Lyceum "Taoba"), Monitoring noise level is under the norm of Georgian standards (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007).s

Report on: Noise Measurement

Monitoring Test

Period of Inspection: 2017/08/10 - 2017/08/14	**Project: Coastal Protection Batumi**	**Location :**	**School-lyceum "Taoba"**

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted noise measurements in order to identify and quantify noise level of workplace for community.

General description

Nowadays, construction activity was carried out only one place near (School Lyceum "Taoba") that is why Contractor "Struijk Group" Ltd performed the noise monitoring test near the mentioned place. Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - noise Levels; the samples have been taken at one location (School Lyceum "Taoba"), three times a day (morning, afternoon and evening).

Device Name: **Sound Level Meter PCE-322A**

Noise Standards: In accordance with the 'Law on public health', the environmental qualitative norms are approved by Decrees of the Minister of Labor, Health and Social Security of Georgia (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007).

Georgian Noise Quality Standards in Residential Areas

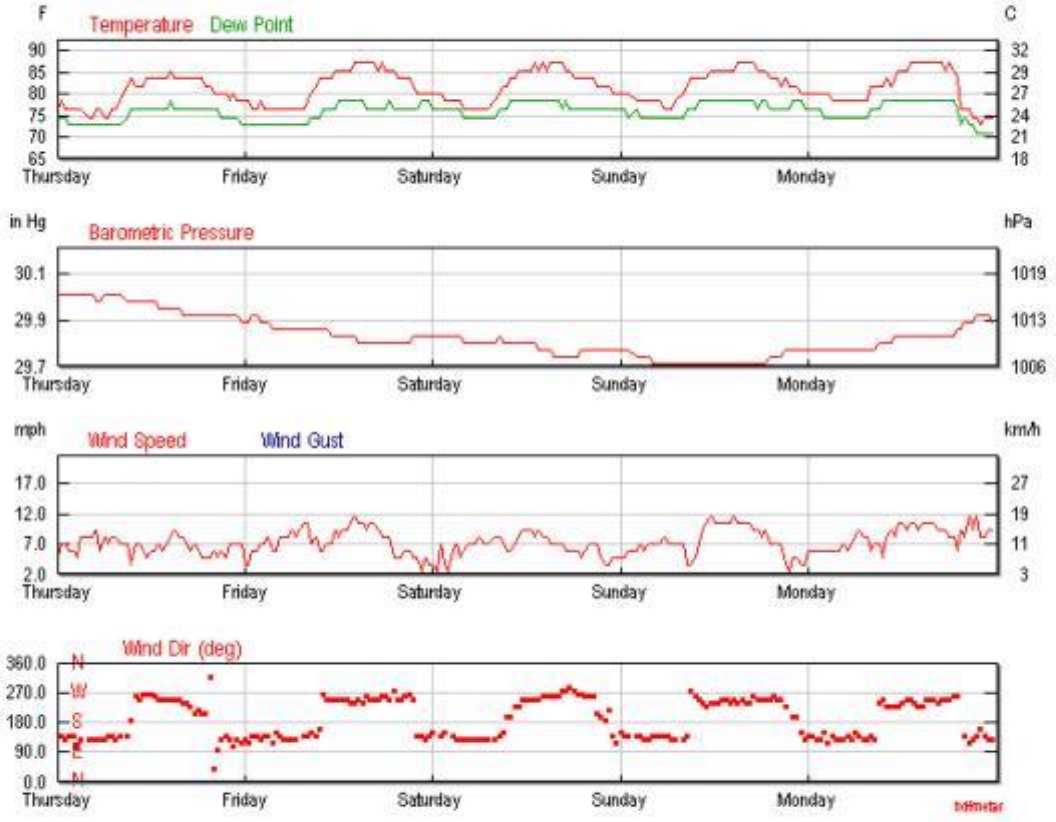
Time	Equivalent Noise Level La eq. dBA	Maximum Admissible Level La max dBA
7am – 11 pm	55	70
11pm – 7am	45	60

Meteorological Data (10.08.2017 - 14.07.2017) Batumi, Georgia

Weather History & Observations

2017	Temp. (°C)			Dew Point (°C)			Humidity (%)			Sea Level Press. (hPa)			Visibility (km)			Wind (km/h)			Precip. (mm)	Events
Aug	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
10	30	27	24	26	24	23	94	85	79	1016	1014	1012	10	10	10	14	10	-	0.00	
11	31	28	25	26	24	23	94	82	70	1013	1010	1009	10	10	10	19	11	-	0.00	
12	31	28	25	26	25	24	94	84	70	1010	1009	1007	10	10	10	14	10	-	0.00	Thunderstorm
13	31	28	25	26	25	24	94	84	74	1008	1007	1006	10	10	10	19	11	-	0.00	
14	31	27	23	26	24	22	94	84	75	1013	1010	1008	10	10	3	19	11	-	0.00	Rain , Thunderstorm

Weather History Graph



Map with samples points:

Location			Noise (dBA)	Photos of taken during sample	Average Level of Noise (dBA)	
MPC (Maximum Permissible Concentration) for working area			80 dBA		Arithmetic average	Total
School-lyceum "Taoba"	Day 1 10.08.2017	Morning (9:32)	42.1dBA		48.0dBA	51.8 dBA
		Noon (15:17)	50.3dBA			
		Evening (18:54)	51.7dBA			
	Day 2 11.08.2017	Morning (9:57)	48.5dBA		50.5dBA	
		Noon (15:07)	50.4dBA			
		Evening (18:34)	52.8dBA			

	Day 3 12.08.2017	Morning (9:35)	49.3dBA		**52.0dBA**	
		Noon (15:37)	53.4dBA			
		Evening (18:57)	53.5dBA			
	Day 4 13.08.2017	Morning (9:33)	49.7dBA		**53.1dBA**	
		Noon (15:03)	55.5dBA			
		Evening (18:57)	54.2dBA			

	Day 5 14.08.2017	Morning (9:37)	50.7dBA		**55.4dBA**	
		Noon (3:05)	57.5dBA			
		Evening (18:56)	58.0dBA			

Conclusion:

Based on the results of the tests conducted in one place (School Lyceum "Taoba"), Monitoring noise level is under the norm (51.8dBA) of Georgian standards (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007).s

Report on: Noise Measurement

Monitoring Test

Period of Inspection: 2017/09/11 - 2017/09/15	Project: Coastal Protection Batumi	Location :	School-lyceum "Taoba"

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted noise measurements in order to identify and quantify noise level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - noise Levels; the samples have been taken at one location (School Lyceum "Taoba"), three times a day (morning, afternoon and evening) during five days.

Device Name: **Sound Level Meter PCE-322A**

Noise Standards: In accordance with the 'Law on public health', the environmental qualitative norms are approved by Decrees of the Minister of Labor, Health and Social Security of Georgia (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007).

Georgian Noise Quality Standards in Residential Areas

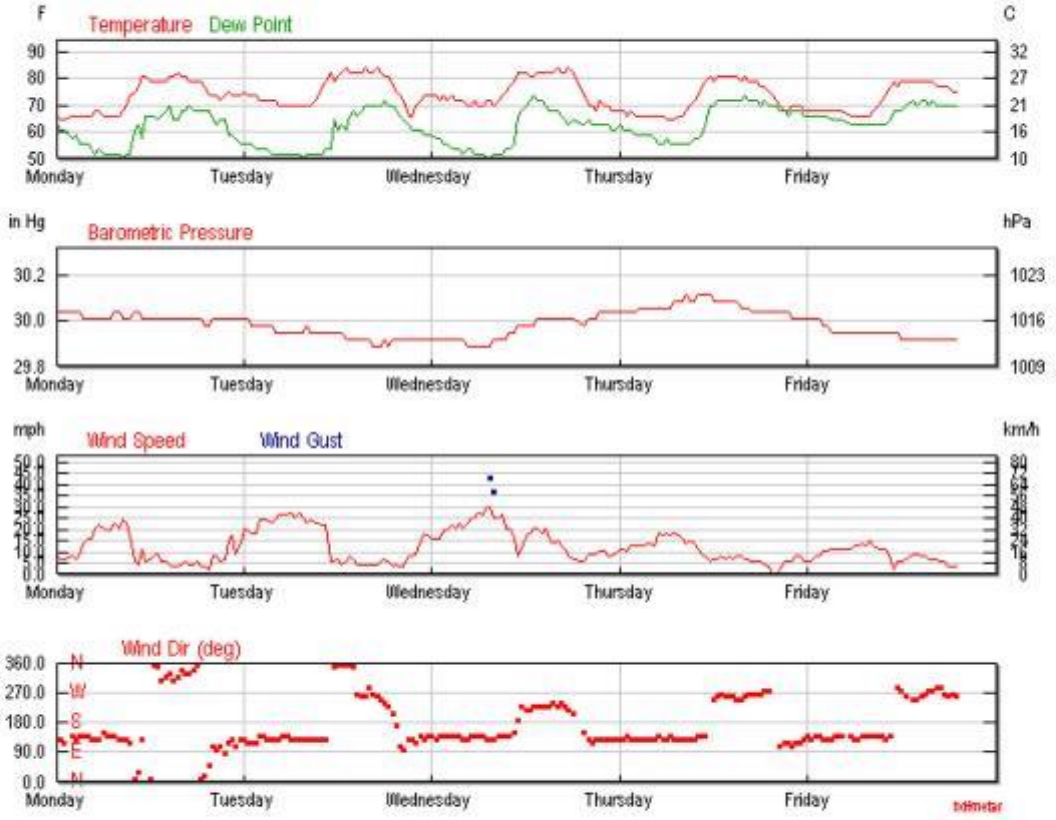
Time	Equivalent Noise Level La eq. dBA	Maximum Admissible Level La max dBA
7am – 11 pm	55	70
11pm – 7am	45	60

Meteorological Data (11.09.2017 - 15.09.2017) Batumi, Georgia

Weather History & Observations

2017	Temp. (°C)			Dew Point (°C)			Humidity (%)			Sea Level Press. (hPa)			Visibility (km)			Wind (km/h)			Precip. (mm)	Events
Sep	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
11	28	23	18	21	16	10	88	65	45	1017	1016	1015	-	-	-	39	18	-	0.00	
12	29	24	19	22	15	10	88	59	37	1016	1014	1012	-	-	-	45	27	63	0.00	
13	29	24	20	23	16	10	83	60	44	1017	1014	1012	-	-	-	48	29	69	0.00	
14	27	22	18	23	18	13	100	77	54	1020	1018	1016	10	10	10	29	18	-	0.00	
15	26	22	19	22	19	17	94	82	65	1016	1014	1013	10	10	10	24	14	-	0.00	

Weather History Graph



Map with samples points:

Location			Noise (dBA)	Photos of taken during sample	Average Level of Noise (dBA)	
MPC (Maximum Permissible Concentration) for working area			80 dBA		Arithmetic average	Total
School-lyceum "Taoba"	Day 1 10.08.2017	Morning (10:16)	44.4dBA		45.4dBA	47.9 dBA
		Noon (14:43)	44.2dBA			
		Evening (18:21)	47.5dBA			
	Day 2 11.08.2017	Morning (10:44)	46.2dBA		46.7dBA	
		Noon (14:05)	44.4dBA			
		Evening (18:17)	49.5dBA			

	Day 3 12.08.2017	Morning (10:11)	47.2dBA		**47.6dBA**	
		Noon (14:57)	45.7dBA			
		Evening (18:47)	49.9dBA			
	Day 4 13.08.2017	Morning (10:19)	48.7dBA		**48.5dBA**	
		Noon (14:25)	46.2dBA			
		Evening (18:38)	50.7dBA			

	Day 5 14.08.2017	Morning (10:17)	55.5dBA		**51.7dBA**	
		Noon (14:37)	46.9dBA			
		Evening (18:19)	52.9dBA			

Conclusion:

Based on the results of the tests conducted in one place (School Lyceum "Taoba"), Monitoring noise level is under the norm (47.9 dB) of Georgian standards (Decrees Nos. 297/N of 16.08.2001, including the changes made to it by further decrees of the Ministry Nos. 38/N of 02.24.2003, 251/N of 09.15.1006, 351/N of 12.17.2007).

Report on: Noise Measurement

Monitoring Test

Period of Inspection: 2017/10/09 - 2017/10/13	Project: Coastal Protection Batumi	Location :	School-lyceum "Taoba"

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted noise measurements in order to identify and quantify noise level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - noise Levels; the samples have been taken at one location (School Lyceum "Taoba"), three times a day (morning, afternoon and evening) during five days, during 30 seconds for each taken sample.

Device Name: **Sound Level Meter PCE-322A**

Noise Standards: Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments"

Permissible norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments

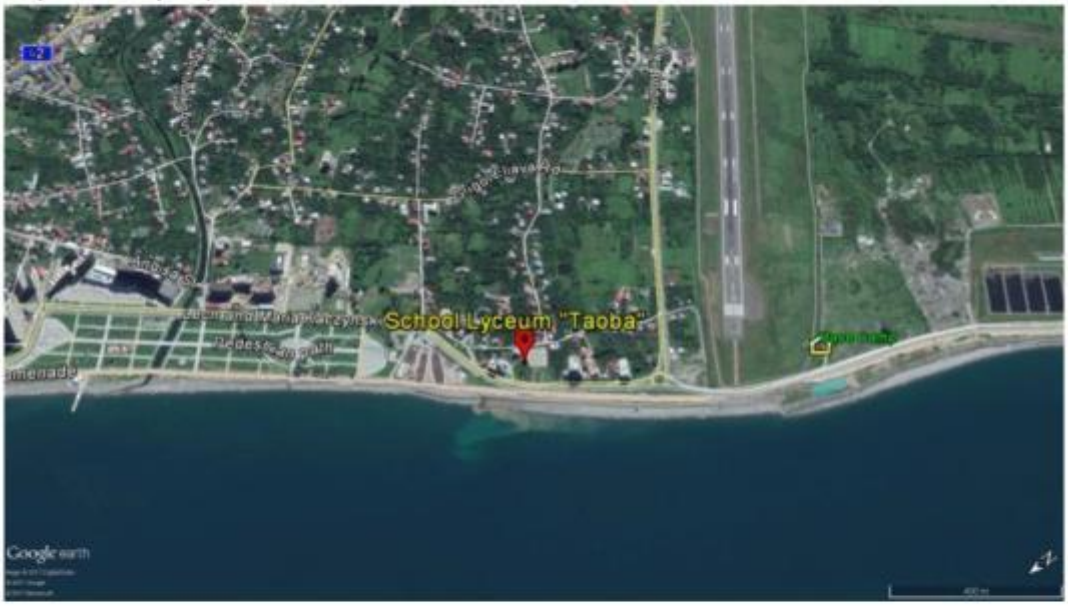
N	The applied functions of the spaces and areas	Admissible norms		
		L day (DBA)		
		Day	Evening	L night (DBA)
1	Studying establishments and reading rooms	35	35	35
2	The treatment cabinets of the medical establishments	40	40	40
3	Residential and sleeping areas	35	30	30
4	The treatment and rehabilitation rooms of the inpatient medical establishments	35	30	30
5	The rooms of the hotel/guest houses/motels	40	35	35
6	Trading halls and guest rooms	55	55	55
7	Restaurants, bars, cafes	50	50	50
8	Spectator/listeners' hall	30	30	30
9	Sport halls and pools	55	55	55
10	Small offices (≤100 m³), working premises and premises	40	40	40

1

	without office technique			
11	Large offices (≥100 m³), working premises and premised with office technique	45	45	45
12	Conversation premises	35	35	35
13	Territories, distanced from the low multistoried residential houses (number of the floors >6), medical establishments, children and social service objects	50	45	40
14	Territories, distanced from the multistoried residential houses (number of the floors >6), cultural, educational, administrative and scientific establishments	55	50	45
15	Territories, distanced from the hotels, trading, service, sport and social organizations	60	55	50

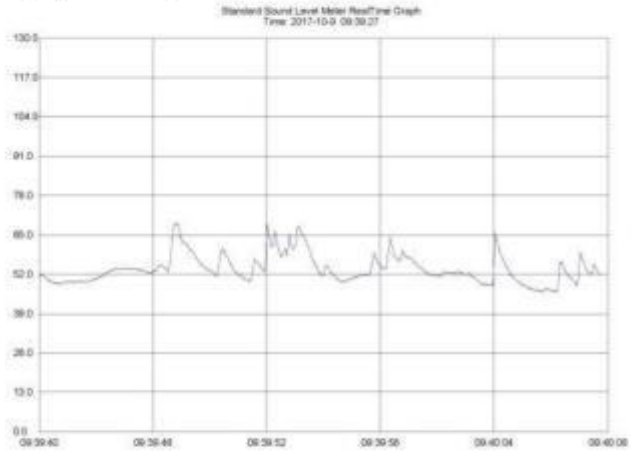
Note: The threshold #13 and highlighted in the table (yellow) is thresholds, which are considered.

Map with samples points:

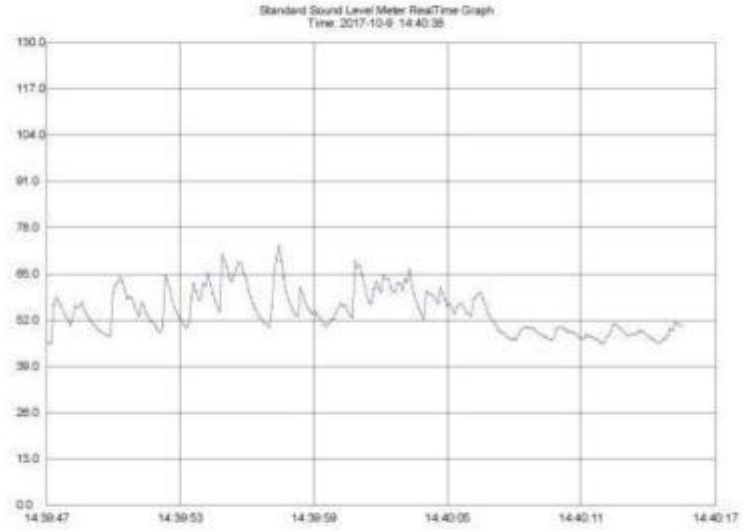


Test results:

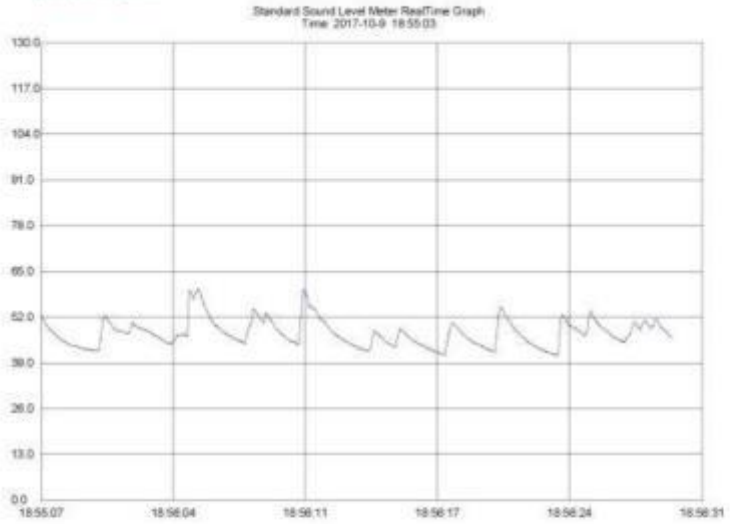
Day 1 (09.10.2017):



Start Time: 09-10-2017,09:39:40
Maximum: 69.70 09-10-2017,09:39:48
Minimum: 46.30 09-10-2017,09:40:08
Sample Rate: 0.10
Average: 53.77

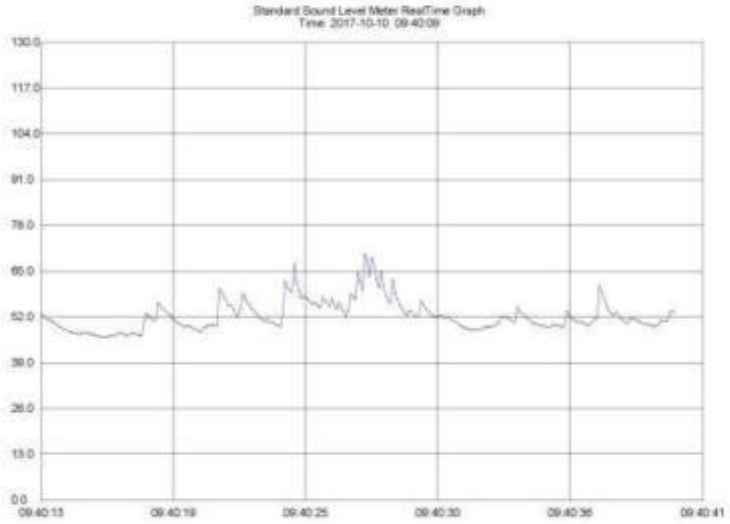


Start Time: 09-10-2017,14:39:47
Maximum: 72.80 09-10-2017,14:39:57
Minimum: 45.20 09-10-2017,14:39:47
Sample Rate: 0.10
Average: 54.44

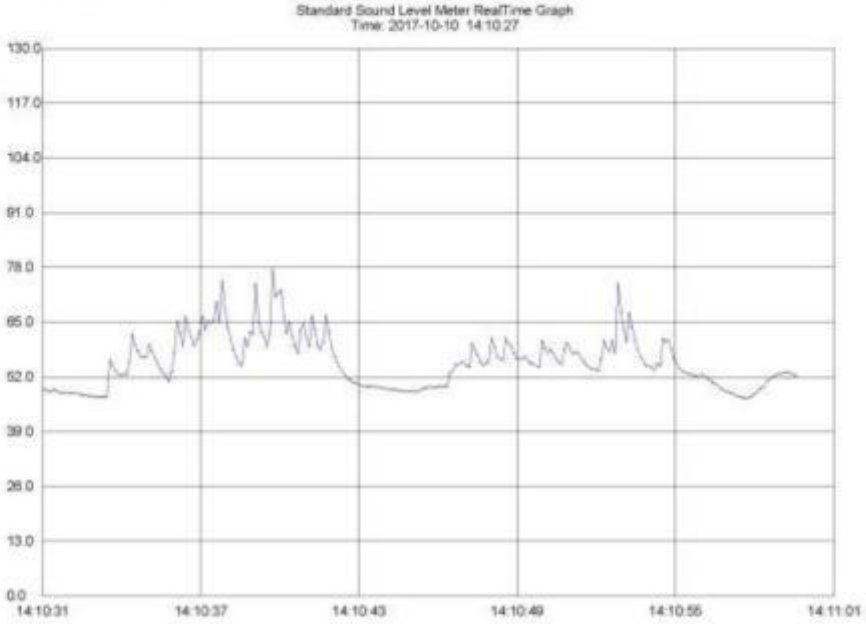


Start Time: 09-10-2017,18:55:07
Maximum: 59.80 09-10-2017,18:56:06
Minimum: 41.20 09-10-2017,18:56:18
Sample Rate: 0.10
Average: 47.52

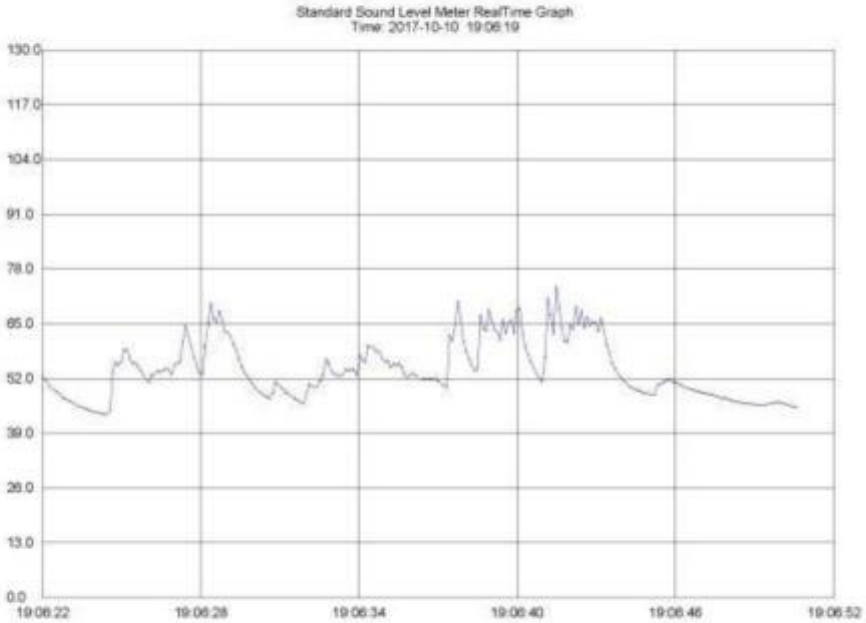
Day 2 (10.10.2017):



Start Time: 10-10-2017,09:40:13
Maximum: 69.90 10-10-2017,09:40:28
Minimum: 46.10 10-10-2017,09:40:18
Sample Rate: 0.10
Average: 52.33

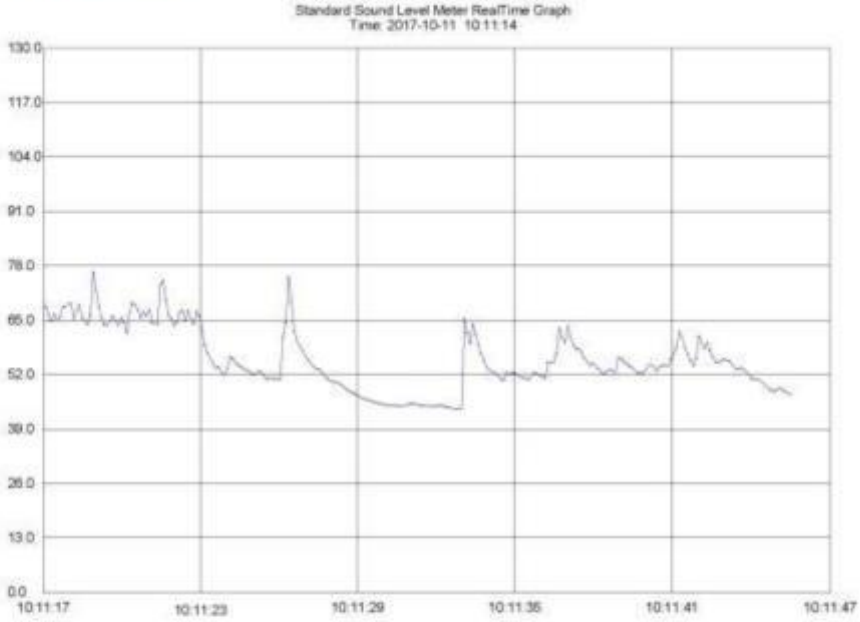


Start Time: 10-10-2017,14:10:31
Maxnum: 77.50 10-10-2017,14:10:40
Minnum: 47.00 10-10-2017,14:10:58
Sample Rate: 0.10
Average: 55.44

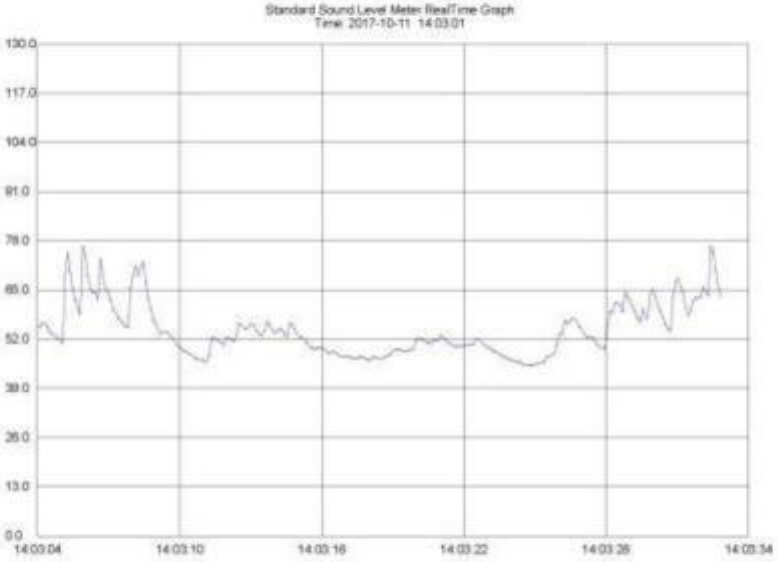


Start Time: 10-10-2017,19:06:22
Maxnum: 73.80 10-10-2017,19:06:42
Minnum: 43.40 10-10-2017,19:06:24
Sample Rate: 0.10
Average: 53.94

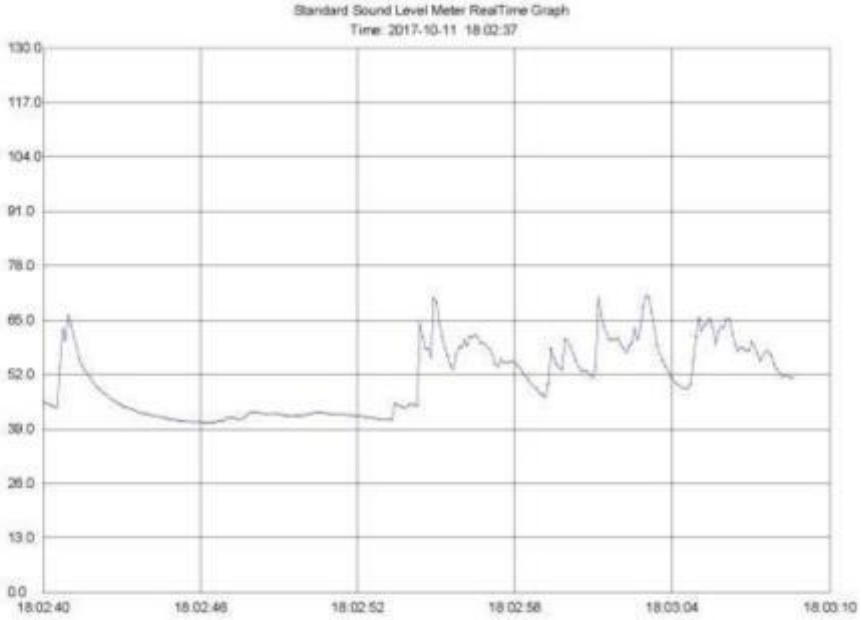
Day 3 (11.10.2017):



Start Time: 11-10-2017,10:11:17
Maximum: 76.50 11-10-2017,10:11:19
Minimum: 43.70 11-10-2017,10:11:33
Sample Rate: 0.10
Average: 55.59

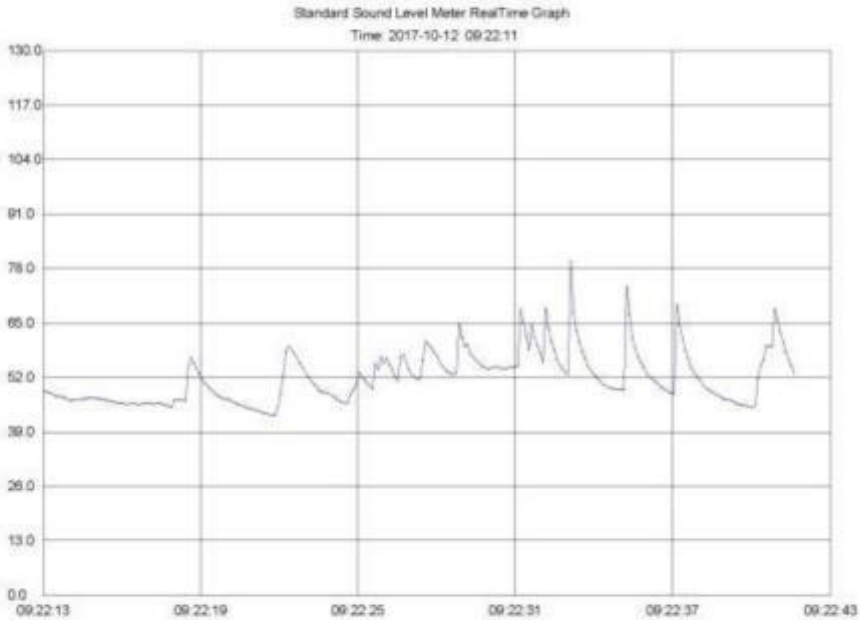


Start Time: 11-10-2017,14:03:04
Maximum: 76.50 11-10-2017,14:03:33
Minimum: 45.10 11-10-2017,14:03:25
Sample Rate: 0.10
Average: 54.58

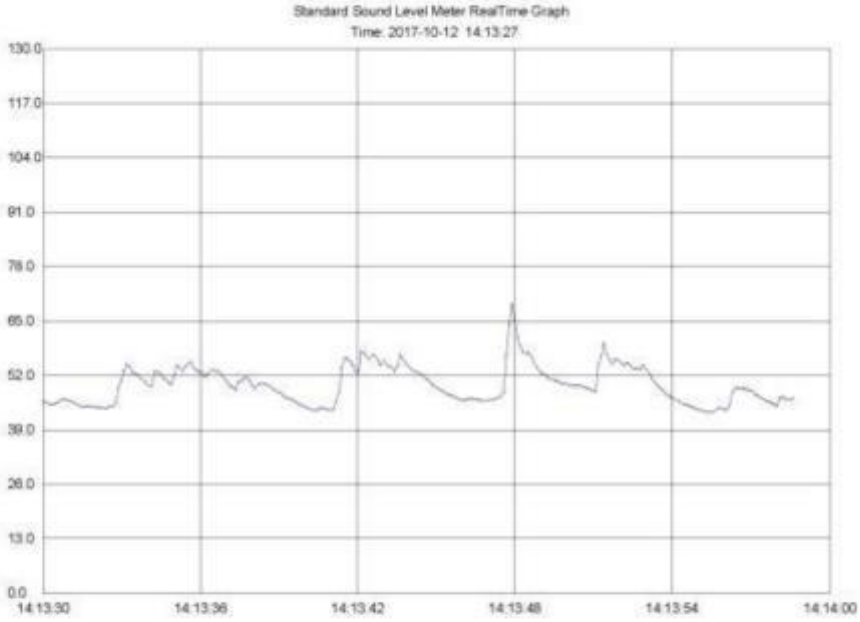


Start Time: 11-10-2017,18:02:40
Maximum: 70.80 11-10-2017,18:03:02
Minimum: 40.50 11-10-2017,18:02:47
Sample Rate: 0.10
Average: 50.75

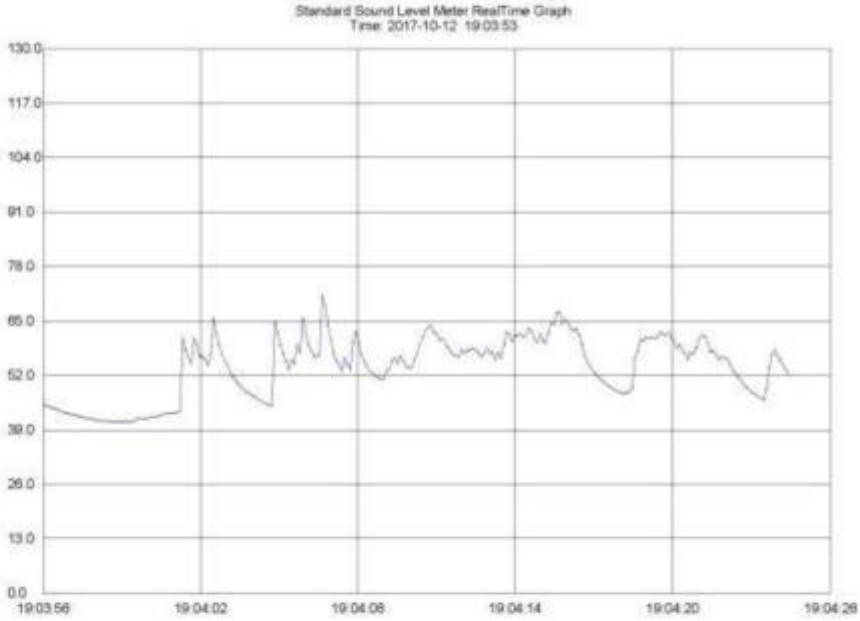
Day 4 (12.10.2017):



Start Time: 12-10-2017,09:22:13
Maximum: 79.80 12-10-2017,09:22:33
Minimum: 43.00 12-10-2017,09:22:21
Sample Rate: 0.10
Average: 51.93

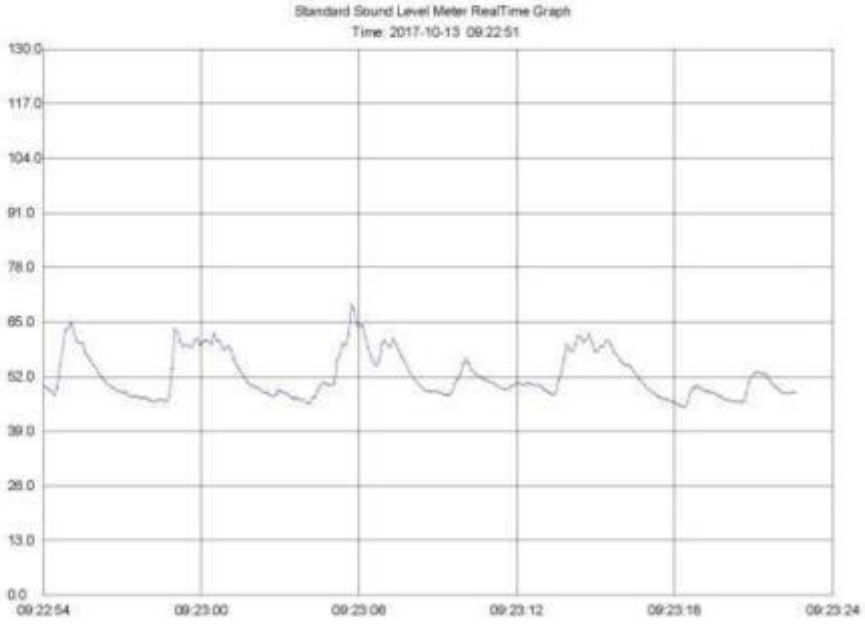


Start Time: 12-10-2017,14:13:30
Maximum: 69.10 12-10-2017,14:13:47
Minimum: 43.20 12-10-2017,14:13:55
Sample Rate: 0.10
Average: 49.71

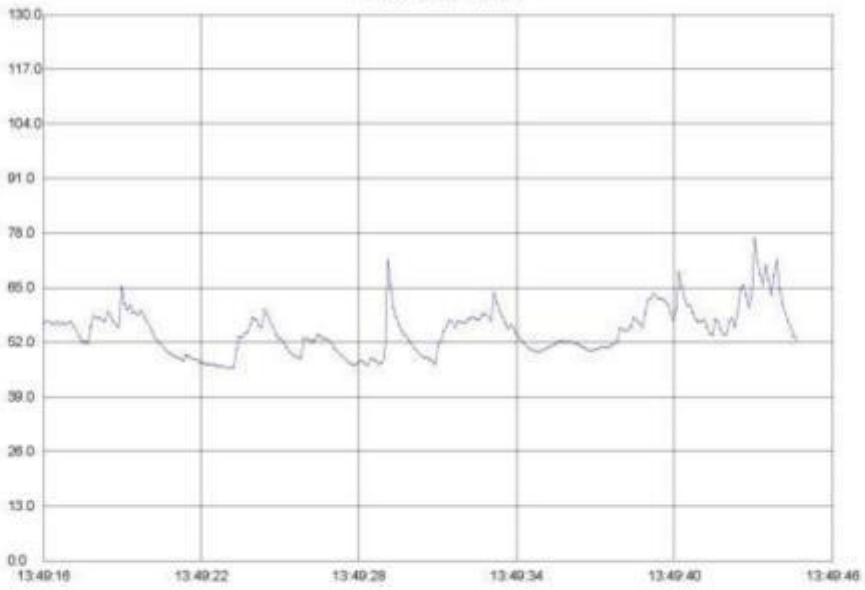


Start Time: 12-10-2017,19:03:56
Maximum: 70.90 12-10-2017,19:04:05
Minimum: 40.80 12-10-2017,19:03:59
Sample Rate: 0.10
Average: 53.90

Day 5 (13.10.2017):



Start Time: 13-10-2017,09:22:54
Maximum: 68.90 13-10-2017,09:23:05
Minimum: 44.70 13-10-2017,09:23:19
Sample Rate: 0.10
Average: 52.37



Start Time: 13-10-2017,13:49:16
Maximum: 78.80 13-10-2017,13:49:43
Minimum: 45.90 13-10-2017,13:49:23
Sample Rate: 0.10
Average: 54.62

Start Time: 13-10-2017,18:26:35
Maximum: 70.80 13-10-2017,18:27:00
Minimum: 41.20 13-10-2017,18:26:38
Sample Rate: 0.10
Average: 53.61

Meteorological Data (09.10.2017 - 13.10.2017) Batumi, Georgia

Weather History & Observations

2017	Temp. (°C)			Dew Point (°C)			Humidity (%)			Sea Level Press. (hPa)			Visibility (km)			Wind (km/h)			Precip. (mm)	Events
Oct	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
9	22	19	16	19	16	9	94	78	52	1018	1014	1009	10	10	6	39	26	60	0.00	Rain
10	17	16	14	16	15	13	100	95	82	1022	1020	1019	10	7	2	24	11	-	0.00	Rain
11	16	14	14	14	13	13	100	95	82	1025	1024	1022	10	9	4	16	10	-	0.00	Rain
12	17	14	13	15	13	12	94	91	82	1026	1025	1024	10	10	3	19	11	-	0.00	
13	20	17	13	14	13	11	100	81	60	1026	1024	1022	10	10	6	26	14	-	0.00	Rain

Weather History Graph

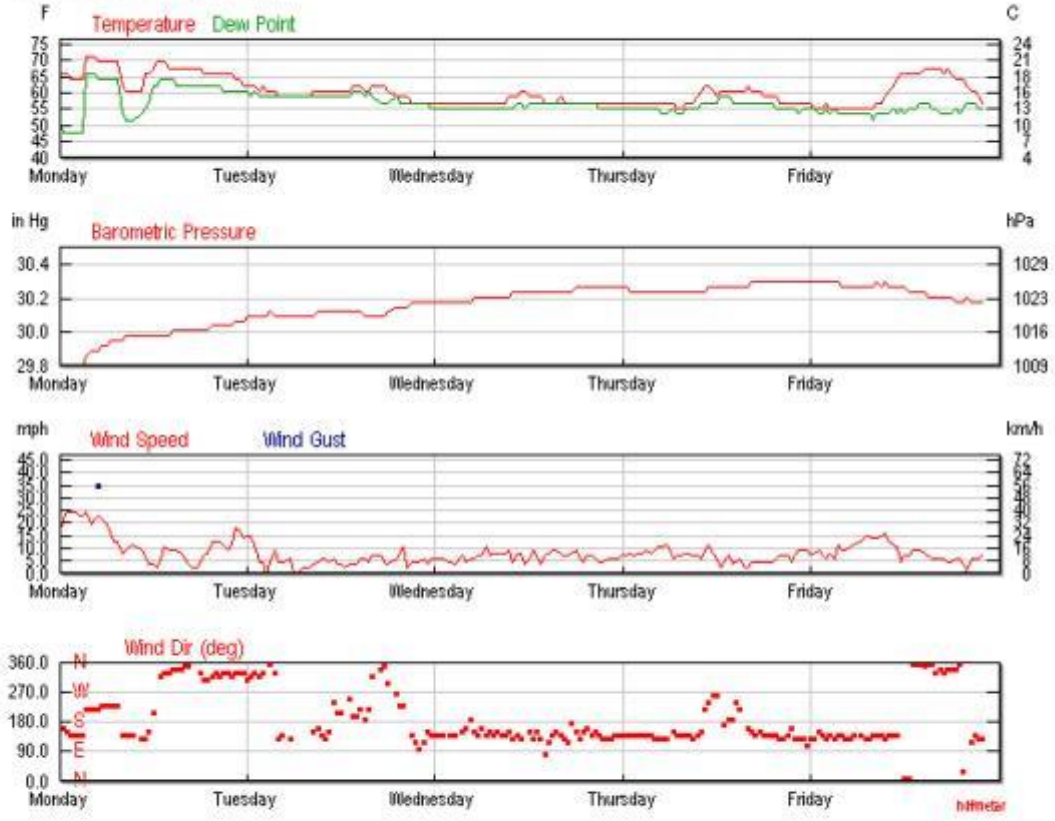


Photo-Documentation:




Conclusion:

"Based on the results of the tests conducted in one place (School Lyceum "Taoba"), Monitoring noise levels are slightly higher than the norm of Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments. However during the monitoring period no working activities were present".

Location	Days	Period of day	Time of taken sample	Monitoring result of daily mean (Average); dBA	Daily values (Arithmetical average) dBA	Thresholds of daily mean by Georgian law (Resolution No 398 of the Government of Georgia, August 15, 2017) - See Annex N1; Item #13; dBA
School-lyceum "Taoba"	Day 1 09.10.2017	Morning	09:39	53.77	54.10	50
		Noon	14:40	54.44		
		Evening	18:55	47.52	47.52	45
	Day 2 10.10.2017	Morning	09:40	52.33	53.88	50
		Noon	14:10	55.44		
		Evening	19:06	53.94	53.94	45
	Day 3 11.10.2017	Morning	10:11	55.59	54.98	50
		Noon	14:03	54.38		
		Evening	18:02	50.75	50.75	45
	Day 4 12.10.2017	Morning	09:22	51.93	50.82	50
		Noon	14:13	49.71		
		Evening	19:03	53.90	53.90	45
	Day 5 13.10.2017	Morning	09:22	52.37	53.49	50
		Noon	13:49	54.62		
		Evening	18:26	53.61	53.61	45

Report on: Noise Measurement

Monitoring Test

Period of Inspection: 2017/11/07 - 2017/11/11	Project: Coastal Protection Batumi	Location :	School-lyceum "Taoba"

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted noise measurements in order to identify and quantify noise level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - noise Levels; the samples have been taken at one location (School Lyceum "Taoba"), three times a day (morning, afternoon and evening) during five days, during 30 seconds for each taken sample.

Device Name: **Sound Level Meter PCE-322A**

Noise Standards: Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments"

Permissible norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments

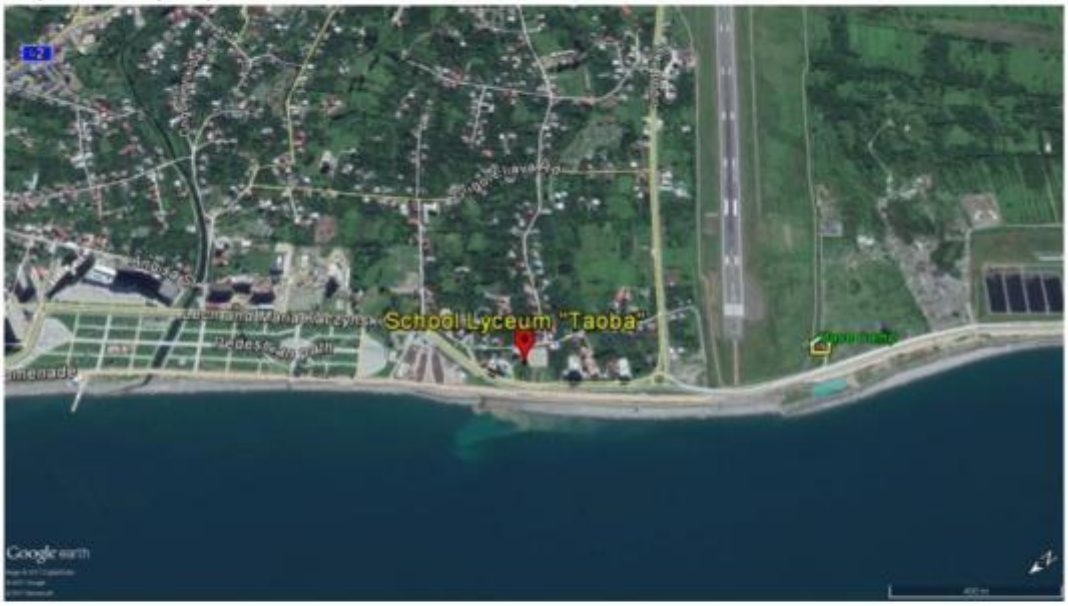
N	The applied functions of the spaces and areas	Admissible norms		
		L day (DBA)		
		Day	Evening	L night (DBA)
1	Studying establishments and reading rooms	35	35	35
2	The treatment cabinets of the medical establishments	40	40	40
3	Residential and sleeping areas	35	30	30
4	The treatment and rehabilitation rooms of the inpatient medical establishments	35	30	30
5	The rooms of the hotel/guest houses/motels	40	35	35
6	Trading halls and guest rooms	55	55	55
7	Restaurants, bars, cafes	50	50	50
8	Spectator/listeners' hall	30	30	30
9	Sport halls and pools	55	55	55
10	Small offices (≤100 m³), working premises and premises	40	40	40

1

	without office technique			
11	Large offices (≥100 m³), working premises and premised with office technique	45	45	45
12	Conversation premises	35	35	35
13	Territories, distanced from the low multistoried residential houses (number of the floors >6), medical establishments, children and social service objects	50	45	40
14	Territories, distanced from the multistoried residential houses (number of the floors >6), cultural, educational, administrative and scientific establishments	55	50	45
15	Territories, distanced from the hotels, trading, service, sport and social organizations	60	55	50

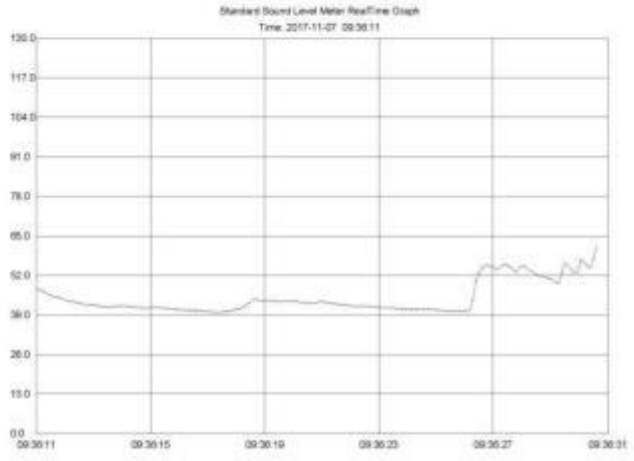
Note: The threshold #13 and highlighted in the table (yellow) is thresholds, which are considered.

Map with samples points:

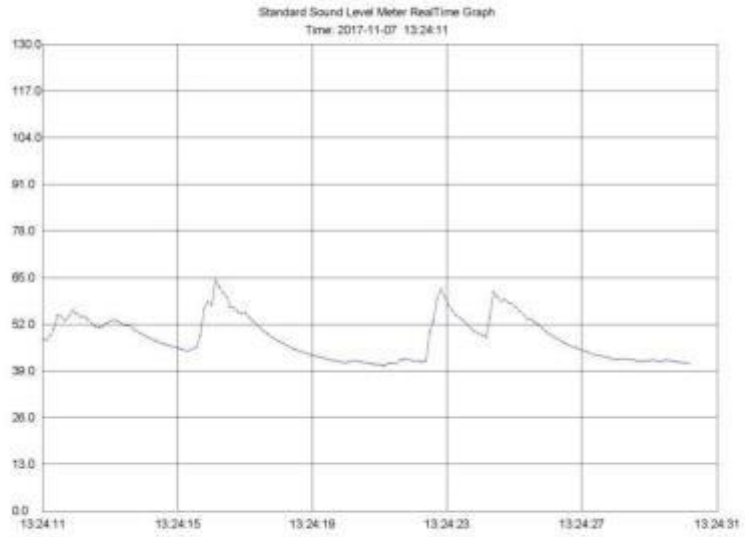


Test results:

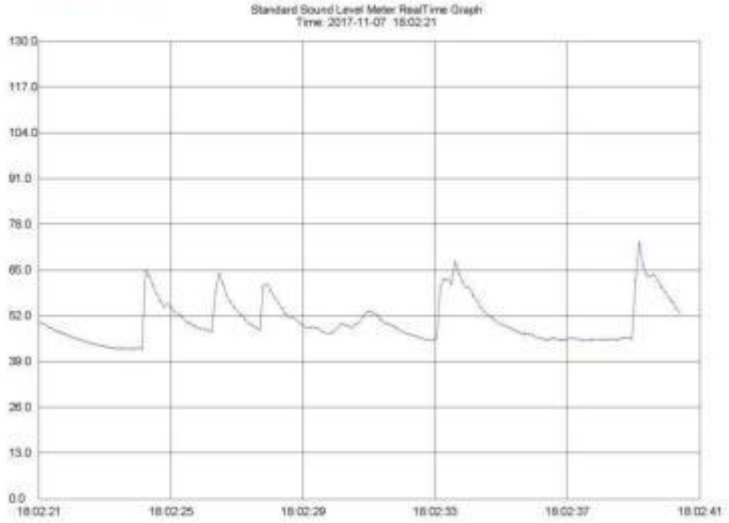
Day 1 (07.11.2017):



Start Time: 07-11-2017,09:36:11
Maximum: 61.50 07-11-2017,09:36:30
Minimum: 39.90 07-11-2017,09:36:17
Sample Rate: 0.10
Average: 44.67

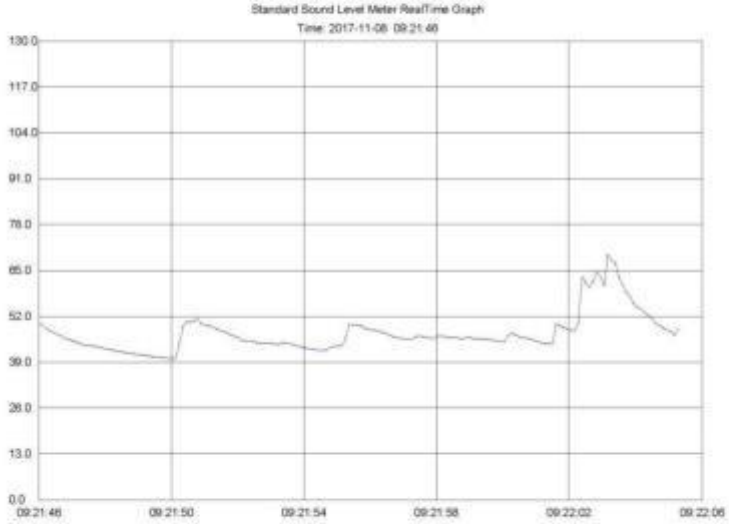


Start Time: 07-11-2017,13:24:11
Maximum: 64.50 07-11-2017,13:24:17
Minimum: 40.50 07-11-2017,13:24:21
Sample Rate: 0.10
Average: 48.25

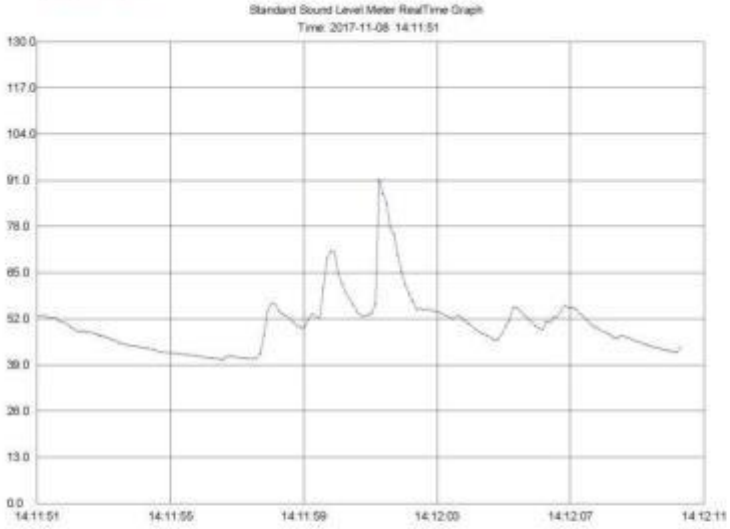


Start Time: 07-11-2017,18:02:21
Maximum: 72.80 07-11-2017,18:02:39
Minimum: 42.50 07-11-2017,18:02:24
Sample Rate: 0.10
Average: 50.57

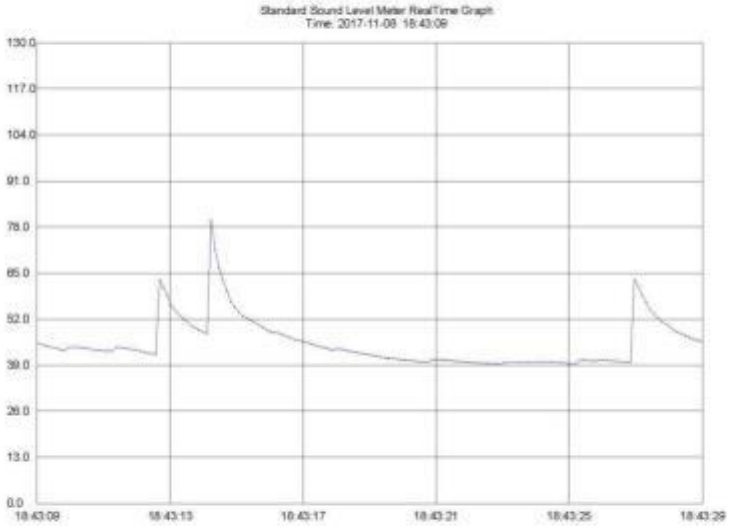
Day 2 (08.11.2017):



Start Time: 08-11-2017, 09:21:46
Maximum: 69.30 08-11-2017,09:22:04
Minimum: 40.10 08-11-2017,09:21:51
Sample Rate: 0.10
Average: 47.20

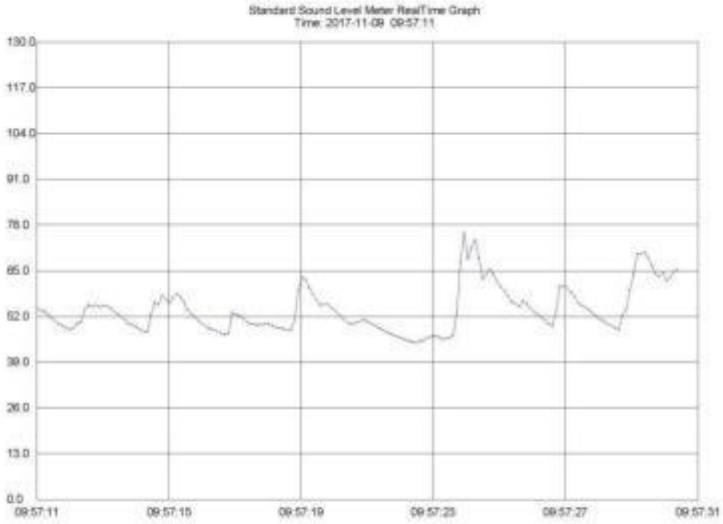


Start Time: 08-11-2017,14:11:51
Maximum: 91.30 08-11-2017,14:12:01
Minimum: 40.50 08-11-2017,14:11:57
Sample Rate: 0.10
Average: 50.42

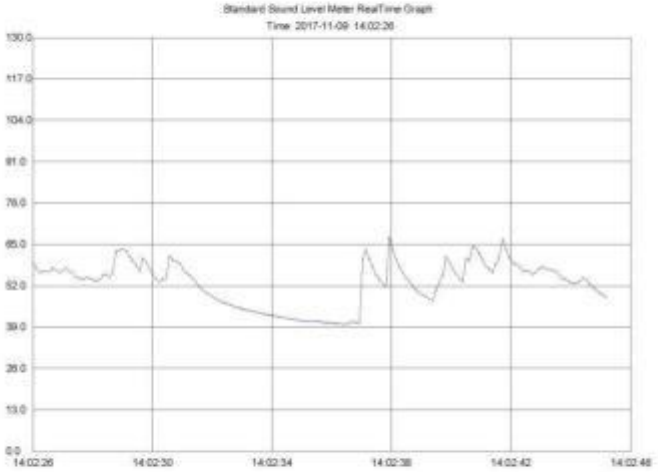


Start Time: 08-11-2017,18:43:09
Maximum: 79.80 08-11-2017,18:43:14
Minimum: 39.30 08-11-2017,18:43:23
Sample Rate: 0.10
Average: 46.22

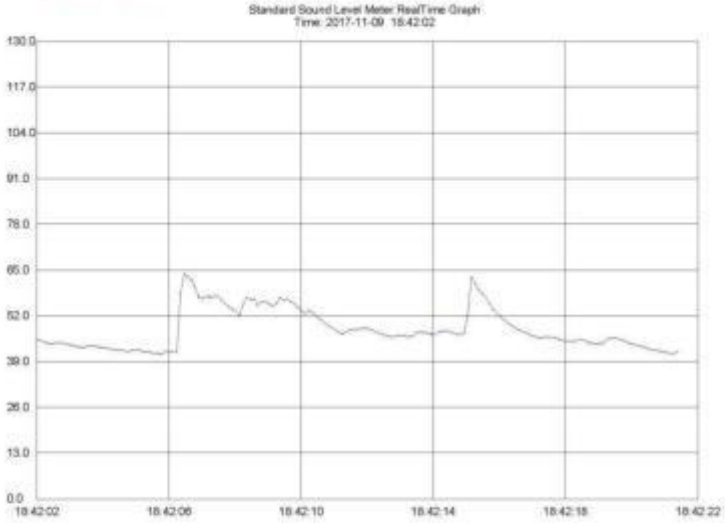
Day 3 (09.11.2017):



Start Time: 09-11-2017,09:57:11
Maximum: 75.70 09-11-2017,09:57:24
Minimum: 44.40 09-11-2017,09:57:22
Sample Rate: 0.10
Average: 53.88

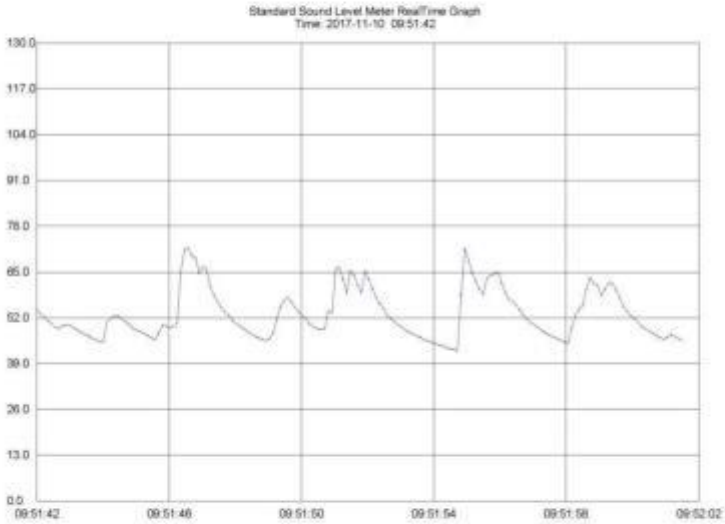


Start Time: 09-11-2017,14:02:26
Maximum: 67.10 09-11-2017,14:02:38
Minimum: 39.90 09-11-2017,14:02:37
Sample Rate: 0.10
Average: 52.71

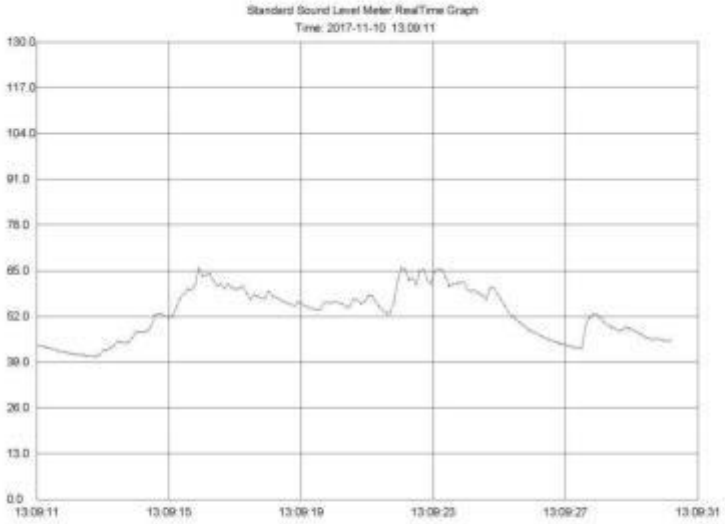


Start Time: 09-11-2017,18:42:02
Maximum: 63.80 09-11-2017,18:42:07
Minimum: 41.10 09-11-2017,18:42:05
Sample Rate: 0.10
Average: 48.11

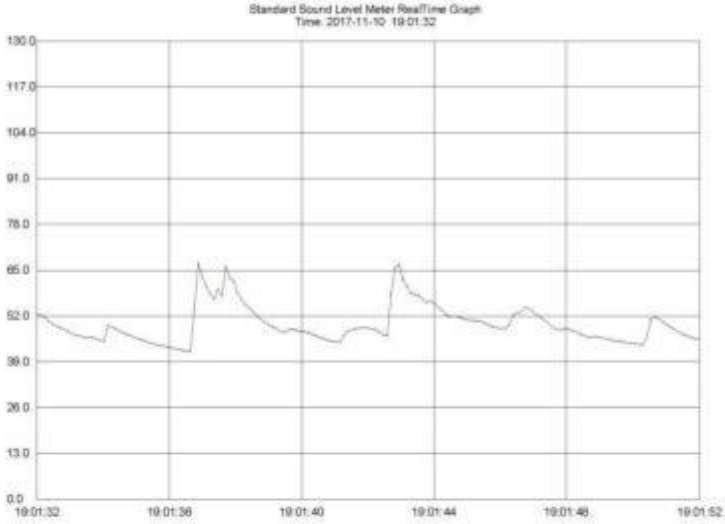
Day 4 (10.11.2017):



Start Time: 10-11-2017,09:51:42
Maximum: 71.80 10-11-2017,09:51:47
Minimum: 42.70 10-11-2017,09:51:55
Sample Rate: 0.10
Average: 52.99

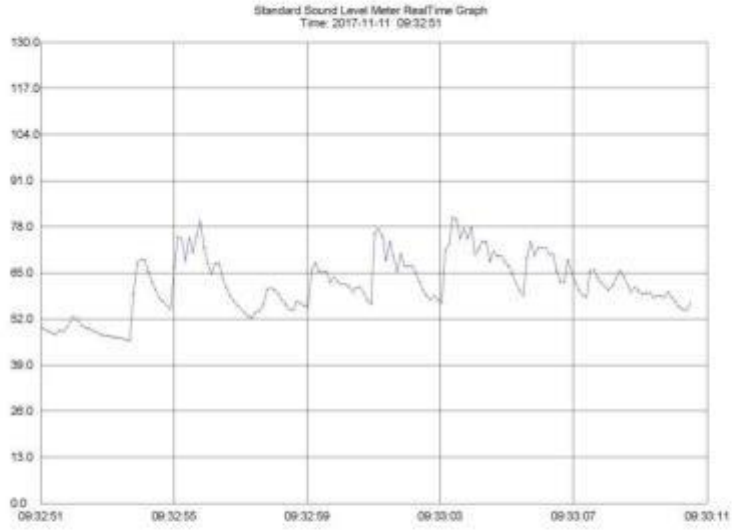


Start Time: 10-11-2017,13:09:11
Maximum: 65.80 10-11-2017,13:09:16
Minimum: 40.50 10-11-2017,13:09:13
Sample Rate: 0.10
Average: 52.72

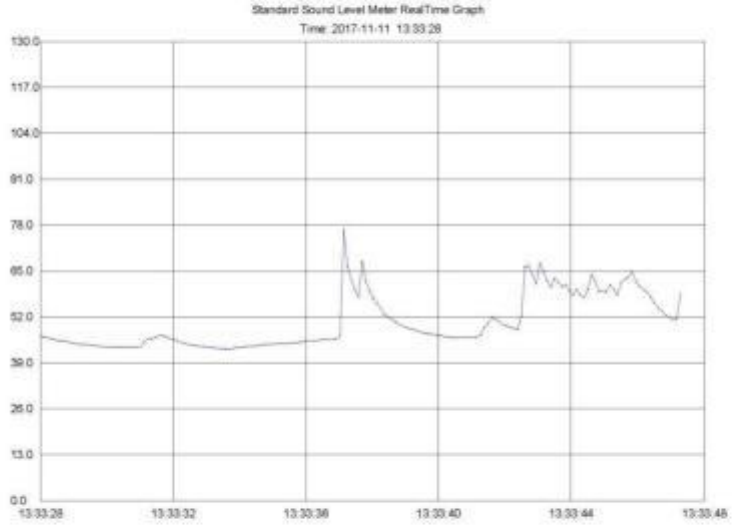


Start Time: 10-11-2017,19:01:32
Maximum: 66.90 10-11-2017,19:01:43
Minimum: 41.90 10-11-2017,19:01:37
Sample Rate: 0.10
Average: 49.66

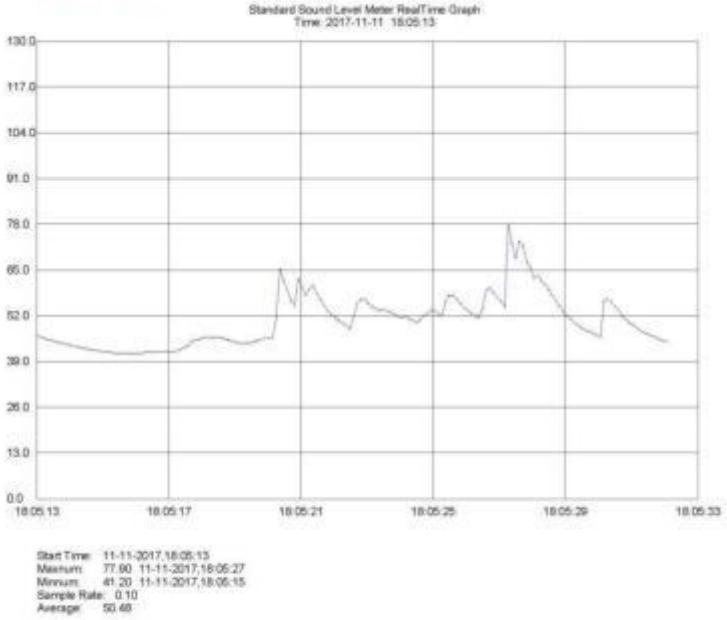
Day 5 (11.11.2017):



Start Time: 11-11-2017,09:32:51
Maximum: 80.80 11-11-2017,09:33:04
Minimum: 45.80 11-11-2017,09:32:53
Sample Rate: 0.10
Average: 61.66



Start Time: 11-11-2017,13:33:28
Maximum: 76.80 11-11-2017,13:33:37
Minimum: 42.90 11-11-2017,13:33:34
Sample Rate: 0.10
Average: 50.29



Meteorological Data (07.11.2017 - 11.11.2017) Batumi, Georgia

Weather History & Observations

2017	Temp. (°C)			Dew Point (°C)			Humidity (%)			Sea Level Press. (hPa)			Visibility (km)			Wind (km/h)			Precip. (mm)	Events
Nov	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
7	17	14	13	15	13	11	100	88	82	1027	1025	1021	10	10	6	21	11	-	0.00	Rain
8	17	16	14	14	13	12	94	90	77	1027	1026	1025	10	10	9	13	10	-	0.00	-
9	17	14	13	14	13	12	100	88	77	1025	1024	1022	10	10	9	11	8	-	0.00	Rain
10	17	13	11	14	12	10	100	92	77	1022	1022	1021	10	10	6	14	10	-	0.00	Rain
11	17	13	11	12	11	9	94	83	68	1022	1021	1020	10	10	10	27	16	-	0.00	-

Weather History Graph

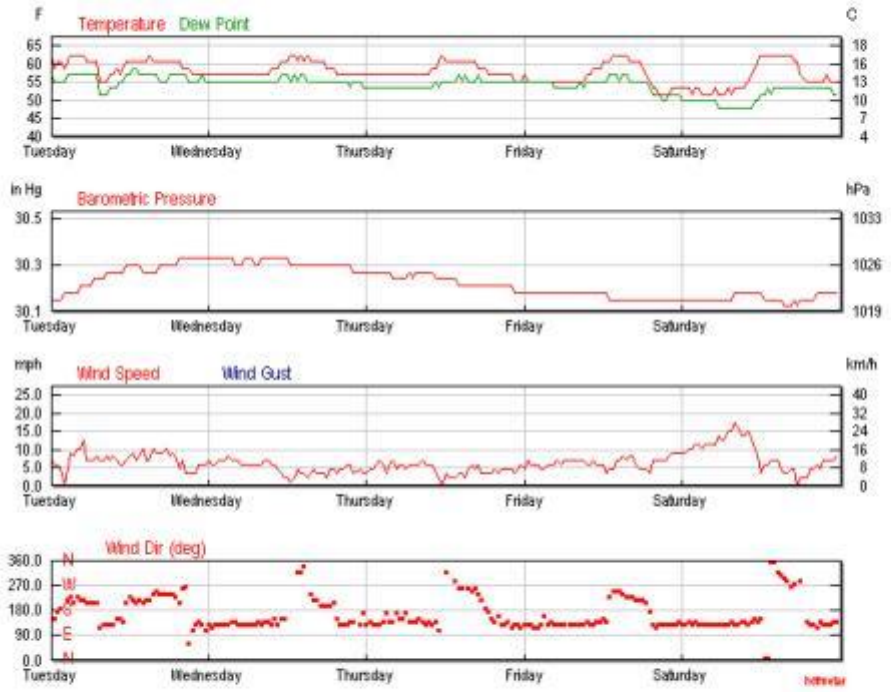


Photo-Documentation:

Conclusion:

"Based on the results of the tests conducted in one place (School Lyceum "Taoba"), Monitoring noise levels are slightly higher than the norm of Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments. However during the monitoring period no working activities were present".

Location	Days	Period of day	Time of taken sample	Monitoring result of daily mean (Average); dBA	Daily values (Arithmetical average) dBA	Thresholds of daily mean by Georgian law (Resolution No 398 of the Government of Georgia, August 15, 2017) - See Annex N1; Item #13; dBA
School-lyceum "Taoba"	Day 1 07.11.2017	Morning	09:36	44.67	**46.46**	50
		Noon	13:24	48.25		
		Evening	18:02	50.57	**50.57**	45
	Day 2 08.11.2017	Morning	09:21	47.20	**48.81**	50
		Noon	14:11	50.42		
		Evening	18:43	45.22	**45.22**	45
	Day 3 09.11.2017	Morning	09:57	53.86	**53.28**	50
		Noon	14:02	52.71		
		Evening	18:42	48.11	**48.11**	45
	Day 4 10.11.2017	Morning	09:51	52.99	**52.85**	50
		Noon	13:09	52.72		
		Evening	19:01	49.66	**49.66**	45
	Day 5 11.11.2017	Morning	09:32	61.66	**55.97**	50
		Noon	13:33	50.29		
		Evening	18:05	50.48	**50.48**	45

Report on: Noise Measurement

Monitoring Test

Period of Inspection: 20171211 - 20171215	**Project: Coastal Protection Batumi**	**Location :**	**School-lyceum "Taoba"**

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted noise measurements in order to identify and quantify noise level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - noise Levels; the samples have been taken at one location (School Lyceum "Taoba"), three times a day (morning, afternoon and evening) during five days, during 30 seconds for each taken sample.

Device Name: **Sound Level Meter PCE-322A**

Noise Standards: Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments"

Permissible norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments

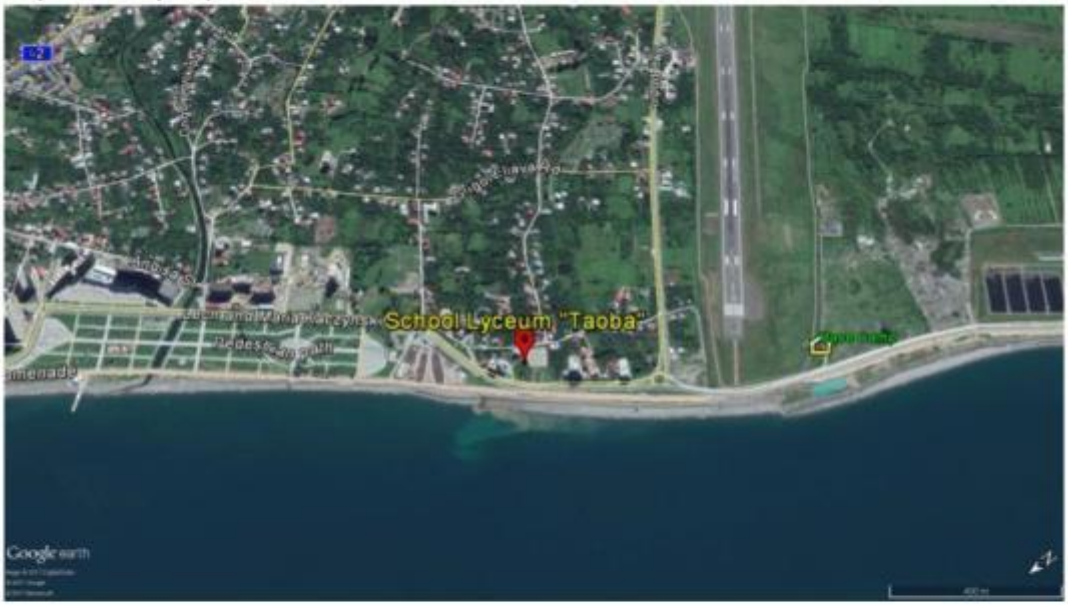
N	The applied functions of the spaces and areas	Admissible norms		
		L day (DBA)		
		Day	Evening	L night (DBA)
1	Studying establishments and reading rooms	35	35	35
2	The treatment cabinets of the medical establishments	40	40	40
3	Residential and sleeping areas	35	30	30
4	The treatment and rehabilitation rooms of the inpatient medical establishments	35	30	30
5	The rooms of the hotel/guest houses/motels	40	35	35
6	Trading halls and guest rooms	55	55	55
7	Restaurants, bars, cafes	50	50	50
8	Spectator/listeners' hall	30	30	30
9	Sport halls and pools	55	55	55
10	Small offices (≤100 m³), working premises and premises	40	40	40

1

	without office technique			
11	Large offices (≥100 m³), working premises and premised with office technique	45	45	45
12	Conversation premises	35	35	35
13	Territories, distanced from the low multistoried residential houses (number of the floors >6), medical establishments, children and social service objects	50	45	40
14	Territories, distanced from the multistoried residential houses (number of the floors >6), cultural, educational, administrative and scientific establishments	55	50	45
15	Territories, distanced from the hotels, trading, service, sport and social organizations	60	55	50

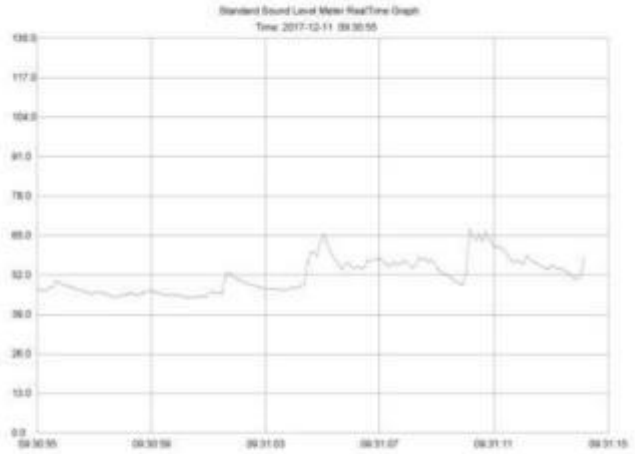
Note: The threshold #13 and highlighted in the table (yellow) is thresholds, which are considered.

Map with samples points:

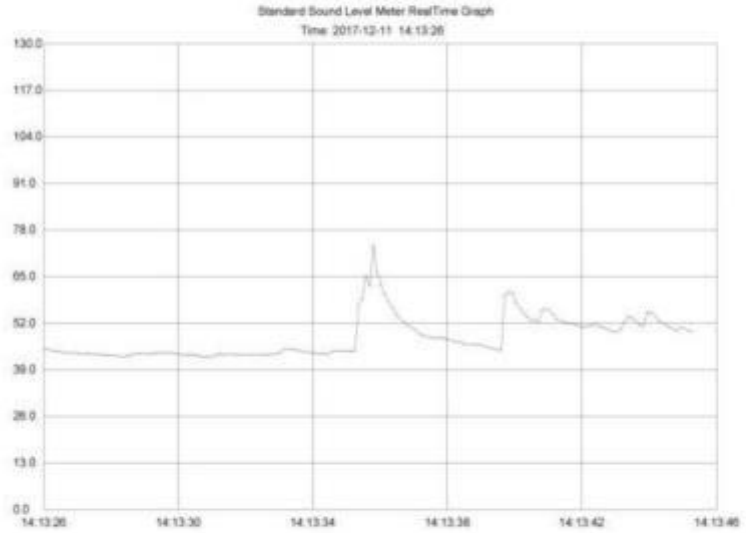


Test results:

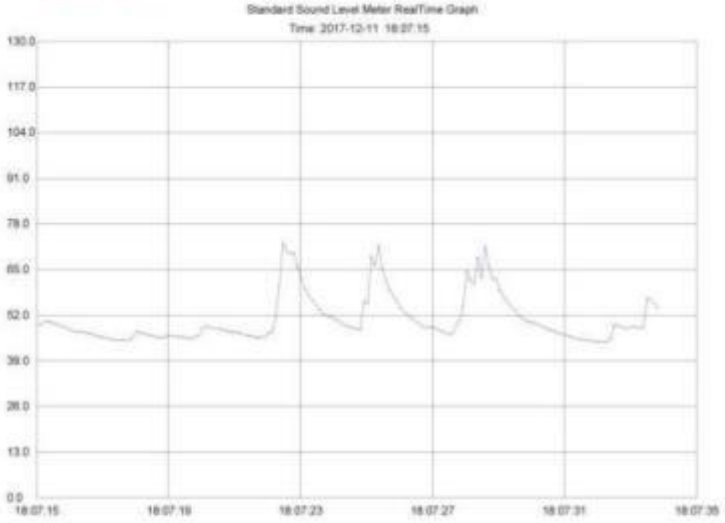
Day 1 (11.12.2017):



Start Time 11-12-2017,09:30:55
Maximum 67.90 11-12-2017,09:31:10
Minimum 44.40 11-12-2017,09:30:58
Sample Rate 0.10
Average 51.84

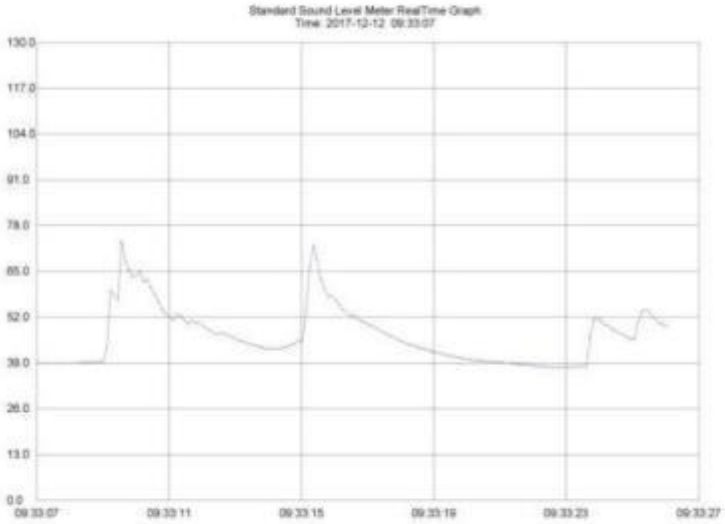


Start Time 11-12-2017,14:13:26
Maximum 73.60 11-12-2017,14:13:36
Minimum 42.70 11-12-2017,14:13:31
Sample Rate 0.10
Average 48.00



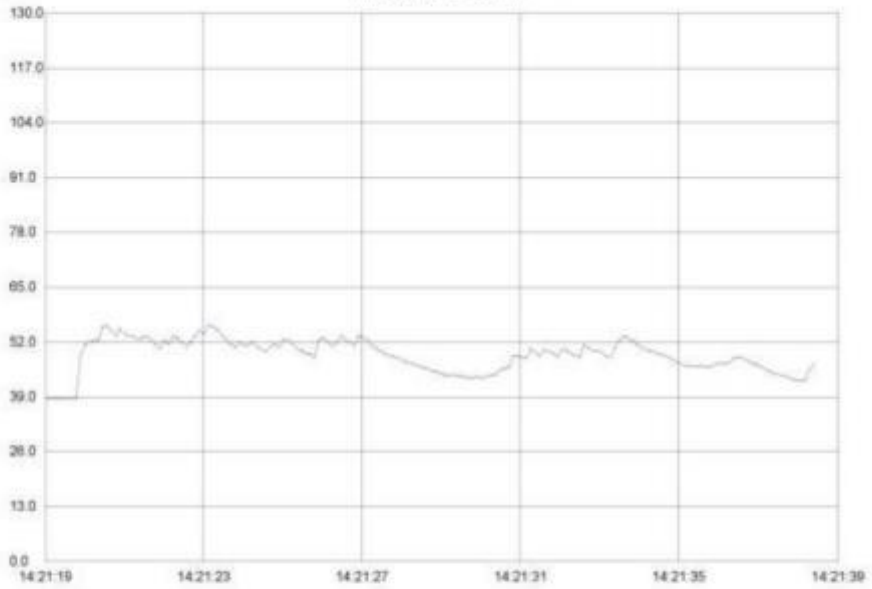
Start Time: 11-12-2017,18:07:15
Maxnum: 72.40 11-12-2017,18:07:17
Minnum: 44.40 11-12-2017,18:07:22
Sample Rate: 0.10
Average: 50.92

Day 2 (12.12.2017):



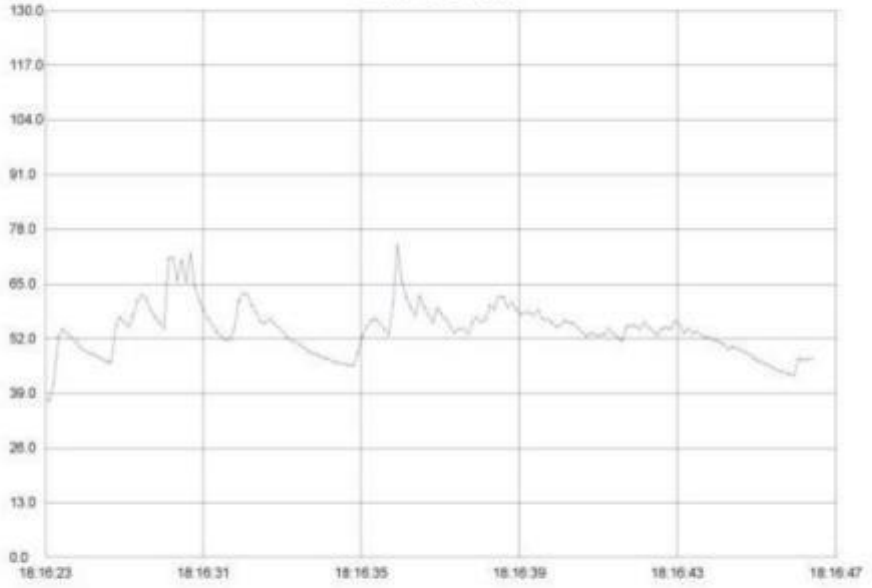
Start Time: 12-12-2017,09:33:07
Maxnum: 73.60 12-12-2017,09:33:09
Minnum: 37.80 12-12-2017,09:33:24
Sample Rate: 0.10
Average: 46.70

Standard Sound Level Meter RealTime Graph
Time: 2017-12-12 14:21:19



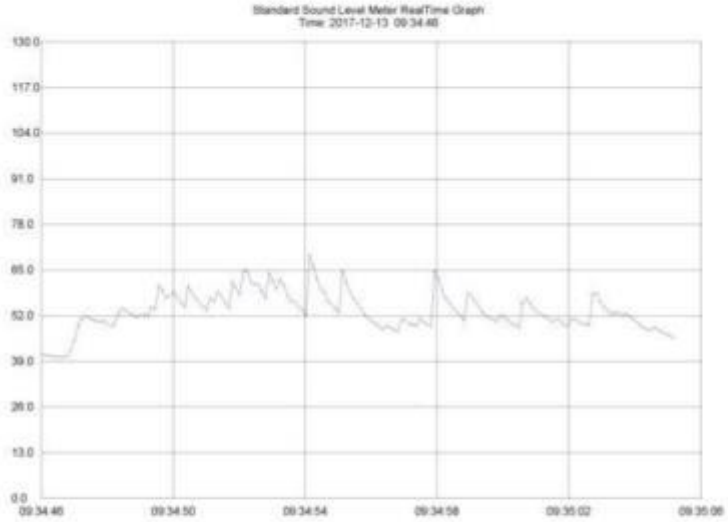
Start Time: 12-12-2017,14:21:19
Maxnum: 56.00 12-12-2017,14:21:23
Minnum: 38.50 12-12-2017,14:21:20
Sample Rate: 0.10
Average: 48.77

Standard Sound Level Meter RealTime Graph
Time: 2017-12-12 18:16:23

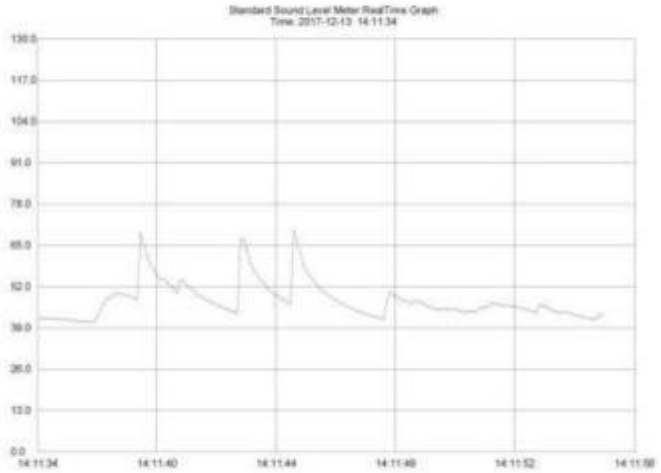


Start Time: 12-12-2017,18:16:23
Maxnum: 74.30 12-12-2017,18:16:36
Minnum: 37.40 12-12-2017,18:16:23
Sample Rate: 0.10
Average: 54.12

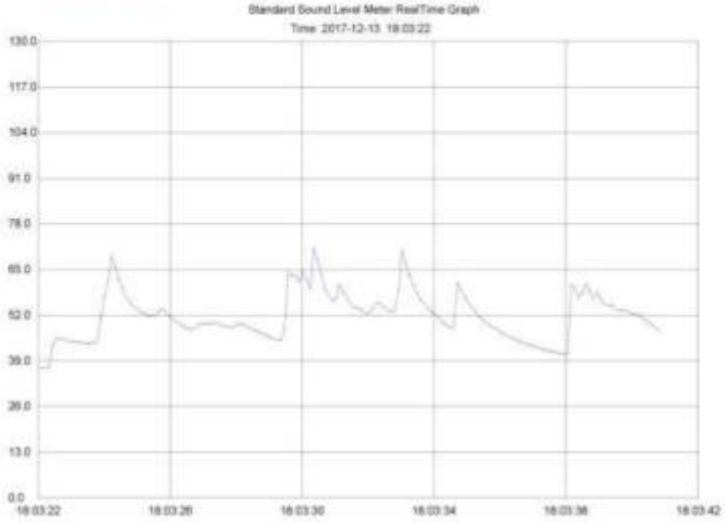
Day 3 (13.12.2017):



Start Time: 13-12-2017,09:34:46
Maximum: 69.30 13-12-2017,09:34:54
Minimum: 40.30 13-12-2017,09:34:47
Sample Rate: 0.10
Average: 53.28

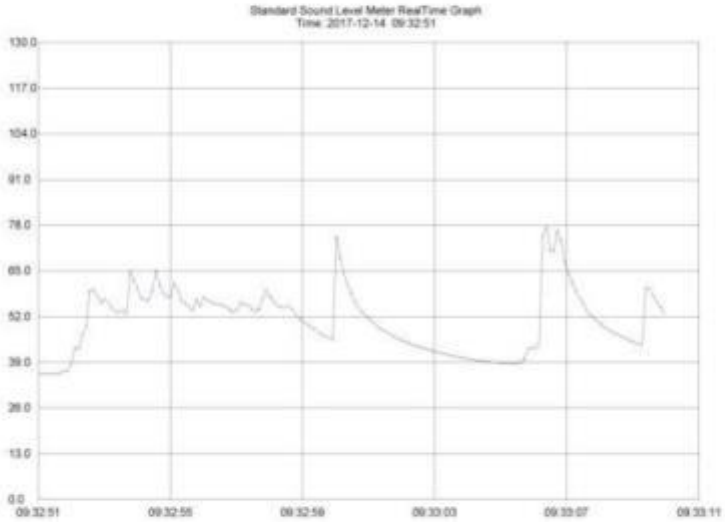


Start Time: 13-12-2017,14:11:34
Maximum: 69.80 13-12-2017,14:11:45
Minimum: 40.80 13-12-2017,14:11:36
Sample Rate: 0.10
Average: 47.73

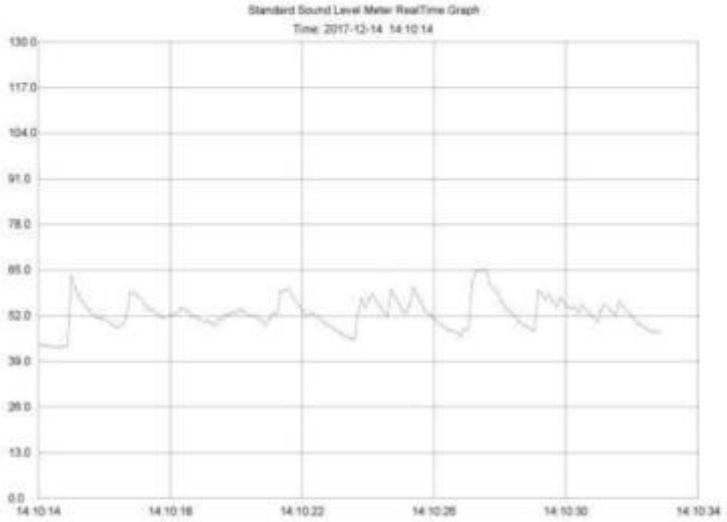


Start Time: 13-12-2017,18:03:22
Maxnum: 70.90 13-12-2017,18:03:31
Minnum: 36.90 13-12-2017,18:03:22
Sample Rate: 0.10
Average: 51.81

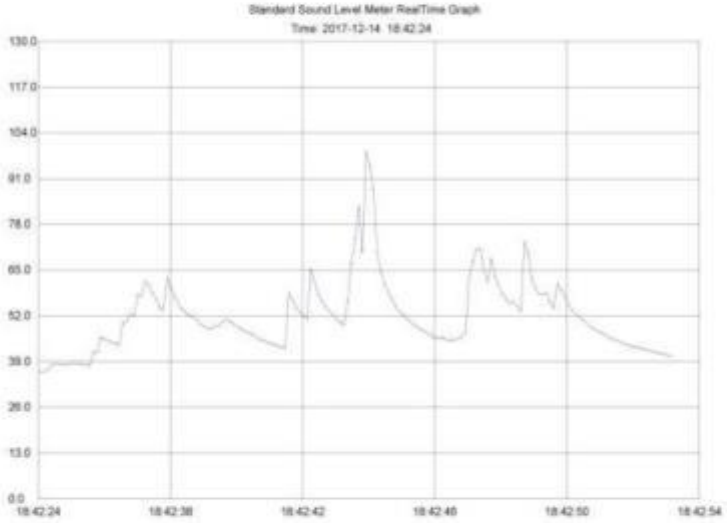
Day 4 (14.12.2017):



Start Time: 14-12-2017,09:32:51
Maxnum: 77.50 14-12-2017,09:33:06
Minnum: 35.50 14-12-2017,09:32:52
Sample Rate: 0.10
Average: 50.92

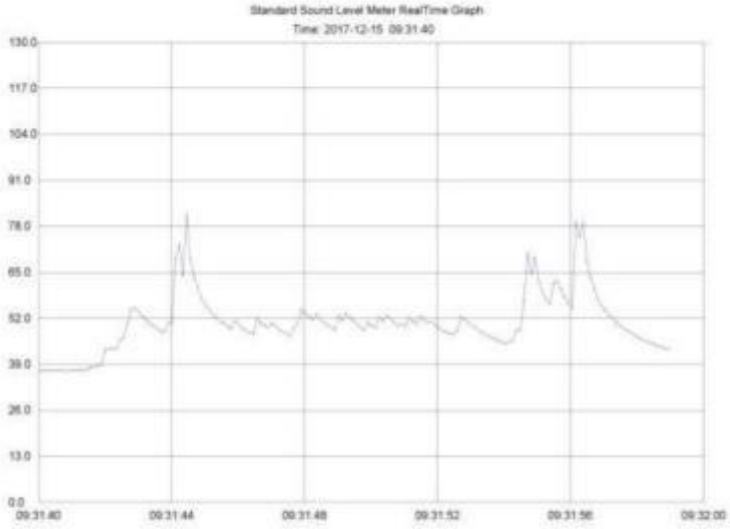


Start Time: 14-12-2017,14:10:14
Maximum: 65.20 14-12-2017,14:10:26
Minimum: 43.10 14-12-2017,14:10:15
Sample Rate: 0.10
Average: 52.66



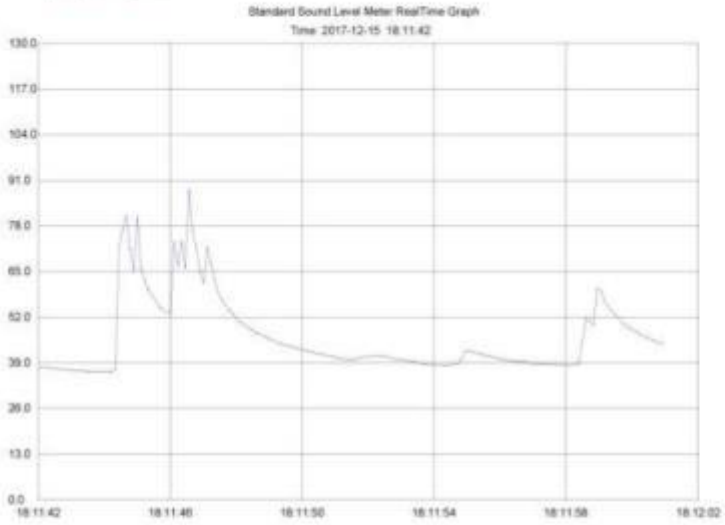
Start Time: 14-12-2017,18:42:24
Maximum: 98.60 14-12-2017,18:42:44
Minimum: 36.20 14-12-2017,18:42:24
Sample Rate: 0.10
Average: 51.87

Day 5 (15.11.2017):



Start Time: 15-12-2017,09:31:40
Maximum: 81.20 15-12-2017,09:31:45
Minimum: 37.00 15-12-2017,09:31:41
Sample Rate: 0.10
Average: 50.84

Start Time: 15-12-2017,14:22:18
Maximum: 91.30 15-12-2017,14:22:33
Minimum: 37.40 15-12-2017,14:22:19
Sample Rate: 0.10
Average: 52.28



Start Time: 15-12-2017,18:11:42
Maximum: 88.20 15-12-2017,18:11:47
Minimum: 36.50 15-12-2017,18:11:45
Sample Rate: 0.10
Average: 46.35

Meteorological Data (11.12.2017 - 15.12.2017) Batumi, Georgia

Weather History & Observations

2017	Temp. (°C)			Dew Point (°C)			Humidity (%)			Sea Level Press. (hPa)			Visibility (km)			Wind (km/h)			Precip. (mm)	Events
Dec	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	low	high	avg	high	sum	
11	12	9	6	6	3	-1	87	68	47	1030	1027	1020	10	10	6	45	31	-	0.00	Rain
12	18	13	8	7	2	1	71	56	34	1029	1027	1025	-	-	-	42	35	61	0.00	
13	16	11	6	8	2	-1	87	54	36	1025	1022	1020	-	-	-	39	29	-	0.00	
14	14	10	6	8	3	0	87	67	54	1021	1018	1015	-	-	-	29	18	-	0.00	
15	17	12	8	7	3	2	71	59	42	1023	1019	1016	10	10	10	40	26	-	0.00	

Weather History Graph

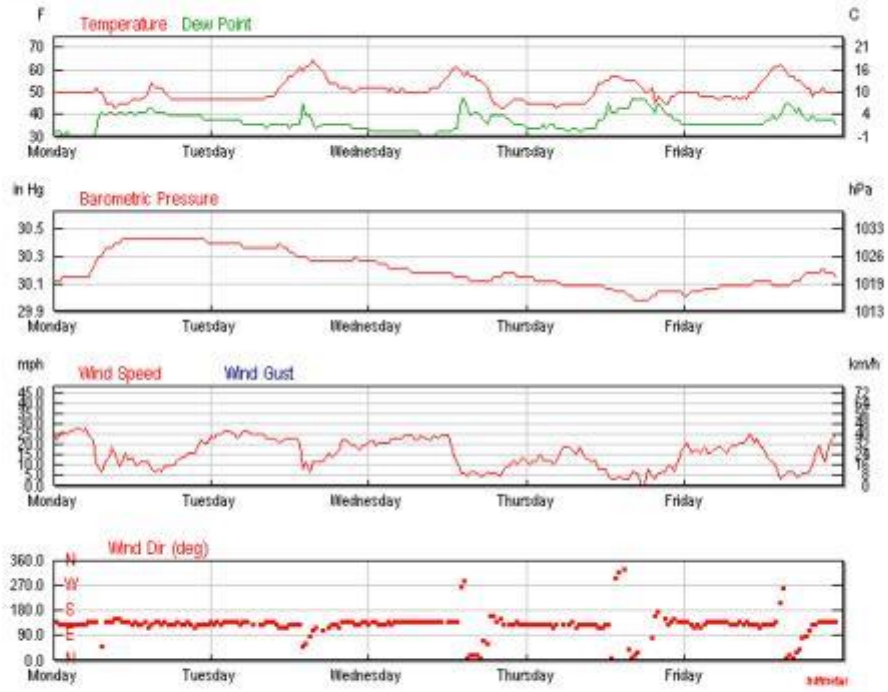


Photo-Documentation:

Conclusion:
"Based on the results of the tests conducted in one place (School Lyceum "Taoba"), Monitoring noise levels are slightly higher than the norm of Resolution No 398 of the Government of Georgia, August 15, 2017; Technical Regulations – „On the norms of acoustic noise in the premises of buildings and areas of the residential houses and social/public establishments. However during the monitoring period no working activities were present".

Location	Days	Period of day	Time of taken sample	Monitoring result of daily mean (Average); dBA	Daily values (Arithmetical average) dBA	Thresholds of daily mean by Georgian law (Resolution No 398 of the Government of Georgia, August 15, 2017) - See Annex N1; Item #13; dBA
School-lyceum "Taoba"	Day 1 11.12.2017	Morning	09:30	51.84	**49.92**	50
		Noon	14:13	48.00		
		Evening	18:07	50.92	**50.92**	45
	Day 2 12.12.2017	Morning	09:33	46.70	**47.73**	50
		Noon	14:21	48.77		
		Evening	18:16	54.12	**54.12**	45
	Day 3 13.12.2017	Morning	09:34	53.28	**50.50**	50
		Noon	14:11	47.73		
		Evening	18:03	51.81	**51.81**	45
	Day 4 14.12.2017	Morning	09:32	50.92	**51.79**	50
		Noon	14:10	52.66		
		Evening	18:42	51.87	**51.87**	45
	Day 5 15.12.2017	Morning	09:31	50.84	**51.56**	50
		Noon	14:22	52.28		
		Evening	18:11	46.35	**46.35**	45

Attachment 2: Water Turbidity measurements

July, 2017 - implemented by National Environmental Agency

The National Environmental Agency
The Department of the Environmental Pollution Monitoring

The Atmospheric air, water
and soil Analyses laboratory
www.nea.gov.ge

QMA 6

THE NATIONAL ENVIRONMENTAL AGENCY
THE DEPARTMENT OF ENVIRONMENTAL POLLUTION MONITORING

ATMOSPHERIC AIR, WATER and SOIL ANALYSIS LABORATORY

8th Floor – David Agmashenebeli ave.150, Tbilisi, Georgia, 0112

– Test report – №86
10.07.2017

1/4

The National Environmental Agency
The Department of the Environmental Pollution Monitoring

The Atmospheric air, water
and soil Analyses laboratory
www.nea.gov.ge

QMA 6

– Test report – №86
10.07.2017

Registered sample number: №766, №767

Name of customer: Ltd "Struck Group Georgia"

Address of customer: Varketili III, №33b, Tbilisi

Tel.: (+99532) 579 74-10-11

Identification of samples by the applicant: №1, №2

Description and identification of the sample (matrix): Sea water

Identification of the used method: Photometric

The date of receipt of the sample: 06.07.2017

The date of examination: 06.07.2017

Number of Parties to the Protocol: 4

The National Environmental Agency
The Department of the Environmental Pollution Monitoring

The Atmospheric air, water
and soil Analyses laboratory
www.nea.gov.ge

QMA 6

№766 (1)

Batumi

International Airports runway (Airport)

№	Measured Parameters	Unit	Results	Methods
1	Turbidity	NTU	0.44	Photometric

№767 (2)

Batumi

The area surrounding the Entertainment Center (Boom-Boom Beach).

№	Measured Parameters	Unit	Results	Methods
1	Turbidity	NTU	0.52	Photometric

Test results may be disputed in writing within 14 days from the date of receipt of the Protocol.

Executor:

G.Kuchava

Head of laboratory: **Elina Bakradze**

Water Turbidity Test Report

(Monitoring)

Sample taking date: 2017/08/11	Project: Coastal Protection Batumi	Location :	GPS 1: (X= 715816; Y= 4611061)
			GPS 2: (X= 716086; Y= 4611382)

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted water turbidity measurements in order to identify and quantify water turbidity level of workplace for community.

General description

Nowadays, construction activity was carried out only one place near (School Lyceum "Taoba") that is why Contractor "Struijk Group" Ltd performed the water turbidity monitoring test near the mentioned place. Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - water turbidity levels; the samples have been taken at two location {GPS 1: (X= 715816; Y= 4611061); and GPS 2: (X= 716086; Y= 4611382)}.

Device Name: **TSS Portable handheld measurement instrument for turbidity/solids.**

Water turbidity standards: In accordance with the UKTAG proposed standard for suspended solids, August 2007

UKTAG proposed standard

	Min	Max
Water Turbidity (weighted particles) mg/l	25 mg/l 100 mg/l 200 mg/l 400 mg/l	100 mg/l low risk 200 mg/l moderate risk 400 mg/l high risk 400 < mg/l unacceptable risk

Map with samples points:

1

N1	Location	Measured Parameters	Unit	Results	Method
1	GPS 1: (X= 715816; Y= 4611061)	Suspended Solids	mg/L	23	Photometric

N1	Location	Measured Parameters	Unit	Results	Method
2	GPS 2: (X= 716086; Y= 4611382)	Suspended Solids	mg/L	19	Photometric

Conclusion:

Based on the results of the tests conducted in two places {GPS 1: (X= 715816; Y= 4611061); and GPS 2: (X= 716086; Y= 4611382)}, Monitoring water turbidity level are under the norm of UKTAG standard.

Photos:






2

Water Turbidity Test Report

(Monitoring)

Sample taking date: 2017/09/11	**Project: Coastal Protection Batumi**	**Location :**	**GPS 1: (X= 715623; Y= 4610841)**
			GPS 2: (X= 715580; Y= 4610778)

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted water turbidity measurements in order to identify and quantify water turbidity level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - water turbidity levels; the samples have been taken at two location {GPS 1: (X= 715816; Y= 4610841); and GPS 2: (X= 715580; Y= 4610778)}.

Device Name: **TSS Portable handheld measurement instrument for turbidity/solids.**

Water turbidity standards: In accordance with the UKTAG proposed standard for suspended solids, August 2007

UKTAG proposed standard

	Min	Max
Water Turbidity (weighted particles) mg/l	25 mg/l 100 mg/l 200 mg/l 400 mg/l	100 mg/l low risk 200 mg/l moderate risk 400 mg/l high risk 400 < mg/l unacceptable risk

Map with samples points:

N1	Location	Measured Parameters	Unit	Results	Method
1	GPS 1: (X= 715623; Y= 4610841)	Suspended Solids	mg/L	9.26	Photometric

N1	Location	Measured Parameters	Unit	Results	Method
2	GPS 2: (X= 715580; Y= 4610778)	Suspended Solids	mg/L	7.24	Photometric

Conclusion:

Based on the results of the tests conducted in two places {GPS 1: (X= 715623; Y= 4610841); and GPS 2: (X= 715580; Y= 4610778)}, Monitoring water turbidity level are under the norm of UKTAG standard.

Photos:






Water Turbidity Test Report

(Monitoring)

Sample taking date: 2017/10/10	Project: Coastal Protection Batumi	Location :	GPS 1: (X= 715771; Y= 4611059)
			GPS 2: (X= 715580; Y= 4610778)

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted water turbidity measurements in order to identify and quantify water turbidity level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - water turbidity levels; the samples have been taken at two location {GPS 1: (X= 715771; Y= 4611059); and GPS 2: (X= 715580; Y= 4610778)}.

Device Name: **TSS Portable handheld measurement instrument for turbidity/solids.**

Water turbidity standards: In accordance with the UKTAG proposed standard for suspended solids, August 2007

UKTAG proposed standard

	Min	Max
Water Turbidity (weighted particles) mg/l	25 mg/l 100 mg/l 200 mg/l 400 mg/l	100 mg/l low risk 200 mg/l moderate risk 400 mg/l high risk 400 < mg/l unacceptable risk

Map with samples points:

1

N1	Location	Measured Parameters	Unit	Results	Method
1	GPS 1: (X= 715771; Y= 4611059)	Suspended Solids	mg/L	18.03	Photometric

N1	Location	Measured Parameters	Unit	Results	Method
2	GPS 2: (X= 715580; Y= 4610778)	Suspended Solids	mg/L	24.35	Photometric

Conclusion:

Based on the results of the tests conducted in two places {GPS 1: (X= 715771; Y= 4611059); and GPS 2: (X= 715580; Y= 4610778)}, Monitoring water turbidity level are under the norm of UKTAG standard.

Photos:






2

Water Turbidity Test Report

(Monitoring)

Sample taking date: 2017/11/07	Project: Coastal Protection Batumi	Location :	GPS 1: (X= 715671; Y= 4610929)
			GPS 2: (X= 715516; Y= 4610717)

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted water turbidity measurements in order to identify and quantify water turbidity level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - water turbidity levels; the samples have been taken at two location {GPS 1: (X= 715671; Y= 4610929); and GPS 2: (X= 715516; Y= 4610717)}.

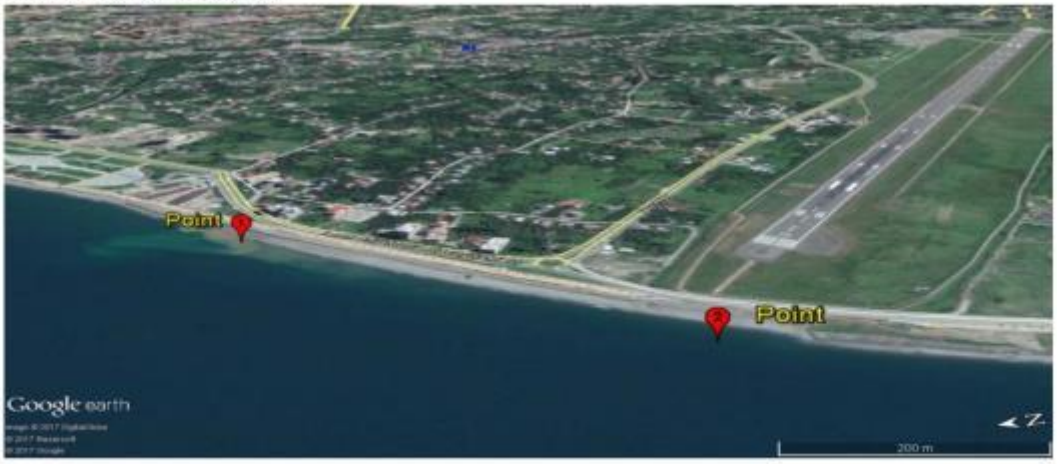
Device Name: **TSS Portable handheld measurement instrument for turbidity/solids.**

Water turbidity standards: In accordance with the UKTAG proposed standard for suspended solids, August 2007

UKTAG proposed standard

	Min	Max
Water Turbidity (weighted particles) mg/l	25 mg/l 100 mg/l 200 mg/l 400 mg/l	100 mg/l low risk 200 mg/l moderate risk 400 mg/l high risk 400 < mg/l unacceptable risk

Map with samples points:



1

N1	Location	Measured Parameters	Unit	Results	Method
1	GPS 1: (X= 715671; Y= 4610929)	Suspended Solids	mg/L	21.43	Photometric

N1	Location	Measured Parameters	Unit	Results	Method
2	GPS 2: (X= 715516; Y= 4610717)	Suspended Solids	mg/L	18.09	Photometric

Conclusion:

Based on the results of the tests conducted in two places {GPS 1: (X= 715671; Y= 4610929); and GPS 2: (X= 715516; Y= 4610717)}. Monitoring water turbidity level are under the norm of UKTAG standard.

Photos:






2

Water Turbidity Test Report

(Monitoring)

Sample taking date: 2017/12/11	Project: Coastal Protection Batumi	Location :	GPS 1: (X= 715866; Y= 4611143)
			GPS 2: (X= 715637; Y= 4610888)

Introduction

Under the project Coastal Protection Batumi contractor "Struijk Group Georgia" LLC Environmental Manager conducted water turbidity measurements in order to identify and quantify water turbidity level of workplace for community.

General description

Contractor Environmental Manager Mamuka Shaorshadze visited site and took measures - water turbidity levels; the samples have been taken at two location {GPS 1: (X= 715866; Y= 4611143); and GPS 2: (X= 715637; Y= 4610888)}.

Device Name: **TSS Portable handheld measurement instrument for turbidity/solids.**

Water turbidity standards: In accordance with the UKTAG proposed standard for suspended solids, August 2007

UKTAG proposed standard

	Min	Max
Water Turbidity (weighted particles) mg/l	25 mg/l 100 mg/l 200 mg/l 400 mg/l	100 mg/l low risk 200 mg/l moderate risk 400 mg/l high risk 400 < mg/l unacceptable risk

Map with samples points:

1

N1	Location	Measured Parameters	Unit	Results	Method
1	GPS 1: (X= 715866; Y= 4611143)	Suspended Solids	mg/L	31.70	Photometric

N1	Location	Measured Parameters	Unit	Results	Method
2	GPS 2: (X= 715637; Y= 4610888)	Suspended Solids	mg/L	44.60	Photometric

Conclusion:

Based on the results of the tests conducted in two places {GPS 1: (X= 715866; Y= 4611143); and GPS 2: (X= 715637; Y= 4610888)}, Monitoring water turbidity level are under the norm of UKTAG standard.

Photos:






2

Attachment 3: Site re-entry walk over surveys for preventing damage to flora and Fauna

July, 2017 No spaces to be conservated in this project frames

Project: Batumi Costal Protection

Report of: Site re-entry walk over survey (from delta Chorokhi to Alphabet tower) for preventing damage to Fauna

Report N3 (July)

Location - Batumi City

Date: 10th July, 2017

This report reflects information about conducted site re-entry walk over survey (along the boulevard) on 1st June, 2017 of investigation existing Fauna terrestrial habitats. Investigation site section was covered as sea line as sea parts territories. Please see the investigation location:

During the investigation period weather was cloudy. Investigation was conducted from 7 am to 10 pm.

There were several species of avifauna identified on the mentioned location, please see below the list of table:

Avifauna		Quantity		
Georgian Name	Scientific Name	Baseline date	Date	
		24/02/2017	01/06/2017	01/07/2017
დიდი კოკონა	Podiceps cristatus	67	-	-
მცირე კოკონა	Tachybaptus ruficollis	3	-	-

1

დიდი ჩვამა	Phalacrocorax carbo	14	2	2
რუხი ყანჩა	Ardea cinerea	2	-	-
დიდი თეთრი ყანჩა	Ardea alba	1	-	-
ქოჩორა ყვინთია	Aythya fuligula	28	-	-
მერა	Milvus migrans	1	-	-
ჩვეულებრივი კაკაჩა	Buteo buteo	2	-	-
მელოტა	Fulica atra	4	-	-
თეთრი ბოლოქანქარა	Motacilla alba	5	1	-
სკვინჩა	Fringilla coelebs	2	1	1
სახლის ბეღურა	Passer domesticus	11	4	1
რუხი ყვავი	Corvus cornix	8	-	1
ჩვეულებრივი თევზიყლაპია	Sterna hirundo	1	-	-
ყვითელფეხა თოლია	Larus michahellis	135	-	156
ტბის თოლია	Chroicocephalus ridibundus	56	-	-
მებორნე	Actitis hypoleucos	-	1	-
პატარა წინტალა	Charadrius dubius	-	2	2
შევარდენი	Falco subbuteo	-	1	-
ვერცხლისფერი თოლია	Larus cachinnans	-	23	-
სოფლის მერცხალი	Hirundo rustica	-	40	-
მთის ბოლოქანქალა	Motacilla cinerea	-	1	-
შავი ყვავი	Corvus corone	-	1	-

There were several species of terrestrial mammals habitats identified on the mentioned location, please see below the list of table:

Terrestrial animals		Quantity		
Georgian Name	Scientific Name	Baseline date	Date	
		24/02/2017	1/6/2017	1/7/2017
წავი	Lutralutra	4	1	-
მაჩვი	Meles meles minor	7	2	1
ნუტრია	Myocastor coypus	8	1	1
ბუჩქნარის მემინდვრია	Microtus arvalis	14	5	2
მინდვრის თაგვი	Apodemus agrarius	23	12	15
ვასაკა	Hyla arborea	15	4	4
ჩვეულებრივი გომბეშო	Bufo	32	21	15
მწვანე ბაყაყი	Rana esculenta	27	13	9
ჩვეულებრივი ტრიტონი	Triturus vulgaris	13	7	4
ჩვეულებრივი ანკარა	Natrix natrix	4	2	1
წყლის ანკარა	Natrix tessellata	9	2	3
კასპიის კუ	Mauremys caspica	2	1	2
ჭაობის კუ	Emys orbicularis	6	4	2
რუხი კურდღელი	Lepus europaeus	-	2	1
ჩვეულებრივი თხუნელა	Talpa europaea	-	1	-

Conclusion:

Nowadays, no one from these identified existing spices aren't doing the breeding and nestling near the project working areas. In case of any breeding and nestling period all construction works will be stopped, which may have any potential impact on them and their locations will be marked and protected.

Note: None of the species provided above in the list are in the red list.

Prepared by: Jimsher Mamuchadze Signature:

Report of: Site re-entry walk over survey (from delta Chorokhi to Alphabet tower) for preventing damage to Flora and Fauna

Project: Batumi Costal Protection

Report N4 (August)

Location - Batumi City

Date: 10st August, 2017

This report reflects information about conducted site re-entry walk over survey on 10st August, 2017 of investigation existing Flora and Fauna terrestrial habitats. Investigation site section was covered as sea line as sea parts territories. Please see the investigation location:

During the investigation period weather was cloudy. Investigation was conducted from 7 am to 10 pm. The investigation was conducted in the project alignment area.

There were several species of avifauna identified on the mentioned location, please see below the list of table:

Avifauna		Quantity			
Georgian Name	Scientific Name	Baseline date	Date		
		24/02/2017	01/06/2017	01/07/2017	01/08/2017
დიდი კოკონა	Podiceps cristatus	67	-	-	2
მცირე კოკონა	Tachybaptus ruficollis	3	-	-	-
დიდი ზღამბა	Phalacrocorax carbo	14	2	2	14
რუხი ყანჩა	Ardea cinerea	2	-	-	-
დიდი თეთრი ყანჩა	Ardea alba	1	-	-	1
მცირე თეთრი ყანჩა	Egretta garzetta	-	-	-	2
ღამის ყანჩა	Nycticorax nycticorax	-	-	-	1
ალკედინი	Alcedo atthis	-	-	-	3

1

ქოჩორა ყვინთია	Aythya fuligula	28	-	-	-
ძერა	Milvus migrans	1	-	-	-
ჩვეულებრივი კაკაჩა	Buteo buteo	2	-	-	-
მელოტა	Fulica atra	4	-	-	-
თეთრი ბოლოქანქარა	Motacilla alba	5	1	-	11
სკვინჩა	Fringilla coelebs	2	1	1	1
სახლის ბეღურა	Passer domesticus	11	4	1	23
მინდვრის ბეღურა	Passer montanus	-	-	-	16
რუხი ყვავი	Corvus cornix	8	-	1	4
ჩვეულებრივი თევზიყლაპია	Sterna hirundo	1	-	-	-
ყვითელფეხა თოლია	Larus michahellis	135	-	156	154
ტბის თოლია	Chroicocephalus ridibundus	56	-	-	-
მებორნე	Actitis hypoleucos	-	1	-	-
პატარა წინტალა	Charadrius dubius	-	2	2	-
შევარდენი	Falco subbuteo	-	1	-	-
ვერცხლისფერი თოლია	Larus cachinnans	-	23	-	-
ჩვეულებრივი ჭიკჭავი	Phylloscopus collybita	-	-	-	1
სოფლის მერცხალი	Hirundo rustica	-	40	-	17
ჭინჭრაქა	Troglodytes troglodytes	-	-	-	2
მთის ბოლოქანქალა	Motacilla cinerea	-	1	-	-
ტურუხტანი	Philomachus pugnax	-	-	-	4
ყორანი	Corvus corone	-	1	-	2

There were several species of terrestrial mammals habitats identified on the mentioned location, please see below the list of table:

Terrestrial animals		**Quantity**			
Georgian Name	Scientific Name	Baseline date	Date		
		24/02/2017	1/6/2017	1/7/2017	01/08/2017
წავი	Lutralutra	4	1	-	-
მაჩვი	Meles meles minor	7	2	1	-
ნუტრია	Myocastor coypus	8	1	1	-
ბუჩქნარის მემინდვრია	Microtus arvalis	14	5	2	-
მინდვრის თაგვი	Apodemus agrarius	23	12	15	1
ტბის ბაყაყი	Rana ridibunda	-	-	-	13
ვასაკა	Hyla arborea	15	4	4	2
ჩვეულებრივი გომბეშო	Bufo	32	21	15	-
მწვანე ბაყაყი	Rana esculenta	27	13	9	-
ჩვეულებრივი ტრიტონი	Triturus vulgaris	13	7	4	-
ჩვეულებრივი ანკარა	Natrix natrix	4	2	1	1
წყლის ანკარა	Natrix tessellata	9	2	3	-

კასპიის კუ	Mauremys caspica	2	1	2	-
ჭაობის კუ	Emys orbicularis	6	4	2	-
რუხი კურდღელი	Lepus europaeus	-	2	1	-
ჩვეულებრივი თხუნელა	Talpa europaea	-	1	-	-

There were several species of Flora identified on the mentioned location, please see below the list of table:

Botanical Survey	
Species	**Familia**
Angelica sylvestris	Apiaceae
Torylis japonica	Apiaceae
Daucus carota	Apiaceae
Eryngium campestre	Apiaceae
Eryngium maritimum	Apiaceae
Periploca graeca	Apocinaceae
Erigeron annuus	Asteraceae
Artemisia vulgaris	Asteraceae
Ambrosia artemisifolia	Asteraceae
Cirsium arvense	Asteraceae
Pulicarya dysenterica	Asteraceae
Reichardia radicata	Asteraceae
Crepis rhoedifolia	Asteraceae
Cychorium intibus	Asteraceae
Lactuca seriola	Asteraceae
Sonchus oleraceus	Asteraceae
Eupatorium cannabinum	Asteraceae
Erigeron cannadensis	Asteraceae
Xantium strumarium	Asteraceae
Centaurea iberica	Asteraceae
Tagetes minuta	Asteraceae
Anthemis euxina	Asteraceae
Siegisbeckia orientalis	Asteraceae
Bidenns tripartita	Asteraceae
Leontodon danubialis	Asteraceae
Alnus glutinosa	Betulaceae
Buddleja davidi	Buddlejaceae
Sambucus ebulus	Caprifoliaceae
Lonicera japonica	Caprifoliaceae
Chenopodium album	Chenopodiaceae
Chenopodium ambrosioides	Chenopodiaceae
Cornus australis	Cornaceae

Lepidium texanum	Crucciferae
Lepidium sativum	Crucciferae
Raphanus maritimus	Crucciferae
Cuscuta europae	Cuscutaceae
Carex divulsa	Cyperaceae
Hippopae rhamnoides	Elaeagnaceae
Equisetum ramosisimum	Equisetaceae
Equisetum majus	Equisetaceae
Equisetum palustre	Equisetaceae
Euphorbia pubescens	Euphorbiaceae
Euphorbia falcata	Euphorbiaceae
Lotus angustissimus	Fabaceae
Lespedeza striata	Fabaceae
Trifolium campestre	Fabaceae
Trifolium arvense	Fabaceae
Trifolium pratense	Fabaceae
Robinea pseudoacacia	Fabaceae
Coronilla varia	Fabaceae
Centaurium erythraea	Gentianaceae
Juglans mandshurica	Juglandceae
Prunella vulgaris	Lamiaceae
Lycopus europeus	Lamiaceae
Satureja laxiflora	Lamiaceae
Mentha pulegium	Lamiaceae
Lemna minor	Lemnaceae
Lythrum salicaria	Lythraceae
Ficus carica	Moraceae
Phytolacca americana	Phytolaccaceae
Plantago lanceolata	Plantaginaceae
Plantago major	Plantaginaceae
Potamogeton natans	Plantaginaceae
Setaria glauca	Poaceae
Sporobolus fertilis	Poaceae
Poa annua	Poaceae
Panicum dichotomiflorum	Poaceae
Scleropoa rigida	Poaceae
Digitaria ciliaris	Poaceae
Echinochloa crusgali	Poaceae
Arundo donax	Poaceae
Polygonum nodosum	Polygonaceae
Polygonum persicaria	Polygonaceae
Polygonum perfoliatum	Polygonaceae
Polygonum convolvulus	Polygonaceae
Rumex obtusifolia	Polygonaceae
Rumex acetosella	Polygonaceae
Rubus anatolicus	Rosacee

Salix alba	Salicaceae
Verbascum thapsus	Scrophulariaceae
Verbascum sessiliflorum	Scrophulariaceae
Verbascum blattaria	Scrophulariaceae
Solanum nigrum	Solanaceae
Typha angustifolia	Thyphaceae
Verbena officinalis	Verbenaceae
Verbena brasiliensis	Verbenaceae

Conclusion:

Nowadays, no one from these identified existing spices aren't doing the breeding and nestling near the project working areas. In case of any breeding and nestling period all construction works will be stopped, which may have any potential impact on them and their locations will be marked and protected.

Note:

None of the Flora and Fauna species provided above in the list are not in the red list.

Prepared by: Jimsher Mamuchadze Signature: _____

Prepared by: Nino Memiadze Signature: _____

Site re-entry walk over survey for preventing damage to Flora and Fauna

Batumi Costal Protection

Report N5 (September)

Location - Batumi City

Date: 4th September, 2017

This report reflects information about conducted site re-entry walk over survey on 4th August, 2017 of investigation existing Flora and Fauna terrestrial habitats. Investigation area was covered along the sea line, shown on the map below.

Please see the investigation location:

During the investigation period weather was cloudy. Investigation was conducted from 7 am to 10 pm. The investigation was conducted in the project alignment area.

There were several species of avifauna identified on the mentioned location, please see below the list of table:

Avifauna		Quantity				
Georgian Name	Scientific Name	Baseline date	Date			
		24/02/2017	01/06/2017	01/07/2017	01/08/2017	04/09/2017
დიდი კოკონა	Podiceps cristatus	67	-	-	2	-
მცირე კოკონა	Tachybaptus	3	-	-	-	-

1

	ruficollis					
დიდი ჩვამა	Phalacrocorax carbo	14	2	2	14	3
რუხი ყანჩა	Ardea cinerea	2	-	-	-	-
დიდი თეთრი ყანჩა	Ardea alba	1	-	-	1	1
მცირე თეთრი ყანჩა	Egretta garzetta	-	-	-	2	-
ღამის ყანჩა	Nycticorax nycticorax	-	-	-	1	-
ალკუნი	Alcedo atthis	-	-	-	3	-
ქოჩორა ყვინთია	Aythya fuligula	28	-	-	-	-
ძერა	Milvus migrans	1	-	-	-	-
ჩვეულებრივი კაკაჩა	Buteo buteo	2	-	-	-	-
მელოტა	Fulica atra	4	-	-	-	-
თეთრი ბოლოქანქარა	Motacilla alba	5	1	-	11	6
სკვინჩა	Fringilla coelebs	2	1	1	1	-
სახლის ბეღურა	Passer domesticus	11	4	1	23	7
მინდვრის ბეღურა	Passer montanus	-	-	-	16	-
რუხი ყვავი	Corvus cornix	8	-	1	4	2
ჩვეულებრივი თევზიყლაპია	Sterna hirundo	1	-	-	-	-
ყვითელფეხა თოლია	Larus michahellis	135	-	156	154	32
ტბის თოლია	Chroicocephalus ridibundus	56	-	-	-	-
მებორნე	Actitis hypoleucos	-	1	-	-	-
პატარა წინტალა	Charadrius dubius	-	2	2	-	1
შევარდენი	Falco subbuteo	-	1	-	-	-
ვერცხლისფერი თოლია	Larus cachinnans	-	23	-	-	-
ჩვეულებრივი ჭივჭავი	Phylloscopus collybita	-	-	-	1	-
სოფლის მერცხალი	Hirundo rustica	-	40	-	17	4
ჭინჭრაქა	Troglodytes troglodytes	-	-	-	2	-
მთის ბოლოქანქალა	Motacilla cinerea	-	1	-	-	-
ტურუხტანი	Philomachus pugnax	-	-	-	4	-
ყორანი	Corvus corone	-	1	-	2	-

There were several species of terrestrial mammals habitats identified on the mentioned location, please see below the list of table:

Terrestrial animals		**Quantity**				
Georgian Name	Scientific Name	Baseline date	Date			
		24/02/2017	01/06/2017	01/07/2017	01/08/2017	04/09/2017
წავი	Lutralutra	4	1	-	-	-
მაჩვი	Meles meles minor	7	2	1	-	-

ნუტრია	Myocastor coypus	8	1	1	-	-
ბუჩქნარის მემინდვრია	Microtus arvalis	14	5	2	-	-
მინდვრის თაგვი	Apodemus agrarius	23	12	15	1	-
ტბის ბაყაყი	Rana ridibunda	-	-	-	13	4
ვასაკა	Hyla arborea	15	4	4	2	-
ჩვეულებრივი გომბეშო	Bufo	32	21	15	-	-
მწვანე ბაყაყი	Rana esculenta	27	13	9	-	-
ჩვეულებრივი ტრიტონი	Triturus vulgaris	13	7	4	-	-
ჩვეულებრივი ანკარა	Natrix natrix	4	2	1	1	-
წყლის ანკარა	Natrix tessellata	9	2	3	-	-
კასპიის კუ	Mauremys caspica	2	1	2	-	-
ჭაობის კუ	Emys orbicularis	6	4	2	-	-
რუხი კურდღელი	Lepus europaeus	-	2	1	-	-
ჩვეულებრივი თხუნელა	Talpa europaea	-	1	-	-	-

There were several species of Flora identified on the mentioned location, please see below the list of table:

Species	Familia	Georgian Name	English Name	Number of trees
Torylis japonica	Apiaceae	მაღლის ბირკა იაპონური	Erect hedgeparsley	-
Daucus carota	Apiaceae	ფერისცვალა	Wild carrot	-
Eryngium campestre	Apiaceae	ნარი	Field eryngo	-
Erigeron annuus	Asteraceae	ერთწლიანი ერიგერონი	Annual fleabane	-
Artemisia vulgaris	Asteraceae	მამულა	Common wormwood	-
Ambrosia artemisifolia	Asteraceae	ამბროზია	Common ragweed	-
Cirsium vulgare	Asteraceae	ნარი ჩვეულებრივი	Spear thistle	-
Crepis rhoedifolia	Asteraceae	კიჭკიჭა	Stinking hawksbeard	-
Cychorium intibus	Asteraceae	ვარდკაჭკაჭა	Common chicory	-
Lactuca seriola	Asteraceae	ღორის ქადა	Prickly lettuce	-
Sonchus oleraceus	Asteraceae	ღიჭა	Common sowthistle	-
Erigeron canadensis	Asteraceae	ცხენისკუდა	Canadian horseweed	-
Xanthium strumarium	Asteraceae	ღორის ბირკა	Rough cocklebur	-
Arctium lappa	Asteraceae	ოროვანდი	Greater burdock	-
Tagetes minuta	Asteraceae	ხავერდა	Muster John Henry	-
Anthemis euxina	Asteraceae	ირაგა ეუქსინური	Cota tinctoria	-
Bidens tripartita	Asteraceae	ორკბილა	three-lobe beggarticks	-

Leontodon danubialis	Asteraceae	ლომისკბილა	Hawkbits	-
Amaranthus albus	Amaranthus albus	ჯიჯლაყა თეთრი	Common tumbleweed	-
Chenopodium album	Chenopodiaceae	ნაცარქათამა	Lamb's quarters	-
Chenopodium ambrosioides	Chenopodiaceae	მექსიკური ჩაი	Wormseed	-
Lepidium texanum	Crucciferae	წიწმატი ველური	Peppercress	-
Lepidium sativum	Crucciferae	წიწმატი ტყის	Garden cress	-
Raphanus maritimus	Crucciferae	ზღვის ბოლოკი	Wild radish	-
Cyperus badius	Crucciferae	წამალწვრილი	Coco-grass	-
Luzula multiflora	Juncaceae	ისლურა	Common woodrush	-
Equisetum ramosissimum	Equisetaceae	შვიტა	Branched horsetail	-
Lotus corniculatus	Fabaceae	კურდღლისფრჩხილა	Common bird's-foot trefoil	-
Lespedeza striata	Fabaceae	იაპონური სამყურა	Japanese clover	-
Trifolium campestre	Fabaceae	სამყურა ველის	Hop trefoil	-
Trifolium arvense	Fabaceae	ბურტყლა სამყურა	Hare's-foot clover	-
Trifolium pratense	Fabaceae	წითელი სამყურა	Red clover	-
Prunella vulgaris	Lamiaceae	გობისცხვირა	Common self-heal	-
Mentha pulegium	Lamiaceae	ომბალო	Peppercress	-
Lythrum salicaria	Lythraceae	ცოცხმაგარა	Purple loosestrife	-
Malva neglecta	Malvaceae	ბალბა	Common mallow	-
Ficus carica	Moraceae	ლეღვი	Common fig	3 trees
Morus alba	Moraceae	თეთრი თუთა	White mulberry	2 trees
Oxalis corniculata	Moraceae	მჟაველა	Creeping woodsorrel	-
Phytolacca americana	Phytolaccaceae	ჭიაფერა	American pokeweed	-
Plantago lanceolata	Plantaginaceae	ლანცეტა მრავალძარღვა	English plantain	-
Plantago major	Plantaginaceae	მრავალძარღვა	Broadleaf plantain	-
Setaria glauca	Poaceae	ყვითელი ძურწა	Pearl millet	-
Sporobolus fertilis	Poaceae	სპორობოლუსი ინდური	Dropseeds	-
Poa annua	Poaceae	ერთწლოვანი თივაქასრა	Annual meadow grass	-
Digitaria violascens	Poaceae	მწყერფეხა	Finger-grass	-
Echinochloa crusgali	Poaceae	ბურჩხა	Barnyard grass	-
Cynodon dactilon	Poaceae	გლერტა	Vilfa stellata	-
Sieglingia decumbens	Poaceae	სიგლინგია	Heath grass	-
Eleusine indica	Poaceae	ინდური ელეუზინა	Indian goosegrass	-

Paspalum dilatatum	Poaceae	ფართო წიწიბურა	Dallisgrass	-
Polygonum nodosum	Polygonaceae	ვიწროფოთოლა წალიკა	Pale persicaria	-
Polygonum persicaria	Polygonaceae	ბოსტნის წალიკა	Lady's thumb	-
Polygonum perfoliatum	Polygonaceae	გაჩერებილფოთოლა წალიკა	Mile-a-minute weed	-
Polygonum convolvulus	Polygonaceae	ყანის ჭლექი	Black-bindweed	-
Rumex obtusifolius	Polygonaceae	მჟავუნა ბლაგვფოთოლა	Bitter dock	-
Rumex acetosella	Polygonaceae	კოკომჟავა	Sheep's sorrel	-
Portulaca oleracea	Portulacaceae	დანდური	Common purslane	-
Salix alba	Salicaceae	წნორი	White willow	5 trees
Verbascum blattaria	Scrophulariaceae	გულსოსანა	Moth mullein	-
Rhus javanica	Anacardiaceae	იაპონური თუთუბო	Nutgall tree	1 tree
Datura stramonium	Anacardiaceae	ლემა	Jimsonweed	-
Physalis ixocarpa	Solanaceae	ონტკოფა	Tomatillo	-
Solanum nigrum	Solanaceae	ძაღლურძენა	European black nightshade	-
Verbena officinalis	Verbenaceae	ცოცხანა	Common vervain	-
Verbena brasiliensis	Verbenaceae	ბრაზილიური ცოცხანა	Brazilian vervain	-

Conclusion: To date no impacts caused by working activities have been observed on flora in the proximity of the working areas.

Nowadays, no one from these identified existing spices aren't doing the breeding and nestling near the project working areas. In case of any breeding and nestling period all construction works will be stopped, which may have any potential impact on them and their locations will be marked and protected.

Note:

None of the Flora and Fauna species provided above in the list are not in the red list.

Prepared by: Jimsher Mamuchadze Signature: _____

Prepared by: Nino Memiadze Signature: _____

Site re-entry walk over survey for preventing damage to Flora and Fauna

Batumi Costal Protection

Report N6 (September)

Location - Batumi City

Date: 10th October, 2017

This report reflects information about conducted site re-entry walk over survey on 08th October, 2017 of investigation existing Flora and Fauna terrestrial habitats. Investigation area was covered along the sea line, shown on the map below.

Please see the investigation location:

During the investigation period weather was cloudy. Investigation was conducted from 7 am to 10 pm. The investigation was conducted in the project alignment area.

There were several species of avifauna identified on the mentioned location, please see below the list of table:

Avifauna		Quantity					
Georgian Name	Scientific Name	Baseline date	Date				
		24/02/2017	01/06/2017	01/07/2017	01/08/2017	04/09/2017	08/10/2017
დიდი კოკონა	Podiceps cristatus	67	-	-	2	-	1

მცირე კოკონა	Tachybaptus ruficollis	3	-	-	-	-	
დიდი ჩვამა	Phalacrocorax carbo	14	2	2	14	3	1
რუხი ყანჩა	Ardea cinerea	2	-	-	-	-	
დიდი თეთრი ყანჩა	Ardea alba	1	-	-	1	1	
მცირე თეთრი ყანჩა	Egretta garzetta	-	-	-	2	-	
ღამის ყანჩა	Nycticorax nycticorax	-	-	-	1	-	
ალკუნი	Alcedo atthis	-	-	-	3	-	
ქოჩორა ყვინთია	Aythya fuligula	28	-	-	-	-	
ძერა	Milvus migrans	1	-	-	-	-	
ჩვეულებრივი კაკაჩა	Buteo buteo	2	-	-	-	-	
მელოტა	Fulica atra	4	-	-	-	-	
თეთრი ბოლოქანქარა	Motacilla alba	5	1	-	11	6	9
სკვინჩა	Fringilla coelebs	2	1	1	1	-	
სახლის ბეღურა	Passer domesticus	11	4	1	23	7	4
მინდვრის ბეღურა	Passer montanus	-	-	-	16	-	
რუხი ყვავი	Corvus cornix	8	-	1	4	2	3
ჩვეულებრივი თევზიყლაპია	Sterna hirundo	1	-	-	-	-	
ყვითელფეხა თოლია	Larus michahellis	135	-	156	154	32	46
ტბის თოლია	Chroicocephalus ridibundus	56	-	-	-	-	
მებორნე	Actitis hypoleucos	-	1	-	-	-	
პატარა წინტალა	Charadrius dubius	-	2	2	-	1	2
შევარდენი	Falco subbuteo	-	1	-	-	-	
ვერცხლისფერი თოლია	Larus cachinnans	-	23	-	-	-	
ჩვეულებრივი ჭივჭავი	Phylloscopus collybita	-	-	-	1	-	
სოფლის მერცხალი	Hirundo rustica	-	40	-	17	4	
ჭინჭრაქა	Troglodytes troglodytes	-	-	-	2	-	
მთის ბოლოქანქალა	Motacilla cinerea	-	1	-	-	-	
ტურუხტანი	Philomachus pugnax	-	-	-	4	-	
ყორანი	Corvus corone	-	1	-	2	-	

There were several species of terrestrial mammals habitats identified on the mentioned location, please see below the list of table:

Terrestrial animals		**Quantity**					
Georgian Name	Scientific Name	Baseline date	Date				
		24/02/2017	01/06/2017	01/07/2017	01/08/2017	04/09/2017	08/10/2017
წავი	Lutralutra	4	1	-	-	-	-

მაჩვი	Meles meles minor	7	2	1	-	-	-
ნუტრია	Myocastor coypus	8	1	1	-	-	-
ბუჩქნარის მემინდვრია	Microtus arvalis	14	5	2	-	-	-
მინდვრის თაგვი	Apodemus agrarius	23	12	15	1	-	-
ტბის ბაყაყი	Rana ridibunda	-	-	-	13	4	6
ვასაკა	Hyla arborea	15	4	4	2	-	-
ჩვეულებრივი გომბეშო	Bufo	32	21	15	-	-	-
მწვანე ბაყაყი	Rana esculenta	27	13	9	-	-	-
ჩვეულებრივი ტრიტონი	Triturus vulgaris	13	7	4	-	-	-
ჩვეულებრივი ანკარა	Natrix natrix	4	2	1	1	-	-
წყლის ანკარა	Natrix tessellata	9	2	3	-	-	-
კასპიის კუ	Mauremys caspica	2	1	2	-	-	-
ჭაობის კუ	Emys orbicularis	6	4	2	-	-	-
რუხი კურდღელი	Lepus europaeus	-	2	1	-	-	-
ჩვეულებრივი თხუნელა	Talpa europaea	-	1	-	-	-	-

There were several species of Flora identified on the mentioned location, please see below the list of table:

Species	Familia	Georgian Name	English Name	Number of trees
Torylis japonica	Apiaceae	ძაღლის ბირკა იაპონური	Erect hedgeparsley	-
Daucus carota	Apiaceae	ფერისცვალა	Wild carrot	-
Eryngium campestre	Apiaceae	ნარი	Field eryngo	-
Erigeron annuus	Asteraceae	ერთწლიანი ერიგერონი	Annual fleabane	-
Artemisia vulgaris	Asteraceae	მამულა	Common wormwood	-
Ambrosia artemisifolia	Asteraceae	ამბროზია	Common ragweed	-
Cirsium vulgare	Asteraceae	ნარი ჩვეულებრივი	Spear thistle	-
Crepis rhoedifolia	Asteraceae	კიჭკიჭა	Stinking hawksbeard	-
Cychorium intibus	Asteraceae	ვარდკაჭკაჭა	Common chicory	-
Lactuca seriola	Asteraceae	ღორის ქადა	Prickly lettuce	-
Sonchus oleraceus	Asteraceae	ღიჭა	Common sowthistle	-
Erigeron canadensis	Asteraceae	ცხენისკუდა	Canadian horseweed	-
Xanthium strumarium	Asteraceae	ღორის ბირკა	Rough cocklebur	-

Arctium lappa	Asteraceae	ორღვანდი	Greater burdock	-
Tagetes minuta	Asteraceae	ხავერდა	Muster John Henry	-
Anthemis euxina	Asteraceae	ირაგა ეუქსინური	Cota tinctoria	-
Bidens tripartita	Asteraceae	ორკბილა	three-lobe beggarticks	-
Leontodon danubialis	Asteraceae	ლომისკბილა	Hawkbits	-
Amaranthus albus	Amaranthus albus	ჯიჯლაყა თეთრი	Common tumbleweed	-
Chenopodium album	Chenopodiaceae	ნაცარქათამა	Lamb's quarters	-
Chenopodium ambrosioides	Chenopodiaceae	მექსიკური ჩაი	Wormseed	-
Lepidium texanum	Crucciferae	წიწმატი ველური	Peppercress	-
Lepidium sativum	Crucciferae	წიწმატი ტყის	Garden cress	-
Raphanus maritimus	Crucciferae	ზღვის ბოლოკი	Wild radish	-
Cyperus badius	Crucciferae	წამალწვრილი	Coco-grass	-
Luzula multiflora	Juncaceae	ისლური	Common woodrush	-
Equisetum ramosissimum	Equisetaceae	შვიტა	Branched horsetail	-
Lotus corniculatus	Fabaceae	კურდღლისფრჩხილა	Common bird's-foot trefoil	-
Lespedeza striata	Fabaceae	იაპონური სამყურა	Japanese clover	-
Trifolium campestre	Fabaceae	სამყურა ველის	Hop trefoil	-
Trifolium arvense	Fabaceae	ბურტყლა სამყურა	Hare's-foot clover	-
Trifolium pratense	Fabaceae	წითელი სამყურა	Red clover	-
Prunella vulgaris	Lamiaceae	გობისცხვირა	Common self-heal	-
Mentha pulegium	Lamiaceae	ომბალო	Peppercress	-
Lythrum salicaria	Lythraceae	ცოცხმაგარა	Purple loosestrife	-
Malva neglecta	Malvaceae	ბალბა	Common mallow	-
Ficus carica	Moraceae	ლეღვი	Common fig	5 trees
Morus alba	Moraceae	თეთრი თუთა	White mulberry	2 trees
Oxalis corniculata	Moraceae	მჟაველა	Creeping woodsorrel	-
Phytolacca americana	Phytolaccaceae	ჭიაფერა	American pokeweed	-
Plantago lanceolata	Plantaginaceae	ლანცეტა მრავალძარღვა	English plantain	-
Plantago major	Plantaginaceae	მრავალძარღვა	Broadleaf plantain	-
Setaria glauca	Poaceae	ყვითელი ძურწა	Pearl millet	-
Sporobolus fertilis	Poaceae	სპორობოლუსი ინდური	Dropseeds	-
Poa annua	Poaceae	ერთწლოვანი თივაქასრა	Annual meadow grass	-
Digitaria violascens	Poaceae	მწყერფეხა	Finger-grass	-
Echinochloa crusgali	Poaceae	ბურჩხა	Barnyard grass	-

Cynodon dactilon	Poaceae	გლერტა	Vilfa stellata	-
Sieglingia decumbens	Poaceae	სიგლინგია	Heath grass	-
Eleusine indica	Poaceae	ინდური ელეუზინა	Indian goosegrass	-
Paspalum dilatatum	Poaceae	ფართო ფიფიბერა	Dallisgrass	-
Polygonum nodosum	Polygonaceae	ვიწროფოთოლა წალიკა	Pale persicaria	-
Polygonum persicaria	Polygonaceae	ბისტრის წალიკა	Lady's thumb	-
Polygonum perfoliatum	Polygonaceae	გაჩვრეტილფოთოლა წალიკა	Mile-a-minute weed	-
Polygonum convolvulus	Polygonaceae	ყანის ჭლექი	Black-bindweed	-
Rumex obtusifolius	Polygonaceae	მგრეჟა მლაგვფოთოლა	Bitter dock	-
Rumex acetosella	Polygonaceae	კოკომჭა	Sheep's sorrel	-
Portulaca oleracea	Portulacaceae	დანდური	Common purslane	-
Salix alba	Salicaceae	წიფლი	White willow	8 trees
Verbascum blattaria	Scrophulariaceae	გულისოსანა	Moth mullein	-
Rhus javanica	Anacardiaceae	იაპონური თუთუბო	Nutgall tree	1 tree
Datura stramonium	Anacardiaceae	ლეშა	Jimsonweed	-
Physalis ixocarpa	Solanaceae	ონბკოფა	Tomatillo	-
Solanum nigrum	Solanaceae	ძაღლურძენა	European black nightshade	-
Verbena officinalis	Verbenaceae	ცოცხანა	Common vervain	-
Verbena brasiliensis	Verbenaceae	ბრაზილიური ცოცხანა	Brazilian vervain	-

Conclusion: To date no impacts caused by working activities have been observed on flora in the proximity of the working areas.

Nowadays, no one from these identified existing spices aren't doing the breeding and nestling near the project working areas. In case of any breeding and nestling period all construction works will be stopped, which may have any potential impact on them and their locations will be marked and protected.

Note:

None of the Flora and Fauna species provided above in the list are not in the red list.

Prepared by: Jimsher Mamuchadze Signature:

Prepared by: Nino Memiadze Signature:

5

Site re-entry walk over survey for preventing damage to Flora and Fauna

Batumi Costal Protection

Report N7 (November)

Location - Batumi City

Date: 12th November, 2017

This report reflects information about conducted site re-entry walk over survey on 12th November, 2017 of investigation existing Flora and Fauna terrestrial habitats. Investigation area was covered along the sea line, shown on the map below.

Please see the investigation location:

During the investigation period weather was cloudy. Investigation was conducted from 7 am to 10 pm. The investigation was conducted in the project alignment area.

There were several species of avifauna identified on the mentioned location, please see below the list of table:

Avifauna		Quantity					
Georgian Name	Scientific Name	Baseline date	Date				
		24/02/2017	01/07/2017	01/08/2017	04/09/2017	08/10/2017	12/11/2017
დიდი კოკონა	Podiceps cristatus	67	-	2	-	1	2
მცირე კოკონა	Tachybaptus ruficollis	3	-	-	-	-	-

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დიდი ჩვამა	Phalacrocorax carbo	14	2	14	3	1	5
რუხი ყანჩა	Ardea cinerea	2	-	-	-	-	-
დიდი თეთრი ყანჩა	Ardea alba	1	-	1	1	-	1
მცირე თეთრი ყანჩა	Egretta garzetta	-	-	2	-	-	-
ღამის ყანჩა	Nycticorax nycticorax	-	-	1	-	-	-
ალკუნი	Alcedo atthis	-	-	3	-	-	-
ქოჩორა ყვინთია	Aythya fuligula	28	-	-	-	-	-
ძერა	Milvus migrans	1	-	-	-	-	-
ჩვეულებრივი კაკაჩა	Buteo buteo	2	-	-	-	-	-
მელოტა	Fulica atra	4	-	-	-	-	-
თეთრი ბოლოქანქარა	Motacilla alba	5	-	11	6	9	14
სკვინჩა	Fringilla coelebs	2	1	1	-		2
ჩიტბატონა	Carduelis carduelis	-	-	-	-	-	30
სახლის ბეღურა	Passer domesticus	11	1	23	7	4	9
მინდვრის ბეღურა	Passer montanus	-	-	16	-	-	-
რუხი ყვავი	Corvus cornix	8	1	4	2	3	18
ჩვეულებრივი თევზიყლაპია	Sterna hirundo	1	-	-	-	-	-
ყვითელფეხა თოლია	Larus michahellis	135	156	154	32	46	90
ტბის თოლია	Chroicocephalus ridibundus	56	-	-	-	-	-
მებორნე	Actitis hypoleucos	-	-	-	-	-	-
მცირე წინტალა	Charadrius dubius	-	2	-	1	2	-
მიმინო	Accipiter nisus	-	-	-	-	-	1
შევარდენი	Falco subbuteo	-	-	-	-	-	-
ვერცხლისფერი თოლია	Larus cachinnans	-	-	-	-	-	-
ჩვეულებრივი ჭივჭავი	Phylloscopus collybita	-	-	1	-	-	1
სოფლის მერცხალი	Hirundo rustica	-	-	17	4	-	-
ჭინჭრაქა	Troglodytes troglodytes	-	-	2	-	-	-
მთის ბოლოქანქალა	Motacilla cinerea	-	-	-	-	-	-
ტურუხტანი	Philomachus pugnax	-	-	4	-	-	-
ყორანი	Corvus corone	-	-	2	-	-	-

There were several species of terrestrial mammals habitats identified on the mentioned location, please see below the list of table:

Terrestrial animals		**Quantity**					
Georgian Name	Scientific Name	Baseline date	Date				
		24/02/2017	01/07/2017	01/08/2017	04/09/2017	08/10/2017	12/11/2017
წავი	Lutralutra	4	-	-	-	-	-
მაჩვი	Meles meles minor	7	1	-	-	-	-

ნუტრია	Myocastor coypus	8	1	-	-	-	-
ბუჩქნარის მემინდვრია	Microtus arvalis	14	2	-	-	-	-
მინდვრის თაგვი	Apodemus agrarius	23	15	1	-	-	-
ტბის ბაყაყი	Rana ridibunda	-	-	13	4	6	3
ვასაკა	Hyla arborea	15	4	2	-	-	-
ჩვეულებრივი გომბეშო	Bufo	32	15	-	-	-	-
მწვანე ბაყაყი	Rana esculenta	27	9	-	-	-	-
ჩვეულებრივი ტრიტონი	Triturus vulgaris	13	4	-	-	-	-
ჩვეულებრივი ანკარა	Natrix natrix	4	1	1	-	-	-
წყლის ანკარა	Natrix tessellata	9	3	-	-	-	-
კასპიის კუ	Mauremys caspica	2	2	-	-	-	-
ჭაობის კუ	Emys orbicularis	6	2	-	-	-	-
რუხი კურდღელი	Lepus europaeus	-	1	-	-	-	-
ჩვეულებრივი თხუნელა	Talpa europaea	-	-	-	-	-	-

There were several species of Flora identified on the mentioned location, please see below the list of table:

Species	Familia	Georgian Name	English Name	Number of trees
Torylis japonica	Apiaceae	ძაღლის ბირკა იაპონური	Erect hedgeparsley	-
Daucus carota	Apiaceae	ფერისცვალა	Wild carrot	-
Eryngium campestre	Apiaceae	ნარი	Field eryngo	-
Erigeron annuus	Asteraceae	ერთწლიანი ერიგერონი	Annual fleabane	-
Artemisia vulgaris	Asteraceae	მამული	Common wormwood	-
Ambrosia artemisifolia	Asteraceae	ამბროზია	Common ragweed	-
Cirsium vulgare	Asteraceae	ნარი ჩვეულებრივი	Spear thistle	-
Crepis rhoedifolia	Asteraceae	კიჭკიჭა	Stinking hawksbeard	-
Cychorium intibus	Asteraceae	ვარდკაჭკაჭა	Common chicory	-
Lactuca seriola	Asteraceae	ღორის ქადა	Prickly lettuce	-
Sonchus oleraceus	Asteraceae	ღიჭა	Common sowthistle	-
Erigeron canadensis	Asteraceae	ცხენისკუდა	Canadian horseweed	-
Xanthium strumarium	Asteraceae	ღორის ბირკა	Rough cocklebur	-
Arctium lappa	Asteraceae	ოროვანდი	Greater burdock	-

Tagetes minuta	Asteraceae	ხავერდა	Muster John Henry	-
Anthemis euxina	Asteraceae	ირაგა ეუქსინური	Cota tinctoria	-
Bidens tripartita	Asteraceae	ორკბილა	three-lobe beggarticks	-
Leontodon danubialis	Asteraceae	ლომისკბილა	Hawkbits	-
Amaranthus albus	Amaranthus albus	ჯიჯლაყა თეთრი	Common tumbleweed	-
Chenopodium album	Chenopodiaceae	ნაცარქათამა	Lamb's quarters	-
Chenopodium ambrosioides	Chenopodiaceae	მექსიკური ჩაი	Wormseed	-
Lepidium texanum	Crucciferae	წიწმატი ველური	Peppercress	-
Lepidium sativum	Crucciferae	წიწმატი ტყის	Garden cress	-
Raphanus maritimus	Crucciferae	ზღვის ბოლოკი	Wild radish	-
Cyperus badius	Crucciferae	წამალწვრილი	Coco-grass	-
Luzula multiflora	Juncaceae	ისლური	Common woodrush	-
Equisetum ramosissimum	Equisetaceae	შვიტა	Branched horsetail	-
Lotus corniculatus	Fabaceae	კურდღლისფრჩხილა	Common bird's-foot trefoil	-
Lespedeza striata	Fabaceae	იაპონური სამყურა	Japanese clover	-
Trifolium campestre	Fabaceae	სამყურა ველის	Hop trefoil	-
Trifolium arvense	Fabaceae	ბურტყლა სამყურა	Hare's-foot clover	-
Trifolium pratense	Fabaceae	წითელი სამყურა	Red clover	-
Prunella vulgaris	Lamiaceae	გობისცხვირა	Common self-heal	-
Mentha pulegium	Lamiaceae	ომბალო	Peppercress	-
Lythrum salicaria	Lythraceae	ცოცხმაგარა	Purple loosestrife	-
Malva neglecta	Malvaceae	ბალბა	Common mallow	-
Ficus carica	Moraceae	ლეღვი	Common fig	2 trees
Morus alba	Moraceae	თეთრი თუთა	White mulberry	2 trees
Oxalis corniculata	Moraceae	მჟაველა	Creeping woodsorrel	-
Phytolacca americana	Phytolaccaceae	ჭიაფერა	American pokeweed	-
Plantago lanceolata	Plantaginaceae	ლანცეტა მრავალძარღვა	English plantain	-
Plantago major	Plantaginaceae	მრავალძარღვა	Broadleaf plantain	-
Setaria glauca	Poaceae	ყვითელი ძურწა	Pearl millet	-
Sporobolus fertilis	Poaceae	სპორობოლუსი ინდური	Dropseeds	-
Poa annua	Poaceae	ერთწლოვანი თივაქასრა	Annual meadow grass	-
Digitaria violascens	Poaceae	მწყერფეხა	Finger-grass	-
Echinochloa crusgali	Poaceae	ბურჩხა	Barnyard grass	-
Cynodon dactilon	Poaceae	გლერტა	Vilfa stellata	-

Sieglingia decumbens	Poaceae	სიგლინგია	Heath grass	-
Eleusine indica	Poaceae	ინდური ელეუზინა	Indian goosegrass	-
Paspalum dilatatum	Poaceae	ფართო წიწიბურა	Dallisgrass	-
Polygonum nodosum	Polygonaceae	ვიწროფოთოლა წალიკა	Pale persicaria	-
Polygonum persicaria	Polygonaceae	ბოსტნის წალიკა	Lady's thumb	-
Polygonum perfoliatum	Polygonaceae	გაჩვრეტილფოთოლა წალიკა	Mile-a-minute weed	-
Polygonum convolvulus	Polygonaceae	ყანის ჭლექი	Black-bindweed	-
Rumex obtusifolius	Polygonaceae	მჟავუნა ბლაგვფოთოლა	Bitter dock	-
Rumex acetosella	Polygonaceae	კოკომჟავა	Sheep's sorrel	-
Portulaca oleracea	Portulacaceae	დანდური	Common purslane	-
Salix alba	Salicaceae	წნორი	White willow	2 trees
Verbascum blattaria	Scrophulariaceae	გულისრისანა	Moth mullein	-
Rhus javanica	Anacardiaceae	იაპონური თუთუბო	Nutgall tree	-
Datura stramonium	Anacardiaceae	ლეშა	Jimsonweed	-
Physalis ixocarpa	Solanaceae	ონბაკოფა	Tomatillo	-
Solanum nigrum	Solanaceae	ძაღვურძენა	European black nightshade	-
Verbena officinalis	Verbenaceae	ცოცხანა	Common vervain	-
Verbena brasiliensis	Verbenaceae	ბრაზილიური ცოცხანა	Brazilian vervain	-

Conclusion: To date no impacts caused by working activities have been observed on flora in the proximity of the working areas.

Nowadays, no one from these identified existing spices aren't doing the breeding and nestling near the project working areas. In case of any breeding and nestling period all construction works will be stopped, which may have any potential impact on them and their locations will be marked and protected.

Note:

None of the Flora and Fauna species provided above in the list are not in the red list.

Prepared by: Jimsher Mamuchadze Signature:

Prepared by: Nino Memiadze Signature:

Site re-entry walk over survey for preventing damage to Flora and Fauna

Batumi Costal Protection

Report N8 (December)

Location - Batumi City

Date: 13th December, 2017

This report reflects information about conducted site re-entry walk over survey on 13th December, 2017 of investigation existing Flora and Fauna terrestrial habitats. Investigation area was covered along the sea line, shown on the map below.

Please see the investigation location:

During the investigation period weather was cloudy. Investigation was conducted from 7 am to 10 pm. The investigation was conducted in the project alignment area.

There were several species of avifauna identified on the mentioned location, please see below the list of table:

Avifauna		Quantity					
Georgian Name	Scientific Name	Baseline date	Date				
		24/02/2017	01/08/2017	04/09/2017	08/10/2017	12/11/2017	13/12/2017
დიდი კოკონა	Podiceps cristatus	67	2	-	1	2	7
მცირე კოკონა	Tachybaptus ruficollis	3	-	-	-	-	1

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დიდი ჩვამა	Phalacrocorax carbo	14	14	3	1	5	51
რუხი ყანჩა	Ardea cinerea	2	-	-	-	-	-
დიდი თეთრი ყანჩა	Ardea alba	1	1	1	-	1	-
მცირე თეთრი ყანჩა	Egretta garzetta	-	2	-	-	-	-
ღამის ყანჩა	Nycticorax nycticorax	-	1	-	-	-	-
ალკუნი	Alcedo atthis	-	3	-	-	-	-
ქოჩორა ყვინთია	Aythya fuligula	28	-	-	-	-	-
ძერა	Milvus migrans	1	-	-	-	-	1
ჩვეულებრივი კაკაჩა	Buteo buteo	2	-	-	-	-	-
მელოტა	Fulica atra	4	-	-	-	-	-
თეთრი ბოლოქანქარა	Motacilla alba	5	11	6	9	14	12
სკვინჩა	Fringilla coelebs	2	1	-		2	1
ჩიტბატონა	Carduelis carduelis	-	-	-	-	30	8
სახლის ბეღურა	Passer domesticus	11	23	7	4	9	2
მინდვრის ბეღურა	Passer montanus	-	16	-	-	-	-
რუხი ყვავი	Corvus cornix	8	4	2	3	18	9
ჩვეულებრივი თევზიყლაპია	Sterna hirundo	1	-	-	-	-	-
ყვითელფეხა თოლია	Larus michahellis	135	154	32	46	90	120
ტბის თოლია	Chroicocephalus ridibundus	56	-	-	-	-	250
მებორნე	Actitis hypoleucos	-	-	-	-	-	-
მცირე წინტალა	Charadrius dubius	-	-	1	2	-	-
მიმინო	Accipiter nisus	-	-	-	-	1	-
შევარდენი	Falco subbuteo	-	-	-	-	-	-
ვერცხლისფერი თოლია	Larus cachinnans	-	-	-	-	-	-
ჩვეულებრივი ჭივჭავი	Phylloscopus collybita	-	1	-	-	1	-
სოფლის მერცხალი	Hirundo rustica	-	17	4	-	-	-
ჭინჭრაქა	Troglodytes troglodytes	-	2	-	-	-	-
მთის ბოლოქანქალა	Motacilla cinerea	-	-	-	-	-	-
ტურუხტანი	Philomachus pugnax	-	4	-	-	-	-
ყორანი	Corvus corone	-	2	-	-	-	3

There were several species of terrestrial mammals habitats identified on the mentioned location, please see below the list of table:

Terrestrial animals		Quantity					
Georgian Name	Scientific Name	Baseline date	Date				
		24/02/2017	01/08/2017	04/09/2017	08/10/2017	12/11/2017	13/12/2017
წავი	Lutralutra	4	-	-	-	-	-
მაჩვი	Meles meles minor	7	-	-	-	-	-

ნუტრია	Myocastor coypus	8	-	-	-	-	-
ბუჩქნარის მემინდვრია	Microtus arvalis	14	-	-	-	-	-
მინდვრის თაგვი	Apodemus agrarius	23	1	-	-	-	-
ტბის ბაყაყი	Rana ridibunda	-	13	4	6	3	-
ვასაკა	Hyla arborea	15	2	-	-	-	-
ჩვეულებრივი გომბეშო	Bufo	32	-	-	-	-	-
მწვანე ბაყაყი	Rana esculenta	27	-	-	-	-	-
ჩვეულებრივი ტრიტონი	Triturus vulgaris	13	-	-	-	-	-
ჩვეულებრივი ანკარა	Natrix natrix	4	1	-	-	-	-
წყლის ანკარა	Natrix tessellata	9	-	-	-	-	-
კასპიის კუ	Mauremys caspica	2	-	-	-	-	-
ჭაობის კუ	Emys orbicularis	6	-	-	-	-	-
რუხი კურდღელი	Lepus europaeus	-	-	-	-	-	-
ჩვეულებრივი თხუნელა	Talpa europaea	-	-	-	-	-	-

There were several species of Flora identified on the mentioned location, please see below the list of table:

Species	Familia	Georgian Name	English Name	Number of trees
Torylis japonica	Apiaceae	ძაღლის ბირკა იაპონური	Erect hedgeparsley	-
Daucus carota	Apiaceae	ფერისცვალა	Wild carrot	-
Eryngium campestre	Apiaceae	ნარი	Field eryngo	-
Erigeron annuus	Asteraceae	ერთწლიანი ერიგერონი	Annual fleabane	-
Artemisia vulgaris	Asteraceae	მამული	Common wormwood	-
Ambrosia artemisifolia	Asteraceae	ამბროზია	Common ragweed	-
Cirsium vulgare	Asteraceae	ნარი ჩვეულებრივი	Spear thistle	-
Crepis rhoedifolia	Asteraceae	კიჭკიჭა	Stinking hawksbeard	-
Cychorium intibus	Asteraceae	ვარდკაჭკაჭა	Common chicory	-
Lactuca seriola	Asteraceae	ღორის ქადა	Prickly lettuce	-
Sonchus oleraceus	Asteraceae	ღიჭა	Common sowthistle	-
Erigeron canadensis	Asteraceae	ცხენისკუდა	Canadian horseweed	-
Xanthium strumarium	Asteraceae	ღორის ბირკა	Rough cocklebur	-
Arctium lappa	Asteraceae	ოროვანდი	Greater burdock	-

Tagetes minuta	Asteraceae	ხავერდა	Muster John Henry	-
Anthemis euxina	Asteraceae	ირაგა ეუქსინური	Cota tinctoria	-
Bidens tripartita	Asteraceae	ორკბილა	three-lobe beggarticks	-
Leontodon danubialis	Asteraceae	ლომისკბილა	Hawkbits	-
Amaranthus albus	Amaranthus albus	ჯიჯლაყა თეთრი	Common tumbleweed	-
Chenopodium album	Chenopodiaceae	ნაცარქათამა	Lamb's quarters	-
Chenopodium ambrosioides	Chenopodiaceae	მექსიკური ჩაი	Wormseed	-
Lepidium texanum	Crucciferae	წიწმატი ველური	Peppercress	-
Lepidium sativum	Crucciferae	წიწმატი ტყის	Garden cress	-
Raphanus maritimus	Crucciferae	ზღვის ბოლოკი	Wild radish	-
Cyperus badius	Crucciferae	წამალწვრილი	Coco-grass	-
Luzula multiflora	Juncaceae	ისლური	Common woodrush	-
Equisetum ramosissimum	Equisetaceae	შვიტა	Branched horsetail	-
Lotus corniculatus	Fabaceae	კურდღლისფრჩხილა	Common bird's-foot trefoil	-
Lespedeza striata	Fabaceae	იაპონური სამყურა	Japanese clover	-
Trifolium campestre	Fabaceae	სამყურა ველის	Hop trefoil	-
Trifolium arvense	Fabaceae	ბურტყლა სამყურა	Hare's-foot clover	-
Trifolium pratense	Fabaceae	წითელი სამყურა	Red clover	-
Prunella vulgaris	Lamiaceae	გობისცხვირა	Common self-heal	-
Mentha pulegium	Lamiaceae	ომბალო	Peppercress	-
Lythrum salicaria	Lythraceae	ცოცხმაგარა	Purple loosestrife	-
Malva neglecta	Malvaceae	ბალბა	Common mallow	-
Ficus carica	Moraceae	ლეღვი	Common fig	2 trees
Morus alba	Moraceae	თეთრი თუთა	White mulberry	2 trees
Oxalis corniculata	Moraceae	მჟაველა	Creeping woodsorrel	-
Phytolacca americana	Phytolaccaceae	ჭიაფერა	American pokeweed	-
Plantago lanceolata	Plantaginaceae	ლანცეტა მრავალძარღვა	English plantain	-
Plantago major	Plantaginaceae	მრავალძარღვა	Broadleaf plantain	-
Setaria glauca	Poaceae	ყვითელი ძურწა	Pearl millet	-
Sporobolus fertilis	Poaceae	სპორობოლუსი ინდური	Dropseeds	-
Poa annua	Poaceae	ერთწლოვანი თივაქასრა	Annual meadow grass	-
Digitaria violascens	Poaceae	მწყერფეხა	Finger-grass	-
Echinochloa crusgali	Poaceae	ბურჩხა	Barnyard grass	-
Cynodon dactilon	Poaceae	გლერტა	Vilfa stellata	-

Sieglingia decumbens	Poaceae	სიგლინგია	Heath grass	-
Eleusine indica	Poaceae	ინდური ელეუზინა	Indian goosegrass	-
Paspalum dilatatum	Poaceae	ფართო წიწიბურა	Dallisgrass	-
Polygonum nodosum	Polygonaceae	ვიწროფოთოლა წალიკა	Pale persicaria	-
Polygonum persicaria	Polygonaceae	ბოსტნის წალიკა	Lady's thumb	-
Polygonum perfoliatum	Polygonaceae	გაჩვრეტილფოთოლა წალიკა	Mile-a-minute weed	-
Polygonum convolvulus	Polygonaceae	ყანის ჭლექი	Black-bindweed	-
Rumex obtusifolius	Polygonaceae	მჟავუნა ბლაგვფოთოლა	Bitter dock	-
Rumex acetosella	Polygonaceae	კოკომჟა	Sheep's sorrel	-
Portulaca oleracea	Portulacaceae	დანდური	Common purslane	-
Salix alba	Salicaceae	წნორი	White willow	2 trees
Verbascum blattaria	Scrophulariaceae	გულისრისანა	Moth mullein	-
Rhus javanica	Anacardiaceae	იაპონური თუთუბო	Nutgall tree	-
Datura stramonium	Anacardiaceae	ლეშა	Jimsonweed	-
Physalis ixocarpa	Solanaceae	ონბაკოჟა	Tomatillo	-
Solanum nigrum	Solanaceae	ძაღვურძენა	European black nightshade	-
Verbena officinalis	Verbenaceae	ცოცხანა	Common vervain	-
Verbena brasiliensis	Verbenaceae	ბრაზილიური ცოცხანა	Brazilian vervain	-

Conclusion: To date no impacts caused by working activities have been observed on flora in the proximity of the working areas.

Nowadays, no one from these identified existing spices aren't doing the breeding and nestling near the project working areas. In case of any breeding and nestling period all construction works will be stopped, which may have any potential impact on them and their locations will be marked and protected.

Note:

None of the Flora and Fauna species provided above in the list are not in the red list.

Prepared by: Jimsher Mamuchadze Signature:

Prepared by: Nino Memiadze Signature:

Attachment 4: Air measurements implemented by National Environmental Agency

July, 2017

The National Environmental Agency
The Department of the Environmental Pollution Monitoring

The Atmospheric air, water
and soil Analyses laboratory
www.nea.gov.ge

QMA 6

THE NATIONAL ENVIRONMENTAL AGENCY
THE DEPARTMENT OF ENVIRONMENTAL POLLUTION MONITORING

ATMOSPHERIC AIR, WATER and SOIL ANALYSIS LABORATORY

8th Floor – David Agmashenebeli ave.150, Tbilisi, Georgia, 0112

– Test report – №86
10.07.2017

1/4

Agreement N 3/620, 30.06.2017

Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) and Sulfur Dioxide (SO_2) measurements in the air in 2 points along the seashore of Batumi, set by the customer – in front of Batumi International Airports runway (Airport) and in the area, surrounding the Entertainment Center (Boom-Boom Beach).

Site	Total Dust, mg/m³	CO, mg/m³	NO_2, mg/m³	SO_2, mg/m³
Airport	0,102	0,59	0,001	<0,265
Boom-Boom Beach	0,036	0,75	0,002	<0,265
MPC	0,5	5,0	0,2	0,5

MPC - maximum permissible concentrations in the air.

0,265 mg/m³– sensitivity of SO_2 –concentration measuring device.

Measurements were carried out on the 4 of July 2017 in time interval from 3:30 pm to 4:30 pm with following devices – Элан CO-50 / NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2), CEL-712 (Dust).

Executor:

G. Narsia

Agreed:

Head of Environmental
Pollution Monitoring Department

M. Arabidze

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტრო
MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

გარემოს ეროვნული სააგენტო
NATIONAL ENVIRONMENTAL AGENCY

№ 12/1-815 15 08 2017

შპს „სტრუიკ გრუპ ჯორჯია"-ს დირექტორს

ბ-ნ ედვარდ სტრუიკს

ბატონო ედვარდ,

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტროს ს.ს.ი.პ „გარემოს ეროვნულ სააგენტო"-სა და შპს „სტრუიკ გრუპ ჯორჯია"-ს შორის 2017 წლის 31 ივლისს გაფორმებული ფასიანი მომსახურების შესახებ №ფმ-3/730 ხელშეკრულების შესაბამისად, დანართის სახით (ქართულ და ინგლისურ ენაზე) გაწვდით, ქ. ბათუმში, თქვენს მიერ მითითებული ატმოსფერული ჰაერის 2 (ორ) წერტილში ჩატარებული გაზომვების შედეგებს.

დანართი: 2 გვ.

პატივისცემით,

სააგენტოს უფროსი თამარ ბაგრატია

მომსახურების ხელშეკრულება N ფმ-3/730, 31. 07. 2017 წელი

ქ. ბათუმში, სანაპირო ზოლის გასწვრივ, დამკვეთის მიერ მითითებულ ორ წერტილში - წერტილი #1 კოორდინატებით: 37T 0715817; 4611003 და წერტილი #2 კოორდინატებით: 37T 0715875; 4611072 ატმოსფერულ ჰაერში მტვრის, ნახშირბადის ოქსიდის (CO), აზოტის დიოქსიდისა (NO_2) და გოგირდის დიოქსიდის (SO_2) კონცენტრაციების (მგ/მ³) გაზომვების შედეგები.

გაზომვის ადგილი	მტვერი, მგ/მ³	CO, მგ/მ³	NO_2, მგ/მ³	SO_2, მგ/მ³
წერტილი #1	0,042	1,34	0,028	<0,265
წერტილი #2	0,054	1,72	0,042	<0,265
ზდკ	0,5	5,0	0,2	0,5

0,265 მგ/მ³ – SO_2-ის კონცენტრაციის მზომი ხელსაწყოს ადმოჩენის ზღვარია. ზდკ – ატმოსფერულ ჰაერში ზღვრულად დასაშვები კონცენტრაციების მნიშვნელობებია.

გაზომვები ჩატარდა 2017 წლის 10 აგვისტოს 10:00 სთ–დან 11:00 სთ–მდე დროის ინტერვალში ხელსაწყოებით Элан CO-50/NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2) და CEL-712 (მტვერი).

შემსრულებელი:

ლ. პაპაჩაშვილი

შეთანხმებულია:

გარემოს დაბინძურების მონიტორინგის დეპარტამენტის უფროსი

მ. არაბიძე

Agreement N 3/730, 31.07.2017

Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) and Sulfur Dioxide (SO_2) measurements in the air in 2 points along the seashore of Batumi set by the customer – Site #1 with coordinates 37T 0715817; 4611003 and Site #2 with coordinates 37T 15875; 4611072.

Site	Dust, mg/m³	CO, mg/m³	NO_2, mg/m³	SO_2, mg/m³
#1	0,042	1,34	0,028	<0,265
#2	0,054	1,72	0,042	<0,265
MPC	0,5	5,0	0,2	0,5

MPC - maximum permissible concentrations in the air.

0,265 mg/m³– sensitivity of SO_2 –concentration measuring device.

Measurements were carried out on August 10, 2017 in time interval from 10:00 am to 11:00 am with following devices – Элан CO-50 / NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2), CEL-712 (Dust).

Executor:

L. Papachashvili

Agreed:

Head of Environmental
Pollution Monitoring Department

M. Arabidze

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტრო
MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

გარემოს ეროვნული სააგენტო
NATIONAL ENVIRONMENTAL AGENCY

№ 12/1-822 26 09 2017

შპს „სტრუიკ გრუპ ჯორჯია"-ს დირექტორს
ბ-ნ ედვარდ სტრუიკს

ბატონო ედვარდ,

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტროს ს.ს.ი.პ „გარემოს ეროვნულ სააგენტო"-სა და შპს „სტრუიკ გრუპ ჯორჯია"-ს შორის 2017 წლის 31 ივლისს გაფორმებული ფასიანი მომსახურების შესახებ №ფმ-3/726 ხელშეკრულების შესაბამისად, დანართის სახით (ქართულ და ინგლისურ ენაზე) გაწვდით, ქ. ბათუმში, თქვენს მიერ მითითებული ატმოსფერული ჰაერის 2 (ორ) წერტილში სექტემბრის თვეში ჩატარებული გაზომვების შედეგებს.

დანართი: 2 გვ.

პატივისცემით,

სააგენტოს უფროსი თამარ ბაგრატია

მომსახურების ხელშეკრულება

ქ. ბათუმში, სანაპირო ზოლის გასწვრივ, დამკვეთის მიერ მითითებულ ორ წერტილში - წერტილი #1 კოორდინატებით: 37T 0715817; 4611003 და წერტილი #2 კოორდინატებით: 37T 0715875; 4611072 ატმოსფერულ ჰაერში მტვრის, ნახშირბადის ოქსიდის (CO), აზოტის დიოქსიდისა (NO_2) და გოგირდის დიოქსიდის (SO_2) კონცენტრაციების (მგ/მ³) გაზომვების შედეგები.

გაზომვის ადგილი	მტვერი, მგ/მ³	CO, მგ/მ³	NO_2, მგ/მ³	SO_2, მგ/მ³
წერტილი #1	0,081	1,23	0,009	<0,265
წერტილი #2	0,061	1,03	0,004	<0,265
ზდკ	0,5	5,0	0,2	0,5

0,265 მგ/მ³ – SO_2-ის კონცენტრაციის მზომი ხელსაწყოს აღმოჩენის ზღვარია. ზდკ – ატმოსფერულ ჰაერში ზღვრულად დასაშვები კონცენტრაციების მნიშვნელობებია.

გაზომვები ჩატარდა 2017 წლის სექტემბერში ხელსაწყოებით Элан CO-50/NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2) და CEL-712 (მტვერი).

შემსრულებელი:

გ.მორგოშია

შეთანხმებულია:

გარემოს დაბინძურების მონიტორინგის დეპარტამენტის უფროსი

მ. არაბიძე

Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) and Sulfur Dioxide (SO_2) measurements in the air in 2 points along the seashore of Batumi set by the customer – Site #1 with coordinates 37T 0715817; 4611003 and Site #2 with coordinates 37T 15875; 4611072.

Site	Dust, mg/m³	CO, mg/m³	NO_2, mg/m³	SO_2, mg/m³
#1	0,081	1,23	0,009	<0,265
#2	0,061	1,03	0,004	<0,265
MPC	0,5	5,0	0,2	0,5

MPC - maximum permissible concentrations in the air.

0,265 mg/m³– sensitivity of SO_2 –concentration measuring device.

Measurements were carried out on September with following devices – Эпан CO-50 / NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2), CEL-712 (Dust).

Executor:

G.Morgoshia

Agreed:

Head of Environmental
Pollution Monitoring Department

M. Arabidze

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტრო
MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

გარემოს ეროვნული სააგენტო
NATIONAL ENVIRONMENTAL AGENCY

№ 12/1-976 18 10 2017 წ.

შპს „სტრუიკ გრუპ ჯორჯია"-ს დირექტორს

ბ-ნ ედვარდ სტრუიკს

ბატონო ედვარდ,

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტროს ს.ს.ი.პ „გარემოს ეროვნულ სააგენტო"-სა და შპს „სტრუიკ გრუპ ჯორჯია"-ს შორის 2017 წლის 31 ივლისს გაფორმებული ფასიანი მომსახურების შესახებ №ფმ-3/726 ხელშეკრულების შესაბამისად, დანართის სახით (ქართულ და ინგლისურ ენაზე) გაწვდით, ქ. ბათუმში, თქვენს მიერ მითითებული ატმოსფერული ჰაერის 2 (ორ) წერტილში ოქტომბრის თვეში ჩატარებული გაზომვების შედეგებს.

დანართი: 2 გვ.

პატივისცემით,

სააგენტოს უფროსი **თამარ ბაგრატია**

ი. აღმაშენებლის გამ. 150, 0112, თბილისი, საქართველო
150 D. AGMASHENEBELI AVE., 0112, TBILISI, GEORGIA
Tel.: +995 32 2439502 FAX: +995 32 2439503
E-mail: info@meteo.gov.ge Web: www.meteo.gov.ge

მომსახურების ხელშეკრულება

ქ. ბათუმში, სანაპირო ზოლის გასწვრივ, დამკვეთის მიერ მითითებულ ორ წერტილში - წერტილი #1 კოორდინატებით: 37T 0715817; 4611003 და წერტილი #2 კოორდინატებით: 37T 0715875; 4611072 ატმოსფერულ ჰაერში მტვრის, ნახშირბადის ოქსიდის (CO), აზოტის დიოქსიდისა (NO_2) და გოგირდის დიოქსიდის (SO_2) კონცენტრაციების (მგ/მ³) გაზომვების შედეგები.

გაზომვის ადგილი	მტვერი, მგ/მ³	CO, მგ/მ³	NO_2 მგ/მ³	SO_2 მგ/მ³
წერტილი #1	0,030	1,53	0,003	<0,265
წერტილი #2	0,037	1,25	0,007	<0,265
ზდკ	0,5	5,0	0,2	0,5

0,265 მგ/მ³ – SO_2–ის კონცენტრაციის მზომი ხელსაწყოს აღმოჩენის ზღვარია. ზდკ – ატმოსფერულ ჰაერში ზღვრულად დასაშვები კონცენტრაციების მნიშვნელობებია.

გაზომვები ჩატარდა 2017 წლის ოქტომბერში ხელსაწყოებით Элан CO-50/NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2) და CEL-712 (მტვერი).

შემსრულებელი:

ლ.პაპაჩაშვილი

გ.კარგარეთელი

შეთანხმებულია:

გარემოს დაბინძურების მონიტორინგის დეპარტამენტის უფროსი

მ. არაბიძე

Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) and Sulfur Dioxide (SO_2) measurements in the air in 2 points along the seashore of Batumi set by the customer – Site #1 with coordinates 37T 0715817; 4611003 and Site #2 with coordinates 37T 15875; 4611072.

Site	Dust, mg/m³	CO, mg/m³	NO_2, mg/m³	SO_2, mg/m³
#1	0,030	1,53	0,003	<0,265
#2	0,037	1,25	0,007	<0,265
MPC	0,5	5,0	0,2	0,5

MPC - maximum permissible concentrations in the air.

0,265 mg/m³– sensitivity of SO_2 –concentration measuring device.

Measurements were carried out on October with following devices – Элан CO-50 / NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2), CEL-712 (Dust).

Executor:

G.Morgoshia

Agreed:

Head of Environmental
Pollution Monitoring Department

M. Arabidze

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტრო
MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

გარემოს ეროვნული სააგენტო
NATIONAL ENVIRONMENTAL AGENCY

№ 12/1-1111 20 11 2017 წ.

შპს „სტრუიკ გრუპ ჯორჯია"-ს დირექტორს
ბ-ნ ედვარდ სტრუიკს

ბატონო ედვარდ,

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტროს ს.ს.ი.პ „გარემოს ეროვნულ სააგენტო"-სა და შპს „სტრუიკ გრუპ ჯორჯია"-ს შორის 2017 წლის 31 ივლისს გაფორმებული ფასიანი მომსახურების შესახებ №ფმ-3/726 ხელშეკრულების შესაბამისად, დანართის სახით (ქართულ და ინგლისურ ენაზე) გაგზავნით, ქ. ბათუმში, თქვენს მიერ მითითებული ატმოსფერული ჰაერის 2 (ორ) წერტილში ნოემბრის თვეში ჩატარებული გაზომვების შედეგებს.

დანართი: 2 გვ.

პატივისცემით,

სააგენტოს უფროსი თამარ ბაგრატია

ი. ჭავჭავაძის გამ. 150, 0112, თბილისი, საქართველო
150 D. AGMASHENEBELI AVE. 0112, TBILISI, GEORGIA

Tel.: +995 32 2439502 FAX: +995 32 2439503
E-mail: info@meteo.gov.ge Web: www.meteo.gov.ge

Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) and Sulfur Dioxide (SO_2) measurements in the air in 2 points along the seashore of Batumi set by the customer – Site #1 with coordinates 37T 0715817; 4611003 and Site #2 with coordinates 37T 15875; 4611072.

Site	Dust, mg/m³	CO, mg/m³	NO_2, mg/m³	SO_2, mg/m³
#1	0,031	1,63	0,006	<0,257
#2	0,034	1,28	0,009	<0,246
MPC	0,5	5,0	0,2	0,5

MPC - maximum permissible concentrations in the air.

0,265 mg/m³- sensitivity of SO_2 –concentration measuring device.

Measurements were carried out on November with following devices – Элан CO-50 / NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2), CEL-712 (Dust).

Executor:

L.Papachashvili

G.Kargareteli

G.Morgoshia

Agreed:

Head of Environmental
Pollution Monitoring Department

M. Arabidze

მომსახურების ხელშეკრულება

ქ. ბათუმში, სანაპირო ზოლის გასწვრივ, დამკვეთის მიერ მითითებულ ორ წერტილში - წერტილი #1 კოორდინატებით: 37T 0715817; 4611003 და წერტილი #2 კოორდინატებით: 37T 0715875; 4611072 ატმოსფერულ ჰაერში მტვრის, ნახშირბადის ოქსიდის (CO), აზოტის დიოქსიდისა (NO_2) და გოგირდის დიოქსიდის (SO_2) კონცენტრაციების (მგ/მ³) გაზომვების შედეგები.

გაზომვის ადგილი	მტვერი, მგ/მ³	CO, მგ/მ³	NO_2, მგ/მ³	SO_2, მგ/მ³
წერტილი #1	0,031	1,63	0,006	<0,257
წერტილი #2	0,034	1,28	0,009	<0,246
ზდკ	0,5	5,0	0,2	0,5

0,265 მგ/მ³ – SO_2–ის კონცენტრაციის მზომი ხელსაწყოს აღმოჩენის ზღვარია. ზდკ – ატმოსფერულ ჰაერში ზღვრულად დასაშვები კონცენტრაციების მნიშვნელობებია.

გაზომვები ჩატარდა 2017 წლის ნოემბერში ხელსაწყოებით Элан CO-50/NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2) და CEL-712 (მტვერი).

შემსრულებელი:

ლ.პაპაჩაშვილი

გ.კარგარეთელი

გ.მორგოშია

შეთანხმებულია:

გარემოს დაბინძურების მონიტორინგის დეპარტამენტის უფროსი მ. არაბიძე

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტრო
MINISTRY OF ENVIRONMENT AND NATURAL RESOURCES PROTECTION OF GEORGIA

გარემოს ეროვნული სააგენტო
NATIONAL ENVIRONMENTAL AGENCY

№ 12/1996 18 12 2017 წ.

შპს „სტრუიკ გრუპ ჯორჯია"-ს დირექტორს
ბ-ნ ედვარდ სტრუიკს

ბატონო ედვარდ,

საქართველოს გარემოსა და ბუნებრივი რესურსების დაცვის სამინისტროს ს.ს.ი.პ „გარემოს ეროვნულ სააგენტო"-სა და შპს „სტრუიკ გრუპ ჯორჯია"-ს შორის 2017 წლის 31 ივლისს გაფორმებული ფასიანი მომსახურების შესახებ №ფმ-3/726 ხელშეკრულების შესაბამისად, დანართის სახით (ქართულ და ინგლისურ ენაზე) გაწვდით, ქ. ბათუმში, თქვენს მიერ მითითებული ატმოსფერული ჰაერის 2 (ორ) წერტილში ოქტომბრის თვეში ჩატარებული გაზომვების შედეგებს.

დანართი: 2 გვ.

პატივისცემით,

სააგენტოს უფროსი **თამარ ბაგრატია**

ი. აღმაშენებლის გამ. 150, 0112, თბილისი, საქართველო
150 D. AGMASHENEBELI AVE. 0112, TBILISI, GEORGIA
Tel.: +995 32 2439502 FAX: +995 32 2439503
E-mail: info@meteo.gov.ge Web: www.meteo.gov.ge

Results of Dust, Carbon Monoxide (CO), Nitrogen Dioxide (NO_2) and Sulfur Dioxide (SO_2) measurements in the air in 2 points along the seashore of Batumi set by the customer – Site #1 with coordinates 37T 0715603; 4610796 and Site #2 with coordinates 37T 0715623 ; 4610975.

Site	Dust, mg/m³	CO, mg/m³	NO_2, mg/m³	SO_2, mg/m³
#1	0,033	1,23	0,003	<0,265
#2	0,077	1,25	0,006	<0,265
MPC	0,7	5,2	0,2	0,3

MPC - maximum permissible concentrations in the air.

0,265 mg/m³– sensitivity of SO_2–concentration measuring device.

Measurements were carried out on October with following devices – Элан CO-50 / NO_2 (CO, NO_2), Gas Alert Micro 5 (SO_2), CEL-712 (Dust).

Executor:

G.Morgoshia

Agreed:

Head of Environmental
Pollution Monitoring Department

M. Arabidze

Attachment 5: Proposed monitoring instrumentation

Proposed monitoring instrumentation

TURBIDITY

The following monitoring instrumentation was proposed by Contractor, it was approved.
Waiting for calibration test

DOC023.53.90050

TSS Portable handheld measurement instrument for turbidity/solids

User Manual

06/2012, Edition 3

Section 1 Specifications

These are subject to change without notice.

Performance specifications		
Wavelength	860 nm	
Parameter	**Turbidity**	**Solids (dry matter)**
Measurement method	Combined multiple-beam alternating light technique with IR diode system and beam focus	
	2-channel 90° scattered light measurement in accordance with DIN EN 27027 / ISO 7027; additional measurement value verification through six-channel multiple-angle measurement	Modified absorption measurement Six-channel multiple-angle measurement
Measuring range	0.001–9999 FNU (NTU)	0.001–400 g/L (upper limit depends on matrix)
Resolution	0.001 at 0–0.999 FNU 0.01 at 1–9.99 FNU 0.1 at 10–99.9 FNU 1 at >100 FNU	0.001 at 0–0.999 g/L 0.01 at 1–9.99 g/L 0.1 at 10–99.9 g/L 1 at >100 g/L
Precision	Measuring range: 0.001–9999 FNU Accuracy of the measurement value: < 3% or +/- 0.02 FNU (whichever is greater)	Measuring range: 0.001–400 g/L Accuracy of the measurement value: < 4% or +/- 0.001 g/L (whichever is greater)
Reproducibility	<4% of measurement value	<5% of measurement value
Units	FNU, NTU, EBC	ppm, mg/L, g/L, %
Calibration	1 calibration curve (factory calibration)	4 calibration curves
Sample temperature	0–60 °C (32–140 °F), up to 80 °C (176 °F) briefly	
Pressure range	Max. 10 bar	
Display	LCD, alphanumeric, 4 rows of 16 characters	
Input	6 membrane keys, menu with quick access to important functions	
Power supply (rechargeable batteries)	6 rechargeable NiMH batteries (recommended: 1.2 V/min. 1800 mAH)	
Power consumption	Approx. 60 mA	
Data log	Up to 290 measurement values	
Interface	RS 485	
Probe material	Stainless steel, sapphire	
Cable	10 m (33 ft), PUR, ∅ 8.3 mm (0.33 in.); S-2000 connector, 6-pin	
Protection class	Probe: IP68 Control unit: IP 55	
Size	Probe: ∅ 40 mm (1.57 in.), length = 29 cm (11.42 in.) Control unit: 11 x 23 x 4 cm (4.33 x 9 x 1.57 in.)	
Weight	Probe: 1600 g (3.53 lb) Control unit: 560 g (1.23 lb)	
Warranty	2 years	

2.2 Overview of product

The TSS Portable is a handheld measurement instrument for the analytical determination of turbidity and solids in aqueous media.

2.3 Measurement instrument

The instrument stores the recorded data under the corresponding calibration curve. Four calibration curves for solids (C-DS1, C-DS2, C-DS3, C-DS4) and one calibration curve for turbidity (C-TU) are available for selection.

For solids measurements, a specific calibration must be assigned to each measurement point (section 5.1, page 23).

All measurement values are saved with details of the selected calibration curve, the measurement value, the homogeneity, the date and the time.

Various individual parameters for input, signal processing and output can be set in the menu (Section 4, page 15).

2.4 Measuring principle

The measuring principle is based on a combined infrared absorption stray light process, which determines the lowest turbidity value according to DIN EN 27027 just as precisely and continuously as the high sludge content. In so doing, the light scattered sideways by the turbidity particles is measured at an angle of 90°. In the case of solid material, the measurement occurs at an angle of 90° and 120°.

2.5 Probe

The probe contains sensitive optical and electronic components. Care must therefore be taken to ensure that it is not subjected to any hard mechanical impacts. The inside of the probe, and of the display unit, does not contain any components that can be serviced by the user.

www.pce-group-europe.com

PCE Deutschland
Im Langel 4
Deutschland
D-59872 Meschede
Tel : 029 03 976 99-0
Fax: 029 03 976 99-29
info@warensortiment.de
www.warensortiment.de

SOUND LEVEL METER
INSTRUCTION MANUAL

PCE-322A