

Environmental Monitoring Report

Project Number: 48424-002
July 2019

KAZ: CAREC Corridors 1 and 6 Connector Road (Aktobe–Makat) Reconstruction Project

Prepared by the Dongsung Engineering Co., Ltd in association with subconsultant Zhol-Sapa LLP for the Ministry of Industry and Infrastructure Development, Republic of Kazakhstan and the Asian Development Bank.

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Project No.: 3416-KAZ
Reporting Period: January–June 2019

**REPUBLIC OF KAZAKHSTAN: CAREC CORRIDORS 1 AND 6 CONNECTOR “AKTOBE–MAKAT”
ROAD RECONSTRUCTION PROJECT
(SECTION KM160–330)**

Funded by ASIAN DEVELOPMENT BANK

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Seoul, Korea / Astana, Kazakhstan

For the Committee of Roads of the Ministry of Industry and Infrastructure Development of the
Republic of Kazakhstan

Approved by: PMC JSC “NC “KazAvtoZhol” – Zeinullina A.A.
(PMC employee name) and signature, report submission date

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ABBREVIATIONS

ADB	- Asian Development Bank
JS NC	- Joint Stock National Company
CBP	- Concrete Batching Plant
HIV/AIDS	- Human Immunodeficiency Virus / Acquired Immunodeficiency Syndrome
SS	- State Standard
SRSU	- State Road Safety Unit
TA	- Traffic Accident
STD/STI	- Sexually Transmitted Diseases/ Sexually Transmitted Infections
CoR	- Committee of Roads
KAZh	- JSC “NC “KazAvtoZhol”
PMC	- Project Manager Consultant
CSC	- Construction Supervision Consultant
MIID	- Ministry of Industry and Infrastructure Development
OJSC	- Open Joint Stock Company
ECP	- Environmental Control Program
PEM	- Plan of Environmental Monitoring
EMP	- Environmental Management Plan
SSEMP	- Site-Specific Environmental Management Plan
MPC	- Maximum Permissible Concentration
MPL	- Maximum Permissible Level
RK	- Republic of Kazakhstan
RSE	- Republic State Enterprise
SPZ	- Sanitary Protection Zone
MSW	- Municipal Solid Waste
LLP	- Limited Liability Partnership
OC	- Occupational Safety
CAREC	- Central Asian Regional Economic Cooperation

1 INTRODUCTION

1.1 Preamble

1. This report is a semi-annual environmental monitoring report for CAREC Corridors 1 and 6 Connector Road (Aktobe–Makat) Reconstruction Project (section km 160–330, Lot 1–3). The report is the third semi-annual report for the project.

1.2 Key information

2. In accordance with the Decree of the Government of the Republic of Kazakhstan No. 131 dated March 19, 2019 "On the reorganization of some republican state institutions", the RSE was established under the right of economic management of the "National Center for Quality of Road Assets" COR MIID. The main activities of this structure are the examination of the work and materials quality during construction, reconstruction, repair and maintenance of roads, as well as the management of road assets.
3. COR MIID assigns NC KazAvtoZhol JSC, which is the National Highway Operator, to serve as the Employer's Personal functions since 11.04.2019 on road projects, replacing the previously performed this function of RSE "ZholLaboratory"
4. The situation at Lot 2 was a matter of concern of the CSC and the Employer, since the site had a significant delay in the pace of work which increased from month to month. Since the Contractor could not independently accelerate the pace to reduce delay, the Employer made an additional agreement dated April 29, 2019 which highlights measures to increase Contractor's capacity in order to bring physical progress of works the planned indicators. In June, the Contractor was able to improve the situation and adopted the mitigation measures – so, termination of contract was avoided during the reporting period. However, concerns about the pace of work in this area remain. Although they are not so critical.

2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 Project Description

5. Aktobe–Makat road is a two-lane road of republican significance that was built in 1970-1980. The length of the section that falls into category III/IV is 459 km, and it passes through the territory of Aktobe and Atyrau regions. A complete reconstruction of the pavement with the strengthening of its structure will reduce travel time on the road, fuel consumption of vehicles and cost of vehicles operation on the road and increases transport links and economic development of the region. The road will be reconstructed according to the standards for category II in accordance with the national standards of the Republic of Kazakhstan.

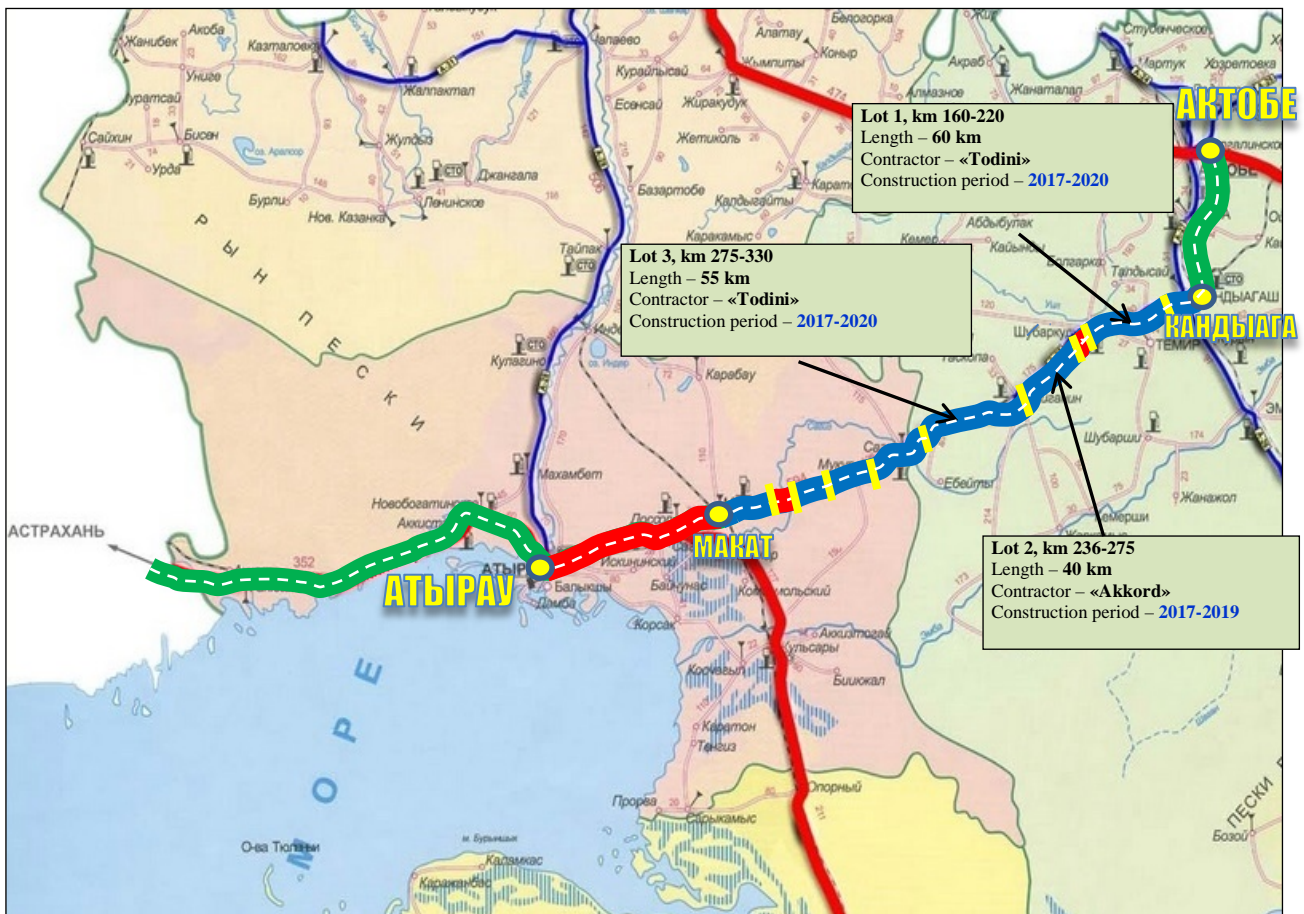


Figure 1. Location of project road

6. The project is financed by the Asian Development Bank (ADB) in the framework of the Loan 3416. ADB and the Government of the Republic of Kazakhstan jointly finance this project in the ratio of 88% to 12%.
7. The proposed project includes reconstruction of the Aktobe–Makat road section km 160–km 468, including: (i) km 160–km 330 in Aktobe region; and (ii) km 330–km 468 in Atyrau region.
8. The length of this project road subject to upgrade and reconstruction is about 299 km of II technical category with an increased level of safety.
9. The entire Aktobe–Makat section, 299 km long, was divided into 7 lots, each of them implies a separate contract for construction work. The road section is divided into the following lots: Lot 1 (Km 160–Km 220), Lot 2 (Km 236–Km 275), Lot 3 (Km 275–Km 330), Lot 4 (Km 330–Km 370), Lot 5 (Km 370–Km 418), Lot 6 (Km 418–Km 458) and Lot 7 (Km 487–Km 504).
10. Lot 1: Km160–km220 (Shubarkuduk village–Karaulykeldy village): This section includes reconstruction of road from category III to category II with a total length of 60.833 km and construction

of one bypass. A bypass of Shubarkuduk village (km 172+600 to km 181+100) will be a greenfield section. The Figure 2 below shows section for Lot 1.

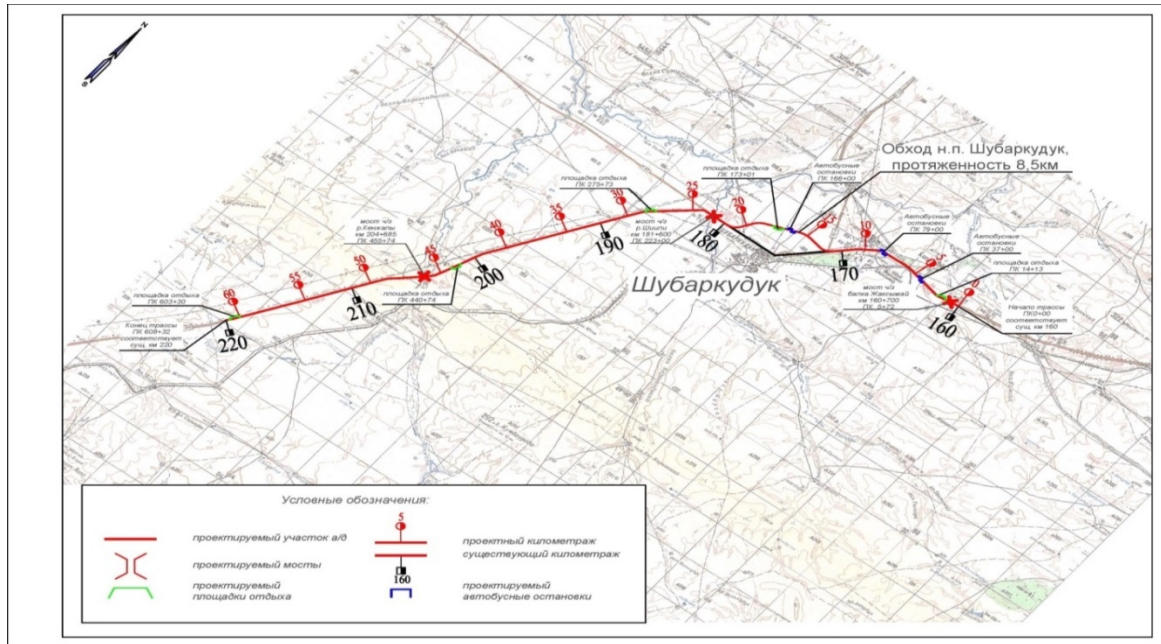


Figure 2. Scheme for Lot 1 section

11. Lot 2: km 236–km 275 (Karaulkeldy village): This section includes reconstruction of road from category III to category II with a total length of 39 km and construction of one bypass. The bypass of Karaulkeldy (km 236 to km 247) (11.8 km) will pass along a new road. Other parts of this section, the direction of traffic flow coincide with existing pavement with partial slopes from the embankment in straight and curve area. In this section, the project envisages construction of 1 bridge and 1 overpass. The following Figure 3 shows the scheme for the lot 2.



Figure 3. Scheme for Lot 2 section.

12. Lot 3: km 275 - km 330 (Zharly v. –Nogaity v.): This section includes reconstruction of road from category III to category II with a total length of 55 km. Other parts of this section, the direction of traffic

flow coincide with existing pavement with partial slopes from the embankment in straight and curve area. Figure 4 below shows Lot 3 section scheme.

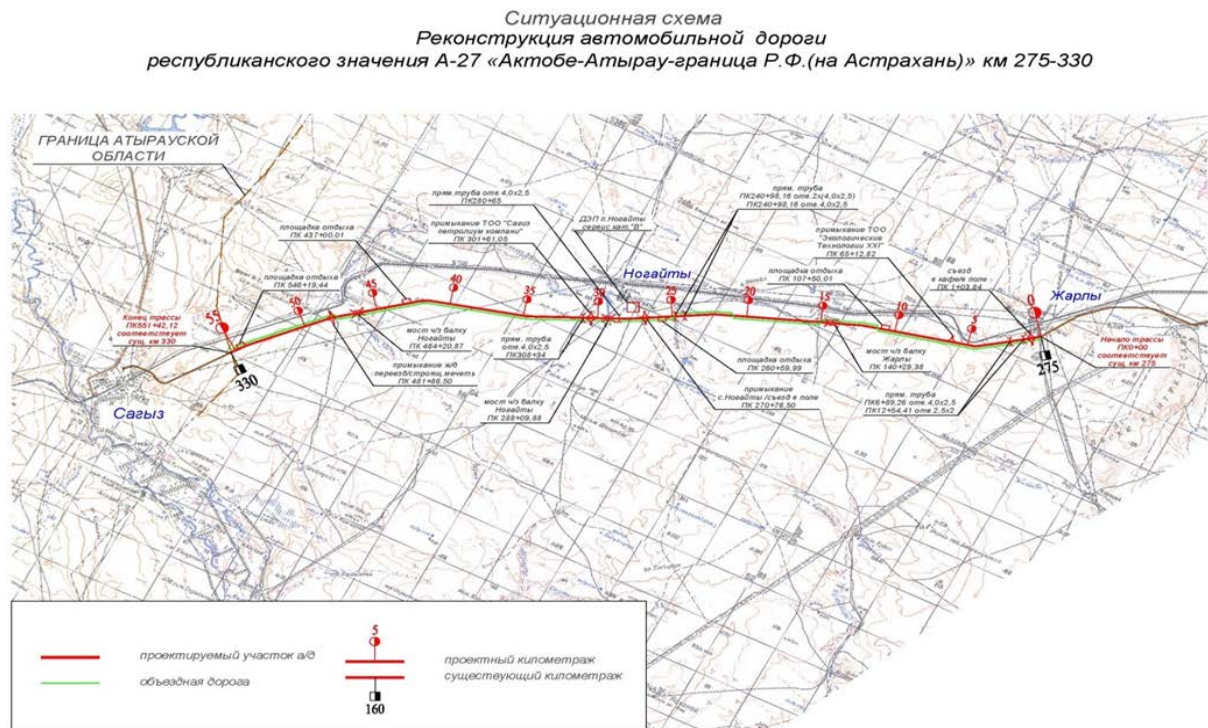


Figure 4. Scheme for Lot 3 section.

2.2 Agreements (contracts) for project implementation and management

13. COR MID entered into an agreement for services with KazAvtoZhol JSC (KAZH) for the provision of Consulting services for project management in accordance with the terms of reference acceptable to ADB and applicable under the laws of the Republic of Kazakhstan. KAZH remains fully staffed throughout Project. The responsible officer for environmental protection and protective measures conducts audits, inspections of the site, interacts with protective measures specialist of the CSC for effective project management in terms of environmental management plans implementation.
14. By the Decree of the President of the Republic of Kazakhstan dated December 26, 2018 No. 806 “On measures of further improvement of public administration system of the Republic of Kazakhstan” in order to increase the efficiency of the public administration system, the Ministry of Investment and Development of the Republic of Kazakhstan was reorganized by transforming it into the Ministry of Industry and Infrastructure Development of the Republic Kazakhstan with the transfer of functions and powers: to the Ministry of National Economy of the Republic of Kazakhstan in the field of formation of the state policy for investment incentives and the Ministry of Foreign Affairs of the Republic of Kazakhstan in the implementation of state policy on investment attraction.
15. Regional representative from the Employer on the site is the Branch of RSE “Aktobe ZholLaboratory”. A list of the main organizations included in the project and related to protective measures for environmental protection (Environmental Safeguards) is presented below in Table 1.

Table 1. List of organizations and contacts of experts related to the project Environmental Safeguards

Organization	Representative	Contact data
ADB	Nurlan Djenchuraev	6 ADB Avenue, Mandaluyong, Metro Manila
ADB Resident Mission in RK	Malika Babadjanova Laura Malikova	12 Samal Microdistrict, Astana Tower Business Center, Nur-Sultan
Committee of Roads	Ruslan Kusainov	Nur-Sultan 010000/ Transport tower/ Kabanbai Batyr st. 32/1 8 778 668 70 06 r.kusainov@mid.gov.kz
Aktobe branch of JSC "NC "KazAvtoZhol""	Mahambetov Marat Branch director	Aktobe, Maresieva st. 89, room No. 301 +7 701 566 31 44 aktobekrti@mail.ru
PMC JSC "NC" KazAvtoZhol"	Zeinullina Aliya Amantaevna Social and safeguards measures specialist	+ 7 701 982 66 57 a.zeinullina@kazautozhol.kz
CSC DONGSUNG ENGINEERING CJ., LTD/ LLP "ZS ENGINEERING"	Imbarova Sara Environmental and safeguards measures specialist	+ 7 771 754 13 55 + 7 701 362 36 12 aktobe_kns1@mail.ru
JSC "Todini Kostruktioni Generali S. p. A." (Italy) for lot 1 and lot 3	Urais Hasan Environmental specialist	8 701 956 59 86 todini_aktobe@todini.it
OJSC "ICIC Akkord" (Azerbaijan) for lot 2	Anuar Embergenov Environmental engineer	Aktobe region Bayganin district Karaulkeldy village, Kozhabay Zhazykov St., 2 A+7 701 484 08 68

16. The project is divided into 3 sections. Lot 1 (Km 160-220) and Lot 3 (Km 275–330) were awarded to the Contractor JSC "Todini Costruzioni Generali S.p.A." (Italy). Lot 2 (Km 236–275) was awarded to the OJSC "ICIC Akkord" (Azerbaijan).

Table 2. Information about Contractors contracts

Contractors name	Contract No.	Section (km)	Length (km)	Contract Signing Date	Work commencement date
JSC "Todini Costruzioni Generali S.p.A." (Italy)	№ 001-ADB/CW-2017	160-220	60	07.09.2017	28.11.2018

OJSC "ICIC Akkord" (Azerbaijan)	№ 002- ADB/CW-2017	236 -275	39	16.08.2017	28.11.2017
JSC "Todini Costruzioni Generali S.p.A." (Italy)	№ 003- ADB/CW-2017	275-330	55	07.09.2017	28.11.2018

17. The Figure 5 below shows the organization chart of interaction between the structures of the Project

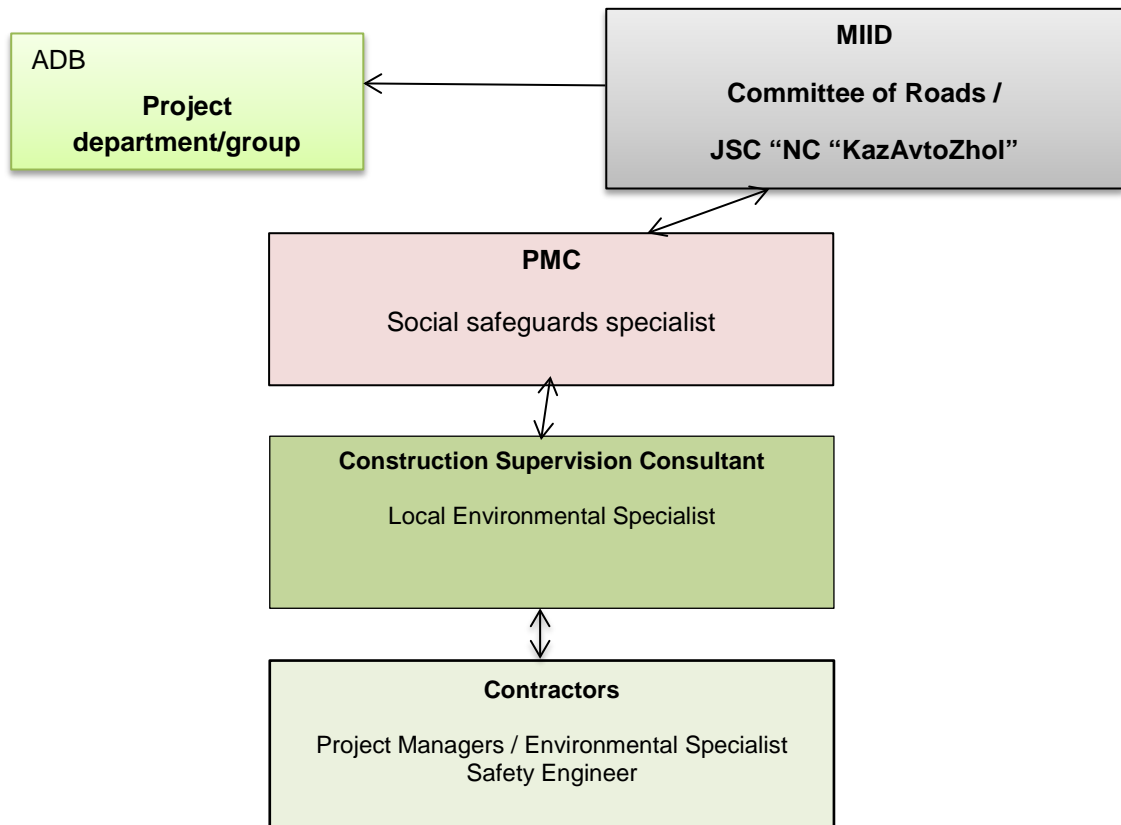


Figure 5. Organization chart of project coordination

2.3 Project Activities During Current Reporting Period

18. The following types of work were performed on Lot 1 during the reporting period:
- Lower pavement layer km 169+490–km 187+230,
 - upper base layer Km 168+503–Km 187+470
 - lower base layer Km 170+030–km 187+500,
 - geotextile placement km 173+080–193+200,
 - subgrade construction on Km 181+500–Km 205+500,
 - culverts construction on Km 192+615, 195+228, 195+267,
 - bridges and overpasses on Km 160+541, 182+306, 205+586.
19. During reporting period, 306 people were involved on the project of Lot 1 as of June 30. The subcontractor has 24 people.

20. Table 3 below provides data on the status of construction work for the reporting period on Lot 1.

Table 3. Status of construction work for the reporting period for Lot 1

Contractor & section	type of work	unit	total in the contract	Executed in 2018	executed in 1 st half of 2019	% of execution	Balance
Todini lot 1 (km 160 -220)	cost	Mln. tg	11 396,3	2 648,69	2 503,116	45	6307,273
	Wearing course	Km	60,8	7,41	14,28	29%	39,1
	Binder course	Km	60,8	8,03	17,53	27	35,24
	Base course	Km	60,8	9,96	16,48	33	34,36
	additional layer (geotextyle)	Km	60	12,62	20,10	28	28,08
	Subgrade	thou m ³	1 537,5	706,14	373,85	24	457,5
	Culvert	pcs	34	16	3	17	15
	bridges and overpass	pcs	3	0,85	0,75	25	1,4
	RMD	pcs	1	0,26	0,2	20	0,54
	% execution of construction works	%	100	23,22	21,78	27	55

21. The following types of work were performed on Lot 2 site during the reporting period:

- Procurement of materials: Crushed stone -140 339 m³, precast concrete products -1250 m³, Bitumen - 2279 tons.
- Earth work on the section from Km 236 to Km 275,
- C4 base layer (mark of the crushed stone-sand layer) on the section Km 247-260, Km 241–246.
- Asphalt concrete work (highly porous and porous asphalt) at Km 247–260, Km 241–246.
- Pile driving, concreting of the grillage, installation of piers, concreting of the crossbeam on Overpass on Km 239.
- Pile driving, concreting of the grillage, installation of piers, concreting of the crossbeam on the bridge on Km 247.
- Construction of culverts and underpasses 14 pcs.

22. During the reporting period, 429 people are working on the project of Lot 2 as of June 30. The subcontractor mobilized 203 people.

23. Table 4 below provides data on the status of construction work for the reporting period on Lot 2.

Table 4. Status of construction work for the reporting period for Lot 2

Contractor & section	type of work	unit	total in the contract	executed in 2018	executed in 1 st half of 2019	% of execution	Balance
AKKORD Lot 2 (km 236-275)	cost	mln tg	8 012,31	1 176,039	1 784,853	36,95	63,05
	Wearing course	km	40,1	1,14	13,51	34,68	25,45
	Binder course	km	40,1	1,17	13,98	35,91	24,95
	Base course	km	40,1	2,14	13,91	36,64	24,05
	additional layer (Geotextile)	km	40,1	2,18	14,44	38,08	23,48
	Subgrade	thou m3	1 699,49	685,32	599,69	72	233,05
	Culvert	pcs	32	6	13,4	51	12,6
	bridges and overpass	pcs	2	0,48	0,536	45,26	0,98
	RMD	pcs	1	0	0	0	1
	% execution of construction works	%	100	14,68	22,27	36,95	63,05

24. Following types of construction work were carried out on Lot 3:

- laying the top layer of the base at Km 301 + 980–281 + 720,
- laying the bottom layer of the base at Km 302 + 00–280 + 410,
- laying an additional layer (geotextile) at Km 302 + 00–280 + 140,
- roadbed construction on the section Km 275 + 200–315 + 00,
- all culverts are completed on the Km275 + 00–329 + 998,
- work on bridges and overpasses on Km 289+ 029, Km 303 + 809 and Km 321 + 420.
- Work on RMD construction at Km 302 + 00

25. During the reporting period, 158 people are mobilized on Lot 3. The subcontractor mobilized 175 people.

26. Table 5 below provides data on the status of construction work for the reporting period on Lot 3.

Table 5. Status of construction work for the reporting period for Lot 3

Contractor & section	type of work	unit	total in the contract	executed in 2018	executed in 1 st half of 2019	% of execution	Balance
Todini lot 3 (км 275-330)	cost	mln tg	9 878,0	1 408,27	2 095, 55	35,4	6374,18
	Wearing course	Km	55	0	0	0	55
	Binder course	km	55	3,40	16,66	32,2	35,08
	Base course	km	55	3,80	17,66	34,4	33,68
	additional layer (geotextyle)	km	55	3,80	17,83	34,73	33,51
	Subgrade	thou m3	1 293	604,00	334,57	55,4	354,43
	Culvert	pcs	22	11	9	100	0
	bridges and overpass	pcs	3	0,33	0,65	24,34	2,02
	RMD	pcs	1	0,17	0,2	37	63
	% execution of construction works	%	100	14,25	20,95	24	64,8

27. At the work sites for all Lots, there is some delay from the scheduled calendar works. However, Contractor's management and CSC engineers are taking measures to reduce delays from plans.

2.4 Description of Any Design Changes

28. During the reporting period, Lot 1, Lot 2 and Lot 3 did not propose any changes to the project design.

2.5 Description of Any Changes in Agreed Construction Methods

29. During the reporting period, there were no significant changes in construction methods. All works are carried out according to the Work Plans.

3 ENVIRONMENTAL PROTECTION ACTIVITIES

3.1 General Description of the Environmental Protection Activity (protective environmental measures)

30. During the reporting period organizational structure of the Contractor for Lot 1 and Lot 3 had changes. Environmental specialist of the general contractor, Hasan Kurais, is constantly on the site. Replacement of the environmental specialist from SMS, on February 15 Budanova Nurgul was mobilized instead of Kozhanov Turar. The organizational structure of the contractor for Lot 2 had short-term changes. From March 2019, the local environmental specialist was mobilized for the period from March to 30 June. Environmental specialist of Lot 2 Anuar Embergenov works remotely from Aktobe.
31. Environmental specialists of contractors provide continuous monitoring of ongoing construction work for compliance with the environmental policies of their companies, as well as all measures provided for in the EMP. Work of these specialists is focused on the continuous monitoring and recording of the impact of certain works on the state of the environment. Continuous monitoring work ensures that deviations from the EMP are avoided or that any unforeseen negative consequences are corrected or quickly detected and eliminated. All activities specified in the EMP are included in the monitoring plans. On a monthly basis, Contractor's environmental specialists since March 2019 keep weekly records of monitoring results to previous monthly and semi-annual reports.
32. Contractor's environmental specialists organize work on Operational Environmental Monitoring (OEM), procedure of soil and water sampling, measuring air pollution according to the SEMP through the involvement of specialists from certified research laboratories, and inform CSC. Reports on these works are submitted to the CSC. Lot 1 and lot 3, the Engineer has approved the laboratory "Gidroresurs" LLP. Lot 2, the laboratory LLP "HydroEcoResource-L" has been approved. The laboratory passed the accreditation and received a certificate valid until August 14, 2023.
33. Both laboratories have appropriate licenses and certificates, accreditation terms in accordance with the law. The contracts were signed for instrumental measurements according to the ECP and the subsequent preparation of EMP reports;
34. According to the contractual obligations, Contractor's environmental specialists of all three sites adhere to all the requirements of the environmental aspects of the contract requirements of the General Contract Conditions, such as 4.7. Setting out, 4.8. Safety procedures, 4.13. Rights of way and facilities, 4.18. Environmental Protection, 6.7. Health and safety. Environmental specialists control compliance with these contract clauses through their own monitoring on a weekly, monthly basis. The results of own environmental audits are recorded in the relevant reports of the Contractor.
35. In addition to OEM of a third-party organization, its own monitoring of the site and facilities, the Contractor's environmental specialists conduct their own consultations on construction sites among personnel. During the reporting period, on Lot 1 on May 24, 2019, the Environmental specialists of the General Contractor and the Subcontractor conducted training for employees of organizations on the health, safety issues and environmental protection measures. The topic of the training includes issues of preventing spills of fuels and lubricants, procedures for recycling soil from spill sites. Topics covered also the separate storage of solid waste and industrial waste. For the Lot 3 a similar training was conducted on May 22, 2019, for employees involved in Lot 3 works.
36. Imbarova Sara was mobilized to the project as CSC's environmental specialist. During the reporting period, inspections were conducted for Lot 1, Lot 2 and Lot 3, and an environmental audit was conducted to eliminate non-compliances previously issued for Lot 1 and Lot 3. Also, construction process was monitored at all three sites. Contractor's environmental specialists' reports were reviewed, EAP reports. Lot 1 and Lot 3, 5 EAP reports are submitted, and for Lot 2, 4 reports are also submitted. Site audit (visit to the site) was performed on the implementation of site-specific environmental management plan.

3.2 On-site audit (site inspections)

37. During the reporting period, a series of monitoring and evaluation visits were conducted. Implementation of the EMP measures, according to the analysis of potential risks in the field of environmental safety of the project, was reviewed.

Table 6. Site visits information

JSC "Todini Costruzioni Generale S.p.A." (Italy) Lot 1		OJSC "ICIC AKKORD" (Azerbaijan) Lot 2		JSC "Todini Costruzioni Generale S.p.A." (Italy) Lot 3	
Visit date	Result	Visit date	Result	Visit date	Result
04.03.2019	to eliminate 2 comments: control of removal of solid waste, violation of zoning of the production base	04.03.2019	2 comments to fix: control of removal of solid waste, complete set of fire-prevention boards	04.03.2019	3 comments to be eliminated: compliance with the regulations at the gas station site, fire safety at the gas station, control of collection and removal of solid waste
12.03.2019	Snow cleaning in culvert	11.03.2019	Verbally to eliminate: Septic tank cover missing, containers of solid waste unlabeled	14.03.2019	Verification of elimination of previously issued comments.
18.04.2019	elimination of previously issued comments.	18.04.2019	elimination of previously issued comments.	18.04.2019	elimination of previously issued comments.
08.05.2019	Dust suppression schedule, deforestation on the bypass road	08.05.2019	Failure to comply with schedules for solid waste removal Dust suppression schedule on inert materials stockpile	08.05.2019	Compliance with Dust suppression Schedule
20.05.2019	Monitoring of previously issued comments.	16.05.2019	3 comments from ADB national consultant: prepare waste passport, number of containers to be reviewed, EMP in a new form of ADB	16.05.2019	4 Comments from ADB National Consultant - waste passport marking of containers - waste segregation trainings - prepare a new form of EMP
28.05.2019	ADB mission The Mission recommended the CSC to hire qualified Environmental Specialists with enough input to monitor	28.05.2019	ADB mission The Mission recommended the CSC to hire qualified Environmental Specialists with enough input to monitor	28.05.2019	ADB mission The Mission recommended the CSC to hire qualified Environmental Specialists with enough input to monitor

	implementation of the Environmental Management Plans.		implementation of the Environmental Management Plans.		implementation of the Environmental Management Plans.
5.06.2019	Verbally issued for the removal of records in the register of registration of waste collection Preparation of the semi-annual report of the contractor	5.06.2019	No comments	7.06.2019	Dust suppression at the work site, control of the process of transportation of inert materials

38. In general, contractor's environmental specialists have demonstrated their commitment to comply with the environmental and social safeguards of the project and the external environment.
39. During the site visits CSC clearly observed how environmental specialists carry out their work on site, keep records, advice managers and workers on environmental and social security issues. Environmental specialists for Lot 1 and Lot 3 provide the entire reporting package consisting of the EMP report and their reports in a weekly, monthly, quarterly and semi-annual format of the EMP implementation. The environmental specialist for Lot 2 is limited to a PEM report.

3.3 Problem Tracking (Based on Non-Compliance Notifications)

40. During the site visits, together with the environmental specialists of the contractors, non-conformities in categorization related to material were identified. Thus, 2 non-conformities were identified on Lot 1: one (minor) associated with the implementation of flood control measures and one major violation of the system for solid waste monitoring. It was noted the importance of strengthening control over ensuring environmental safety in terms of compliance with the export schedule for the subsequent disposal of solid waste and industrial waste at sites and in the office of the CSC.
41. On Lot 2, two major non-conformities were identified: control over the process of storage and removal of solid waste, as well as safety at the sites where asphalt plant is located.
42. On Lot 3, written instructions were given for elimination of major non-compliances on violation of the technical regulations for the construction of stationary gas stations, as well as for ensuring measures to prevent spills of fuel and lubricants.
43. Also, in all Lot 1, Lot 2 and Lot 3, environmental specialists paid attention to the observed dust suppression schedule at the sites where intensive construction work is being carried out, as well as the deadlines for submitting of monthly, semi-annual and PEM reports.
44. According to the register of complaints and appeals on Lot 1, Lot 2 and Lot 3, during the reporting period were no appeals and complaints about non-compliance with environmental safeguards. From the beginning of the project implementation as of 30 June 2019, Lot 1 had 5 appeals. all are closed. Lot 2 no appeals and complaints. Lot 3 received 1 appeal. It is closed. There are no open complaints and appeals on the Project.
45. During the reporting period, 8 non-conformities with environmental standards of activities at the sites were recorded. In annex 19 Notice Letters are attached. For section of Lot 1 - 4, Lot 2 - 1 and on the Lot 3 - 3 non-conformities. Table 7 below provides information on tracking of environmental issues during the reporting period, incrementally, considering the start of the project. Table 7.1. presents data for the previous reporting period. Detailed information for the first half of 2019 is presented in Annex No. 1, form for tracking of non-conformities elimination.

Table 7. Environmental Tracking Summary Report from the beginning of the project on Lot 1, Lot 2 and Lot 3

Total number of problems on the project	16
Number of Open Issues	0

Number of Closed Issues	16
Closing percentage	100%
Open Issues for the Reporting Period	0
Closed Issues for the Reporting Period	16

Table 7.1. Data for previous period 2-nd half of 2018

Total number of problems on the project	9
Number of Open Issues	1
Number of Closed Issues	8
Closing percentage	89%
Open Issues for the Reporting Period	1
Closed Issues for the Reporting Period	8

46. Figure 6 presents the categorization of non-conformances: environment protection - 62%, social impact and safety - 15% and 8% for the impact on human health.

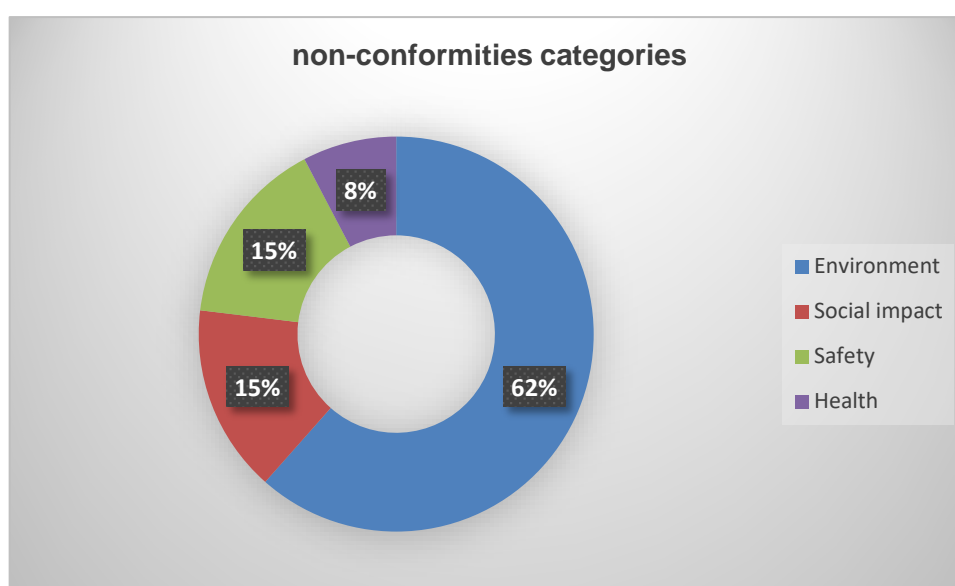


Figure.6 Non-conformance category diagram

3.4 Tendency (general directions)

47. During the reporting period as confirmed by the monitoring and audits of construction sites, there were no complaints from the public about the failure on implementation of environmental protective measures. The non-compliances were resolved by the Contractors at all sites promptly. Corrective actions were taken immediately and written reports with photographs of the results of the actions taken were provided. In general, there is a positive trend in timely response to the elimination of non-compliances and violations.

3.5 Unforeseen environmental impacts or risks

48. During the monitoring periods of construction sites, no unforeseen environmental impacts were identified. Possible risks described in the pre-project assessment process were not implemented,

since all construction work was carried out under the supervision of environmental specialists on the site. The results of environmental monitoring confirm this statement.

49. As part of the monitoring of environmental protection measures, the in view of the short term of engagement (6 months for the whole project period), built all the work on the principle: field work on site during the visit, and the study of documentation online. Communications between CSC Environmental specialist and Contractor Environmental specialist structured and allow the exchange of information and data.

4 RESULTS OF ENVIRONMENTAL MONITORING Overview of monitoring conducted during the current period

50. The works on operational monitoring of environmental protection at construction sites of Lot 1, Lot 2 and Lot 3 were performed by the testing laboratory HydroEcoResource L LLP on the basis of contract No. 76 dated April 17, 2018 (for Lot 1 and Lot 3) and contract No. 64 L dated April 05, 2018 (for Lot 2) for the provision of environmental monitoring services. The laboratory has a certificate of accreditation KZ. T.05.1400, dated August 14, 2018, for the period until August 14, 2023, confirming the presence of the conditions necessary to perform measurements in the field of activity assigned to the laboratory: conducting analytical monitoring of pollutant parameters of the working area, atmospheric air and sources of air emissions, surface , natural waters, as well as analysis of soil and physical factors.
51. Laboratory's activities are regulated by environmental guidelines and regulations, health and hygiene standards, requirements, lists of maximum permissible concentrations, estimated safe exposure levels, maximum permissible discharges and emissions of harmful substances operating in the Republic of Kazakhstan. Works on production monitoring were performed in accordance with the Environmental Code of the Republic of Kazakhstan dated January 9, 2007 No. 212-III. Contractors carried out primary monitoring in accordance with the sampling and measurement points approved by the CSC Engineer. On Lot 1 and Lot 3, measurements were carried out on April 24-25, 2018, on Lot 2: May 23-24, 2018. Data on measurements and laboratory tests are presented in the first semi-annual report of 2018 and recorded as parameters obtained prior to the start of construction work.
52. During the reporting period, measurements and laboratory tests were carried out on each Lot (at the same points where measurements were taken before construction began) in the context of monthly parameters. Based on the laboratory research protocols, data tables were compiled in a monthly section. For Lot 1, data are listed in Annexes 2-6. For Lot 2 in Annexes No. 7-11, for Lot 3 in Annexes 12-16, to this report.
53. Reconstruction of the road (construction works) according to the Sanitary Rules No. 237 dated March 20, 2015 is not classified. Unclassified objects in accordance with the Environmental Code of the Republic of Kazakhstan belongs to category IV. The base camp for the period of construction works belongs to the III class of danger according to the sanitary rules, and to the II category under the Environmental Code of the Republic of Kazakhstan.
54. Contractors Lot 1, Lot 2 and Lot 3 keep internal records, form and provide periodic reports on the results of industrial environmental monitoring in accordance with the requirements established by authorized bodies in the field of environmental protection on the basis of the Environmental Code of the Republic of Kazakhstan (Article 133. Accounting and Reporting on industrial environmental control).
55. Impacts are recorded by environmental specialists and monitored by the activities described in the SEMP. In accordance with the SEMP and along with the Environmental Monitoring Plan, Contractors performed measurements and monitoring of air quality, soil, noise, vibration and socio-cultural resources. Results of monitoring based on laboratory measurement reports are presented in Annexes No. 2-12.

4.1.1 Environmental measurements on Lot № 1

4.1.1.1 Noise and vibration

56. On lot 1, measurements of vibration and noise level, soil sampling was carried out in accordance with the approved scheme of sampling points. Figure 7 below shows a diagram with sampling points and measurements of vibration and noise levels.

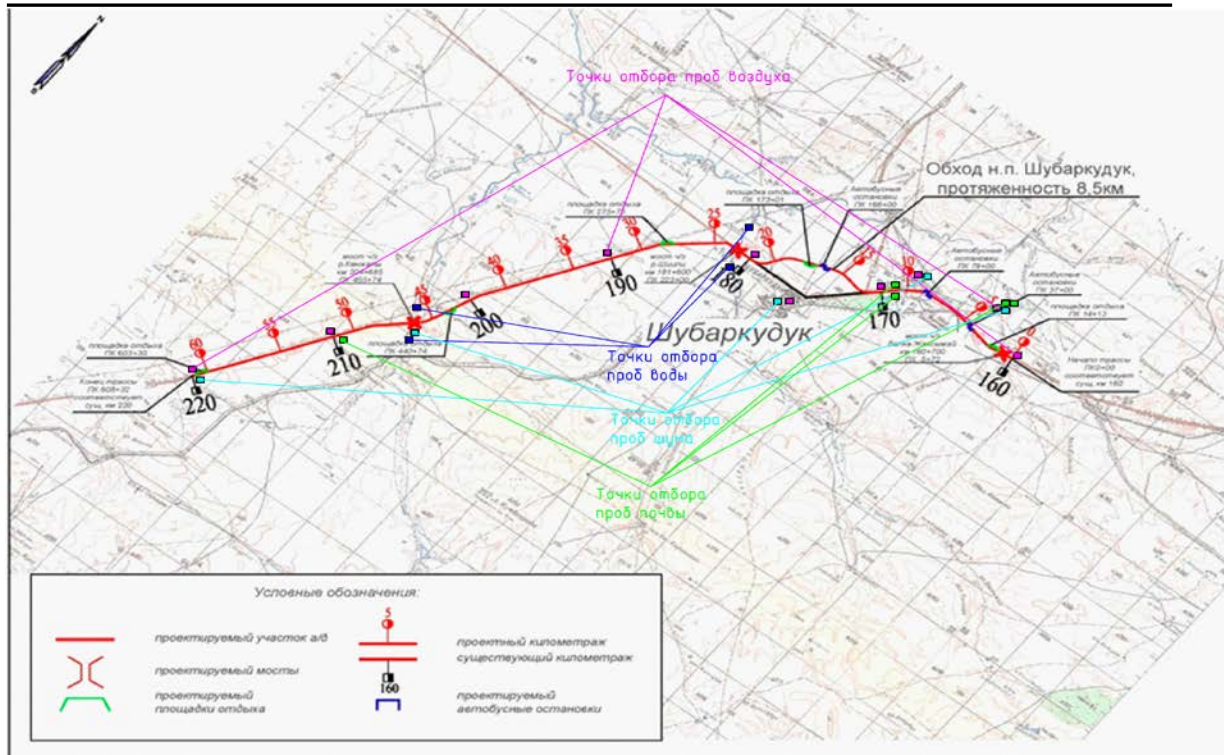


Figure 7: Situation diagram with water sampling points (dark blue), noise and vibration measurements (light blue), air (pink) and soil sampling (green) on Lot 1

57. Dynamics of changes in noise and vibration on Lot 1 areas during the reporting period are represented by instrumental measurements for the period January, February, March, April, May and June. The main regulatory and procedural document that guided the work on monitoring noise and vibration is Order No. 169 of 02/28/2015. "Hygienic standards to the physical factors affecting the person."
58. National standard (GN Order No. 169 dated February 28, 2015) determines MPL of noise level on the construction area of 80 dBA and for operator work in laboratories, asphalt plant- 90 dBA, and MPL in residential areas - 60 dBA. This report adopts a national standard because it is more demanding in terms of MPL.
59. With an acceptable level of 80 dBA for workplaces of drivers of road-building equipment (this MPL is taken from Annex 2 to the order of the Minister of National Economy of the Republic of Kazakhstan "On approval of hygienic standards for physical factors affecting a person" dated February 28, 2015 No. 169 "Sound pressure MPL, sound levels equivalent sound levels for the most typical types of workplaces") marked the highest value equal to 53.0 dB and the lowest within the limits of 48.3 dB. It shows that the level of noise from working building machinery does not exceed MPL at all measurement points. Consequently, this level of noise does not have a negative impact on the health of working personnel.
60. On construction sites, the noise level value is fixed in the range of 48.0–53.0 dB. These values do not exceed MPL for these places.
61. Measurement data on Lot 1 shows that the level of noise from working building machinery does not exceed MPL at all measurement points. Consequently, do not have a negative impact on the health of working personnel.
62. In terms of vibration acceleration on this Lot, no excess of the permissible equivalent level of vibration acceleration of 95 dB recorded at the measurement points. All measurements on the indicated points at Figure.9 are within 33.2–37.0 dB. With these values, there is no negative impact both on the environment and on the health of personnel on the site.

4.1.1.2 Soil

63. Instrumental measurements were carried out in accordance with the following regulatory and methodological documents: GN Order No. 452 of 06/25/2015 Hygienic standard for environmental safety (soil) and GOST 12071-2014 Soils. Selection, packaging, transportation and storage of samples. Soil sampling was carried out according to GOST 28168-89 Soils. Sample selection.
64. Soil samples were taken from Zhaksimay Production Base Km 168, road sections Km 160, Km 170, Km 180, Km 190, Km 200, Km 210. Laboratory data are presented in Annex No. 2. Results of soils sample analyzes show that magnitude of the negative impact on the surrounding soil cover at the SPZ boundary is estimated as low, while the area of impact on vegetation corresponds to the local scale, duration of the impact is constant for the period of construction work.
65. Analysis of data on points 1 and 2 from the Production Base “Zhaksimay” shows that all monitored parameters do not exceed the levels observed before the commencement of the Project. However, during the reporting period, there was an increase in calcium content in the soil at construction sites compared to previously obtained before the commencement of the Project. The Figure 8 below shows the dynamics of changes for all sampling points.

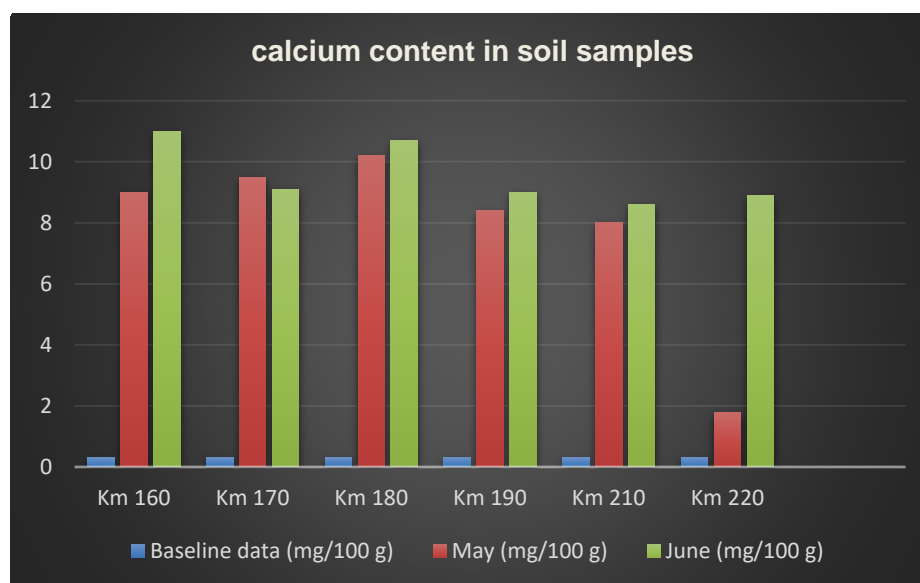


Figure 8. Dynamics of changes of calcium content in soil samples – Lot 1 road section

66. During the primary measurement at Km 160, a calcium value of 0.4 mg / 100 g was recorded. But in May, this figure was already 9.0 mg / 100 g, and in June, 11.0 mg / 100 g. At the Km 170 site, it was previously recorded at 0.7 mg / 100 g, in April the value of 9.1 mg / 100 g was recorded, in May - 9.5 mg / 100 g in June —9.1 mg / 100 g. At Km 190, the primary indicator for calcium was 0.2 mg / 100 g, but in May it was already 8.4 mg / 100 g, and in June it was 9.0 mg / 100 g. Such a change in calcium is due to the calcium content in the materials used for the embankment construction on the sites. The increase in calcium content does not have a significant impact on human's health and on the area where construction works are being carried out. The negative impact on the cultivated plants is possible, however, there are no growing crops in these areas.
67. According to the hygienic standards for environmental safety (in particular to the soil), approved by order of the Minister of National Economy of the Republic of Kazakhstan dated June 25, 2015 No. 452, the soil assessment on Lot 1 for sanitary and chemical parameters is classified as “safe” because MPC's exceedances were not recorded for all monitored pollution parameters. And according to the protocols of instrumental measurement of radiological parameters, the level of contamination by radioactive substances is defined as the natural level.
68. During the reporting period, on Lot 1 among 10 borrow pits excavation was carried out on 5 borrow pits in the volumes planned by the production plans. Detailed information for all borrow pits is presented below in Table 8 below.

Table 8. Information about borrow pits on Lot 1 by status as of June 30, 2019

№	Name	KM/CH	Location		Reserves		extraction	recultivation
			left	right	area, ha	quantity, thousand m ³		
1	Borrow pit 1	29+36		218	3,99	104,9	-	0%
2	Borrow pit 2	49+59	1033		4,99	126,5	-	0%
3	Borrow pit 3	73+61		188	3,99	104,9	-	0%
4	Borrow pit 4	146+94		403	3,99	104,9	14 000	0%
5	Borrow pit 5	203+47		745	15,9	406,8	39 546	0%
6	Borrow pit 6	294+05	1038		15,9	406,8	41 060	0%
7	Borrow pit 7	351+20	319		3,95	104,0	11 578	0%
8	Borrow pit 8	391+46	1010		15,9	422,5	49 801	0%
9	Borrow pit 9	466+32		162	3,99	104,9	-	0%
10	Borrow pit 10	556+75		148	3,99	100,9	-	0%

4.1.1.3 Water quality

69. Main regulatory and methodological documents that guided the monitoring of natural waters in the Karaulkeld River: ND No. 209 dated March 16, 2015. Water sampling was carried out according to GOST RK GOST R 51592-2003 "Water. General requirements for sampling." Monitored parameters of water pollution: pH, Solids, Water-insoluble substances, Chlorides, Ammonium Nitrogen, Petroleum products, Total hardness, Calcium, Magnesium, Sulphates, Nitrates, Nitrites, Iron, Chromium, Total phosphorus, Anionic surfactants.
70. According to the laboratory data for all parameters, no exceeding of permissible norms was noted. But compared with the values obtained during the measurement period before the start of construction works, there is an excess of sulfates, chlorides, dry residue, which do not exceed the permissible norms. Excess noted during the period of active construction work.
71. According to laboratory data on water in the Kenzhaly and Shieli Rivers, the permissible norms were not exceeded for all parameters. However, in the samples from the Shieli River, there is an excess of the content of chlorides, magnesium, sulfates and nitrates in comparison with the baseline measurements carried out on April 24, 2018. So, for chlorides in April to 350 mg/dm³, in May to 336 mg/dm³. And in June, up to 327 mg/dm³ compared with measurements taken before construction, when the chloride content was 182 mg/dm³. For magnesium, there is also an excess of the values obtained before the start of construction work. So, the baseline data was 30 mg/dm³, in April - 138 mg/dm³, in May - 130 mg/dm³, in June 126 mg/dm³. For sulfates: baseline data - of 272 mg/dm³, in April - 475 mg/dm³, in May - 453 mg/dm³, in June - 436 mg/dm³. For nitrates: baseline data was 0.2 mg/dm³, in April - 1.58 mg/dm³, in May - 1.66.
72. Having reviewed all the possible facts of the excess of the above parameters, we came to the conclusion that this excess is associated with external aspects, namely, meltwater drains, etc. No active construction work was carried out on this segment of the site in the reporting period, the production base is located in 65 km.
73. In Kenzhaly river the level of pollution does not exceed the levels obtained prior to construction and the MPL for each of the identified water pollutions parameters. Laboratory data are presented in Annex № 4.

4.1.1.4 Air quality

74. Measurements of air pollution level on Lot 1 site were carried out in accordance with the approved sampling scheme shown in Figure 7 above. Measurements were carried out according to the following parameters: Inorganic dust, suspended solids at the asphalt plant and concrete plant, Nitrogen dioxide, Sulfur dioxide, Carbon monoxide, Formaldehyde, Hydrocarbons C12-C19, Hydrogen sulfide. Laboratory measurement results are presented in Appendix No. 5.
75. Frequency and measuring points: in the first and second quarters - at Km 168 of the Zhaksymay production base where asphalt plant and concrete plant are located, in the second quarter from the beginning of the construction season - at Km 160, 170, 180, 190, 220

76. Obtained laboratory data for the reporting period in samples from Km 160, 170, 180, 190, 220 and base Zhaksimay Km 168 show no excess of air pollution level in all parameters at all points. There is no excess in comparison with base line parameters and with MPC.

4.1.2 Environmental measurements on Lot 2

4.1.2.1 Noise and vibration

77. Instrumental measurements of vibration and noise were conducted at points of the NW of the Karaulkeldy village, NW Zharly village, Production base Karaulkeldy, Km 236, Km 246, Km 250, Km 255, Km 260, Km 265, Km 275, borrow pit No. 2 (Km 242), No. 5 (Km 254), No. 6 (Km 260). Level of vibration and noise does not exceed permissible values at all measuring points. Laboratory data are presented in Annex №7 to this report.

4.1.2.2 Soils

78. During the reporting period, management for borrow pits on Lot 2 carried out following work: soil excavation in accordance with the calendar schedule of extraction. Excavation works are planned to be made in periods from 2018-2020, from April to December. On Lot 2, excavation was carried out on borrow pit No. 2, 5 and 6 on favorable relatively windless days. The overburden works consisted in the excavation of overburden represented by the soil-vegetative layer (Topsoil), with a capacity of 0.3 m, followed by stripping of the useful stratum, with a stripping layer thickness 0.1 m. The design provides for external dumping, i.e. storage of the topsoil along the pit contour, in the form of a safety shaft. In the area of borrow pit No. 2 and 5, these types of work were carried out in accordance with the design and the management plan for the borrow pits. On borrow pit number 6 work is in progress. In Annex 8.
79. Lot 2 obtained a permit for use of soil for the extraction of common mineral resources in sections No. 1-7 for a period up to 01.20.2020. The conclusion of the state environmental review on the EIA project for the industrial development of clay rocks in the areas of soil reserves No. 1-7 in the Baiganin district of the State Institution "Management of Natural Resources and Environmental Management of the Aktobe Region" dated June 5, 2018 under the number KZ 29VDC00070747 was received. A sanitary protection zone is defined within 240 m.
80. Soil samples were taken for laboratory measurements on sections of the Aktobe-Atyrau road, km 236; km 245; km 255; km 265; km 275 and borrow pits number 2; No. 5; No. 6; as well as at the Karaulkeldy production base, in accordance with the approved standards. In Annex No. 9 shows results of laboratory tests. Controlled substances: Dense residue, pH, petroleum products, chlorides, sulfates, calcium, magnesium, carbonates, bicarbonates.
81. The magnitude of the negative impact on the surrounding soil cover at the boundary of the SPZ is estimated to be low, while the area of impact on the vegetation corresponds to a local scale, the duration of exposure to a constant.
82. Excavation work from 9 borrow pits was carried out in the volumes planned in the production plans. Detailed information is presented below in table No. 9. Reclamation in borrow pits has not been started, since the status of the work is the production of volumes according to the production volumes of work

Table 9. Information about borrow pit on Lot 2 by status as of June 30, 2019

№	Name	KM/PK	Location	Reserves			Extraction
				m	thousand m ³	ha	thousand m ³
1	K1	km238+300/ PK23+00	Right	2,70	423,1	15,67	177,1
1a	K1A	km240+200/ PK42+00	Left	2,69	328,7	12,22	60,0

2	K2	km242+000/ PK60+00	Left	2,70	956,1	35,41	38,1
3	K3	km246+000/ PK93+00	Left	2,70	346,1	12,82	77,8
4	K4	km250+220/ PK143+00	Left	2,70	312,7	11,58	41,4
5	K5	km254+340/ PK183+60	Left	2,70	430,7	15,95	9,3
6	K6	km261+100/ PK251+00	Left	2,70	904,7	33,51	62,5
6a	K6A	km267+600/ PK316+00	Right	2,69	321,7	11,96	41,7
7	K7	km271+100/ PK351+00	Right	2,70	181,7	6,73	7,2
Total:					4 206	156	515,1

4.1.2.3 Water quality

83. Monitoring of water resources was carried out during the reporting period on the Karaulkeldy River flowing on this section of the road. The results of measurements of water samples from the Karaulkeldy River show that during the reporting period there was no excess of the MAC for all monitored parameters. Appendix No. 9 presents the results of analyzes based on protocols.

4.1.2.4 Air quality

84. Measurements on air pollution carried out in July at the points Km 236, Km 246, Km 255, Km 265, Km 275, Production Base, ACP, CBP, residential area of the settlements of Karaulkeldy and Zharly show that none of the monitored parameters exceed the MAC. At borrow pits No. 5 and 6, measurements were taken for the entire period from January to June, and at borrow pit No. 2 in the first quarter of this year, when work was carried out. At borrow pit No. 3, measurements were taken in April and May. The analysis of laboratory data from the protocols of air pollution at all the above-mentioned measurement points did not record exceedance of MAC for all monitored parameters.
85. The analysis of industrial environmental monitoring of atmospheric air at the reconstruction sites of the Aktobe-Atyrau highway (km 236-275) of the branch of OJSC ICIC Akkord in Aktobe showed that instrumental measurements carried out during the reporting period showed that the highest maximum and average concentrations of pollutants for all analyzed substances do not exceed the sanitary and hygienic standards of maximum allowable concentration (MAC m. p.) established for inhabited areas. The averaged concentrations of nitric dioxide, nitric oxide, sulfur dioxide, carbon monoxide in the surveyed area are within acceptable limits, inorganic dust concentrations of 70–20% SiO₂ do not exceed the established standards in industrial and residential areas.
86. According to the Management Plan, air pollution at the ACP and CBP provides instrumental measurements with the frequency of 1 time per quarter. By the recommendation of the ADB national consultant, the indicator "inorganic dust" was replaced by "particulate matter". At the ACP and CBP sections, the MAC standards for suspended particles do not exceed MAC.

4.1.3 Environmental measurements on Lot No.3

87. Since Lot 3 and Lot 1 have one Contractor, he involved one Certified Laboratory - HydroEcoResource L LLP - for Operational Environmental Monitoring at both sections.

4.1.3.1 Noise and vibration

88. Measurements on the level of noise and vibration acceleration were carried out at the following points: ACP, Nogayty Production Base, CBP section, km 275, km 285, km 300, km 310, km 320 and Km 330. According to the results of measurements (Appendix No. 12) for the reporting period there was no excess.

4.1.3.2 Soil

89. Borrow pits on Lot 3, for the reporting period, permission KZ46VDD00096356 from 11.07.2018 for borrow pits No. 9-19 was received for excavation and extraction.
90. Instrumental measurements of soil pollution were carried out at the following points: Nogayta Production Base Km 301 points South and East, road sections Km 275, Km 280, Km 285, Km 290, Km 300, Km 310 and Km 330. Appendix No. 13 presents the data with laboratory research protocols. An analysis of the data shows that at all controlled points for the reporting period, MPC exceeded.
91. Excavation work from borrow pits was carried out in the quantities planned for production work. Detailed information is presented below in Table No. 10.

Table 10. Information about borrow pits on Lot 3 by status as of June 30, 2019

№	Name	KM/PK	Location		Reserves		Extraction	recultivation
			left	right	Area, ha	Quantity, m ³		
1	Borrow pit 11	51+95	270		8	203,6	10550	0%
2	Borrow pit 12	125+64	491		15,9	422,5	44550	0%
3	Borrow pit 13	161+50	285		3,99	100,9	-	0%
4	Borrow pit 14	244+83	357		4,02	101,6	-	0%
5	Borrow pit 15	304+79	285		3,99	153,9	10000	0%
6	Borrow pit 16	354+69	276		3,99	104,9	10000	0%
7	Borrow pit 17	404+22	194		16	409,4	59240	0%
8	Borrow pit 18	478+12	1340		15,9	406,8	-	0%
9	Borrow pit 19	522+16	313		3,98	104,6	-	0%

4.1.3.3 Water quality

92. Within the framework of industrial environmental control, monitoring of water resources on the Ayryk, Zharly and Nogait rivers in this section of the road was not carried out since there is no water in them.

4.1.3.4 Air Quality

93. Monitoring of air pollution was carried out in areas where construction work was carried out: Km 290; Km 300; Km 310; Km 320; the nearest residential zone of the Zharly and Nogayty villages, as well as up to 100 m of windward and leeward at the border of the SPZ, the production base of Nogayty. Appendix No. 14 presents data of the laboratory test results. Measurements of air pollution show that at all measurement points there is no recorded excess of MPC for all monitored parameters. According to the results of observations, in general, in all areas of Lot 3, the air condition was assessed as stably good. No deterioration in air quality.

4.2 Trends (general direction)

94. During reporting period, negative environmental impacts: atmospheric air, soil, water resources, vibration and noise, the health of the persons affected by the project, as well as flora and fauna were not noted.
95. Environmental specialists at the sites conduct their work according to the developed system management, for the impact of the projects on the project environment. Organized work on environmental education within the project among engineers and workers.

4.3 Summary of monitoring results

96. The expediency of conducting additional monitoring activities is absent, since all instrumental measurements, observations and audits indicate absence of negative impact of construction work on the environment. The levels of pollutants (water, soil, air, health, flora and fauna) do not exceed MAC. The measures taken by the contractors to reduce environmental impact are enough. The activities of the Contractors exert an acceptable load on the environment.
97. At Lot 1, according to the act of inspection and determination of forest fund losses, at PK127+46 - PK137+60, bypassing Shubarkuduk settlement, it intersects with existing forest plantations along the road, where 250 elm trees fall under forced demolition. For this, the contractor received a logging ticket dated 06/10/2019 from the forest owner of the Aktobe branch of JSC "NC "KazAvtoZhol" with payment of the amount of 143,189 (one hundred forty-three thousand one hundred eighty-nine) tenge. Agreed method of work: cutting down followed by uprooting.
98. Lot 2, there is a good and effective approach based on the creation of an environmental department, consisting of an ecologist and a district (field) ecologist. The local ecologist monitors activities on a permanent basis in the camp, on construction sites and in quarries. As a result, only 1 discrepancy was revealed in this section compared to the previous period.
99. At Lot 1 and Lot 3, the tandem of the "international and local environmental specialists" also showed good interaction, which showed tangible results at the sites. The detected number of discrepancies in both areas is half as much as in the previous period and they belong to the category of quickly resolved.
100. An analysis of the environmental specialists' work to bring them into compliance with the norms, rules, and environmental protection requirements is generally assessed as satisfactory. The work was carried out in accordance with the EMP. Detailed information is presented below in Table 11.

Table 11. Environmental Compliance Monitoring on Lot 1, Lot 2 and Lot 3

No	Location	Problematic issues	Recommended Action	Implementations / Compliance	Fulfillment status
1	Road site	Use of safe tools (goggles, gloves, overalls, helmet, safety shoes, etc.) by workers / engineers.	Availability of safe tools in the base camp and on the construction site.	Safe tools are provided to workers and engineers as needed	Corresponds on Lot 1, Lot 2 and Lot 3
2	Base camp	Water supply	Provide water for drinking and for domestic use, presence of sinks for washing in showers, toilets, in the kitchen and dining room. Cross control and uninterrupted supply of drinking water	Facilities provided. Communications connected to the camp	Provided on Lot 1, Lot 2 and Lot 3
3		Sanitation and Hygiene	Providing toilets and flushing water in showers. Transportation to septic tanks for processing and disposal	Base camp is provided and fulfilled.	Provided on Lot 1, Lot 2 and Lot 3
4		Kitchen and dining room	Providing adequate ventilation, taps and hygiene of places for receiving preparation and eating, storage of products	On Lot 1 and Lot 2, the construction of its own dining room and outsourcing of food services and catering services of a third party. On Lot 3, a complex with all conditions	Lot1 has its own dining room, Lot 2 has its own dining room and Lot 3 is a rental space with catering and

				rented from local resident	catering services.
5		Drainage in base camp	Provision of water drainage in the camp. Avoid accumulation of water inside the camp.	The complex is rented has everything needed	Corresponds on Lot 1, Lot 2 and Lot 3
6		Solid waste and waste	Location of bins and urgent modernization of waste disposal pits, cover and control on the territory of the base camp.	A complex of buildings of a local resident, with provision of export and disposal. There are no fire shields in the laboratory at the production base	Provided on Lot 1, Lot 2 and Lot 3
7	Quarry / borrow pit territory	Material collection comply with legislation of the Republic of Kazakhstan on environmental protection	Obtain permission for excavation on three borrow pits on PK 134, PK 40+00 and PK 00.	Permission obtained	done on Lot 1 only for Lot 1
8	Firefighting equipment in base camp, office.	Firefighting equipment should be located in the base camp and in the office.	Locate Firefighting equipment in a visible place so that it can be used in case of emergency.	In all infrastructures of the camp and the production base	Provided on Lot 1, Lot 2 and Lot 3
9	Movement of transport and equipment in the base camp.	Excessive dust pollution in the camp and noise environmental pollution as a result of traffic on the camp and site.	Equipment must be used at the construction site and shift camp in accordance with its environmental standards regarding noise.	In the residential area of the base camp, at the production base	done on Lot 1, Lot 2 and Lot 3
10	ACP	Provision of PPE, provision of LPP on demand and dairy products, Dust suppression in the territory and in warehouses	Compliance with safety standards and requirements, ensuring compliance with FIDIC conditions, Contractual obligations	Provision of PPE, dust suppression schedule controlled	done on Lot 1, Lot 2 and Lot 3

4.4 Use of Material Resources

4.4.1 Current period

101. Resources using during the reporting period by lots 1, 2 and 3.

Table 12. Amount of used resources for the 1st half of 2019

Resources \ Sections	Lot 1	Lot 2	Lot 3
Electricity, kWh	316 741	156 423	371 746
Natural gas, thn m ³	97 303	443 000	-
Drinking water, m ³	31 350	461	32 725
Water for technical needs, m ³	1 924	659	4 825

4.4.2 Cumulative use of resources

102. Electricity consumption in the second half of 2018 was 59,951.5 kW, and in the first half of 2019, consumption was 316,741 kW. A 5-fold increase in electricity consumption is observed, which is associated with an increase of production work quantity on site. The use of industrial water increased by 7 times compared with the previous period. This is primarily because in the previous period, the need for industrial water was 5 months, 4 of which are the maximum used periods, and in the reporting period, the demand was 4 months of which the maximum used 3 months. Increased dustiness in April, May and June led to an increase in the frequency of irrigation on bypass roads in Shubarkudyk.
103. For Lot 2, according to the data of the use of resources for the first half of the year, the contractor increased electricity used by 2 times compared to the previous half. Consumption for the second half of 2018 amounted to 86 965 kW. This increase is due to the active phases of construction work. Drinking water consumption for the reporting period exceeded 8 times due to the increase in the number of personnel at the facility. On technical water consumption at the same level.
104. For Lot 3, there is also an increase in electricity consumption. So, in the second half of 2018, electricity consumption amounted to 59 951.5 kW, and in the reporting period, electricity consumption amounted to 371 746 kW. A 6-fold increase in electricity consumption is associated with an increase of construction work quantities. Water consumption for technical needs in this area has tripled. This is due to the increase in the multiplicity of dust suppression in construction sites.

4.5 Waste management

105. Waste management is organized by Contractors according to the developed Site-specific EMP. **On Lot 1 site** - generation of household waste is caused by production base "Zhaksymay" located on Km 168. Contractor's laboratory, CBP, ACP, railway dead end, and bitumen pit are located on the territory of this base. Waste from this area is stored on a specially organized site for temporary storage with subsequent export to disposal through the involvement of specialized companies. Removal of household waste from this base is carried out by "Technology XXI Century LLP" based on contract No. 02/05-18 dated May 2, 2018
106. **Lot 2.** Household waste generation is caused by the Karaulkeldy production base: railway dead end, base camp, workshops, laboratory of the contractor. Solid waste is removed by "Zelenstroy LLP" (Aktobe) according to the Contract No. 64 dated August 25, 2018.
107. **Lot 3:** a base camp with infrastructure of the residential part, offices, canteen, laboratory of the Contractor, CBP, ACP, railroad dead end, workshops are located on the Production Base "Nogayty" According to the camp management plan, places for temporary storage of solid waste are organized with the subsequent removal to the landfill. Removal of household waste from this base is carried out by "Technology XXI Century LLP" on the basis of contract No. 02/05-18 dated May 2, 2018. Information on the types and quantity of solid waste removed at the time of this report is not submitted.

4.5.1 Current period

108. During the reporting period, waste management Contractors followed prescribed clauses in the EMP in terms of infrastructure management. Due to lack of special landfills in the places where the project road is being implemented, contractors for the removal of solid waste disposed solid waste to the Baiganin district landfill.

Table 13. Information on removal of household waste for first half of 2019 - Lot 1

No	Waste	Unit	Waste classification	Quantity	Method of waste disposal
1	Solid waste	tn	Not dangerous	2,6	Removal to the landfill
2	Used batteries	tn	Dangerous	0,105	Removal to the landfill

On Lot 2, Zelenstroy LLP takes out waste to its industrial zone in Aktobe, and there it carries out sorting and disposal of waste. The company has an appropriate base and special equipment for waste disposal.

Table 14. Information on removal of household waste for second half of 2019 – Lot 2

№	Waste	Unit	Waste classification	Quantity	Method of waste disposal
1	Solid waste	tn	Not dangerous	1,4	Removal to the landfill
2	Used batteries	tn	Dangerous	0,25	Deliver to the special organization Zelenstroy LLP
3	Oiled rags	tn	Dangerous	0,1	Deliver to the special organization Zelenstroy LLP
4	Waste filters	tn	Dangerous	0,42	Deliver to the special organization Zelenstroy LLP
5	Construction waste	tn	Not dangerous	16	Deliver to the special organization Zelenstroy LLP
6	Scrap metal	tn	Not dangerous	2,5	Deliver to the special organization Zelenstroy LLP

Table 15. Information about removal of production and consumption waste for the first half of 2019 – Lot 3

№	Waste	Unit	Waste classification	Quantity	Method of waste disposal
1	Solid waste	tn	Not dangerous	1,2	Removal to the landfill

4.5.2 Cumulative Waste production

109. Composition of waste production on Lot 1 and Lot 2 is as follows as shown in Figure 9 and Figure 10 below.

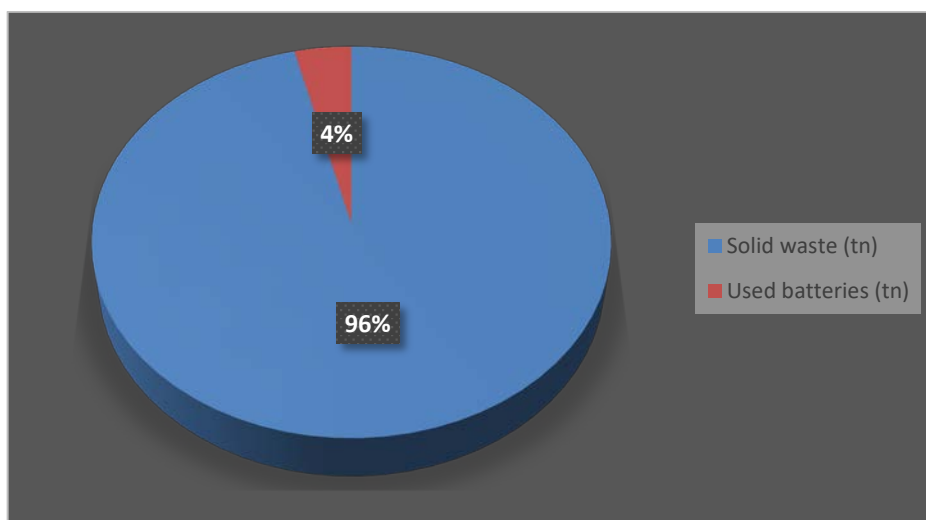


Figure 9. Composition of waste in first half of the year on Lot 1

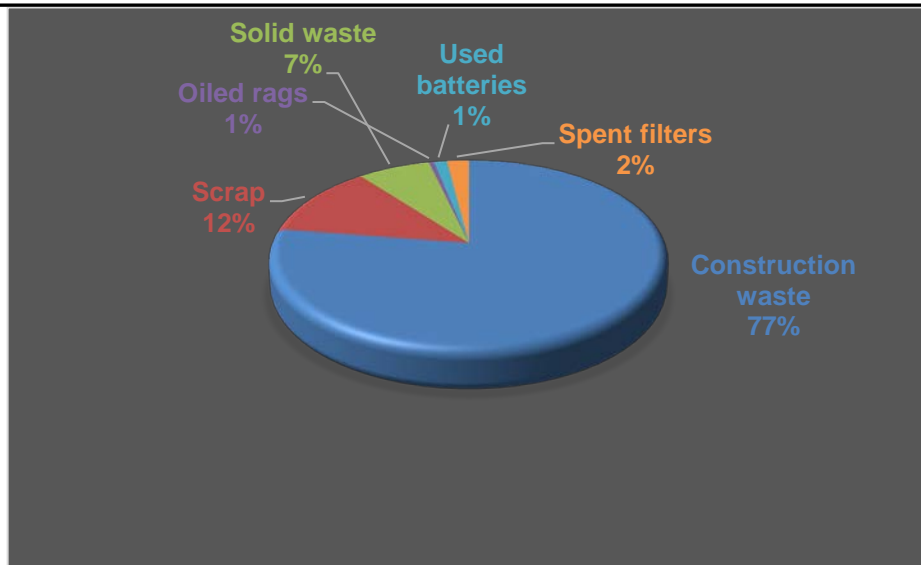


Figure.10 Composition of waste in first half of the year on Lot 2

4.6 Health and safety

4.6.1 Public Health and safety

110. During the reporting period, Contractors conducted activities in accordance with approved road safety management plans. Timely supervision and accompanying advice from the CSC Road Safety Engineer made it possible to ensure safety of road users and Contractor's personnel. During periods of the audit, relevant work was noted by the Contractors for the installation of safety signs, widening of temporary roads, patching, preparation for carrying out activities for the winter maintenance of roads. Hazardous areas are marked with warning signs.

4.6.2. Personnel Health and safety

111. For incidents that occurred on the project during the reporting period, the information is presented below in Table 16

Table 16. Statistics on incidents and accidents on the project

Type	Lot 1	Lot 2	Lot 3
Traffic accident	2	0	0
Accident	0	0	0
Disability	0	0	0
Downtime due to incident	0	0	0
Total:	2	0	0

112. During the reporting period, the Project recorded 2 incidents on Lot 1. Compared to the previous period, this is half as much. At the same time, there are no incidents on Lot 2 and Lot 3.
113. The first fatal incident occurred on 30.01.2019 at approximately 11:40 local time, the accident occurred between 176-177 km of the Aktobe–Makat road, namely a collision of a passenger car with a private loader, traveling in the same direction. As a result of the accident, 5 people were hospitalized, 1 person died - driver of the passenger car (Contractor Letter No. 924/2 dated January 30, 2019).

114. The second fatal incident occurred on 01.05.2019 at 18:16 local time, a traffic accident occurred on the km 176 of the Aktobe-Makat road - a head-on collision of two cars. As a result of the accident, 2 people died (Contractor's Letter No. 1139/2 dated 02.05.2019).
115. It should be noted that the above 2 accidents occurred due to the fault of the drivers, who ignored the signs of the high-speed mode. Monitoring of each incident showed that safety signs were installed on the site in accordance with the approved plan for ensuring safe traffic.
116. Under the project, road safety issues are monitored in accordance with the approved Road Safety Plans (agreed with the CSC and traffic police). Based on the results of the investigation into the circumstances of the road traffic accidents, the authorized body recognized that road accidents are associated with non-compliance with traffic rules in terms of speed limits and compliance with the distance and measures when overtaking a moving vehicle.
117. The issues of observance of safety measures at construction sites are also timely checked by the relevant responsible persons of the contracting organizations. Corresponding investigations have been carried out on the facts of the incidents, as well as additional briefing of employees.

4.7. Trainings

118. During the reporting period, training on issues related to the implementation of the EMP, monitoring of the work on site, CSC conducted in the order of accompanying counseling during environmental audits in August and October. In the course of the audit, the CSC drew the attention of the environmental specialists of the contractor to the fixation of parameters for the implementation of measures to protect the environment and to identify potential risks of a negative impact on the environment.
119. On May 22, 2019, the CSC organized and conducted for training contractors Lot 1, 2 and 3 training on environmental and social standards in Appendix 15 training information.
120. Contractors, in turn, conducted training and education at their sites. On May 22 at Lot 3 and May 24, 2019, at Lot 1 site, trainings were held in the field of environmental protection on the topic "Management of production and consumption waste" to prevent environmental pollution. The participants were given a presentation on the consequences of the negative impact on the environment and on the behavioral skills of staff on the site. The environmental specialist of the contractor in practice demonstrated measures for the remediation of fuel and oil spills.
121. On Lot 1 April 8 this year the contractor conducted training on fire safety and first aid. Specialists from the regional departments for emergency situations, industrial safety, the Department of the Interior, and doctors from the district polyclinic were invited to the training.
122. On April 25, 2019, the Contractor on Lot 1 conducted a safety training, which included questions on the primary course of occupational health, sanitary and hygienic fundamentals and ensuring safety at the workplace.

5 FUNCTIONING OF THE SSEMP

5.1 Review of SSEMP

123. EMP of Lots 1,2 and 3 in the reporting period did not change. The activities announced in the EMP were carried out by the contractors to the necessary extent and in the proper order and quality.
124. The analysis of the work of environmental specialists of contracting organizations shows that during the reporting period they performed a enough work on the site to ensure the implementation of the EMP. The environmental specialists of the contractors for Lot 1 and Lot 3 considered the CSC about the need for a thorough study and subsequent application of laboratory data in their work in terms of evaluating the measures taken. Environmental specialists Lot 1 and Lot 3 provided the CSC with a good level of analytical reports, which reflect all EMP activities.
125. During the reporting period, the environmental specialists of all Lots ensured timely submission of reports on industrial environmental monitoring of independent laboratory. In the previous reporting period, there were comments on the timing of the PEM reports.
126. For the period January-June 2019, for the environmental specialists of Lot 1, 2 and 3, the CSC developed several activities. Table 17 below shows the status of the implementation of these activities.

Table 17: Implementation status of activities scheduled for the first half of 2019

Measures	Timeframe	Responsible	Expected result	Implementation status
Lot 1 and Lot 3				
Develop and approve a schedule for the removal of solid waste from temporary storage from all facilities including engineer's office, construction site, production base, laboratories, etc.	February 2019	Contractor's Environmental Specialist	Approved document with a log for registration of the export of solid waste and industrial waste. Effective Waste Management	Closed in May
Include section on waste management, use of types of resources and quantity in the format of the monthly environmental report	January 2019	Contractor's Environmental Specialist	Tracking the process and making timely adjustments to waste management plans	Included in monthly, quarterly and semi-annual reports
Label containers for solid waste and place placement points on the scheme of the waste management plan	January 2019	Contractor's Environmental Specialist	Compliance with the requirements and rules for the organization of temporary waste storage sites. Accounting by type, hazard class and amount of waste	Issue closed in April.
Conduct awareness-raising work among employees on environmental safety issues at residential facilities, on the construction site, and in the immediate vicinity of settlements.	Quarterly	Contractor's Environmental Specialist	Enlightenment of workers and the public with environmental safety issues, Formation of an interested project environment	Lot 1 and Lot 2 conducted trainings in April and May
Ensure the implementation of plans for the protection of labor health and safety	March, June, August	Environmental Specialist and HSE specialist	Fulfillment of contractual obligations	For lot 1 and 3, information is included in the

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in terms of informing about the non-proliferation of STIs / STDs, HIV / AIDS				work of the safety department and medical staff at the site
Weekly reports-notes by an environmental specialist on monitoring work at the site	Weekly	CSC	Observation reports and analytics. Operational information to track the results of environmental protection activities	On Lot 1 and 3, environmental specialists took to work.
Organization of work to prevent negative impacts on flora and fauna, taking into account regional features: bird nesting periods, migration	February-June 2019	Environmental manager	Photo reports, environmental reports	At Lot 1 on a bypass road, deforestation was carried out on the basis of a logging ticket and taking into account the nesting period of birds. Photo report submitted.
Bringing the Engineer's office according to the specifications, in terms of ensuring the improvement, safety, comfort and completeness of the necessary resources.	February 2019	Project Manager	Fulfillment of contractual obligations	Not done
Lot 2				
To bring in proper condition the site for temporary placement of solid waste	February 2019	Contractor's Environmental Specialist	Compliance with the rules and requirements, prevention of site pollution, waste accumulation, as well as improved accounting for the generation and removal of solid waste	Done, report with photos presented in the report for April
Label containers according to type of waste	February 2019	Contractor's Environmental Specialist	Accounting by type, hazard class, waste amount	Done in March
To bring septic tanks in proper condition in accordance with the requirements for these facilities	March 2019	Contractor's Environmental Specialist	Prevention of sewage pollution, compliance with the requirements and rules for these facilities	Completed not in March but in April due to weather conditions in March
include the section on waste management, use of types of resources and quantity in the format of the	January 2019	Contractor's Environmental Specialist	Tracking the process and making timely adjustments to waste management plans	Included in the monthly report since May

monthly environmental report				
Ensure the mandatory presence of the Engineer during the PEM	According to the schedule of PEM	Contractor's Environmental Specialist	Compliance with the sampling process, sampling point schemes.	Do not notify the CSC about the dates of the PEM
Ensure the implementation of plans for the protection of labor health and safety in terms of informing about the non-proliferation of STIs / STDs, HIV / AIDS	March, June, August	Environmental Specialist and HSE specialist	Fulfillment of contractual obligations	In Lot 2, education is included in the training program for the HSE Department in which environmentalists, together with safety specialists, carry out information work
Weekly reports-notes by an environmental specialist on monitoring work at the site	Weekly from January to June 2019	Contractor's Environmental Specialist	Observation reports and analytics. Information for monitoring the results of environmental protection activities	Not performed
Organization of work to prevent negative impacts on flora and fauna, taking into account regional features: bird nesting periods, migration	February-June 2019	Environmental manager	Photo reports, environmental specialists' reports	Brief information on the ban on unauthorized hunting, cutting, and collection of medicinal herbs and mushrooms is included in the briefing of employees.

127. Based on the results of corrective actions, the CSC developed a series of measures for the subsequent period July-December 2019. The remaining open issues are insignificant, and the contractor has every opportunity to eliminate all of them as soon as possible. Table 18 below presents the corrective actions in the work based on the monitoring results of the first half of 2019.

Table 18. Corrective Action Plan for the second half of 2019

Actions	Timeframe	Responsible	Expected result
Ensure presence of the Engineer during the PEM	According to the PEM schedule	Contractor's Environmental Specialist	Compliance with the sampling process, sampling point schemes.
Weekly reports-notes by an environmentalist on monitoring work at the site	Weekly for the period January to June 2019	Contractor's Environmental Specialist	Observation reports. Information for monitoring the results of environmental protection activities
Bringing the Engineer's office according to the specifications, in terms of ensuring the improvement, safety, comfort and completeness of the necessary resources.	September	Environmental Specialist of Lot 1	providing the Engineer's office with safety, landscaping and gardening requirements

6 ADVANCED METHODS (GOOD PRACTICES) AND OPPORTUNITIES FOR THEIR IMPROVEMENT

6.1 Advanced methods (good practices)

128. In process of site monitoring CSC noted on Lot 2 how good practice is the formation of an interested environment with local authorities. The leading specialists of the Contractor on a weekly basis participate in meetings of the local akimat and in working order solve all the issues raised by the local population. The contractor has formed a good communication with local population, which allows him to remove any problems in a short time, without expecting or ignoring needs and requirements of the local population in obtaining information on impact of the project on life and lifestyle of local population. This practice allowed GRM to work effectively in this area. On this site is not recorded a single appeal. All issues are resolved on the site in working order.

6.2 Opportunity for improvement

129. Now, such areas for this construction project have not been identified.

7 BRIEF CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

130. Among effective protective measures on the project are:

- Construction waste removal was carried out according to work plans, with the provision of protective measures. All air emissions to atmosphere were within acceptable limits. Instrumental measurements did not show exceeding the permissible norms. In general, environmental specialists of Lot 1, Lot 2 and Lot 3 sections perform ongoing monitoring and ensure an effective system for managing the environmental management plan;
- competent planning of construction works, which allowed the Contractor not to accumulate a large amount of equipment in small areas, especially in sensitive areas. Constant adjustment of the work schedule of waters sprinkling machinery, considering all factors affecting the process of dust generation;
- an organization structure that allows effective work of the environmental management system. In the organization structure of contractors, vertical and horizontal interactions are included and staff of linear structures (headman, foremen, etc.) are involved in this process;
- Contractor on Lot 2 was not limited to contractual obligations to mobilize an environmental specialist. The contractor formed an environmental unit, expanding the staff of the department from one to three units and in internal documents reviewed the interaction with the safety and health department regarding educational work on the site among staff and workers.

131. According to the results of monitoring the work of environmental specialists, Lot 1,2 and 3 during the reporting period, their potential was noticeably strengthened.

132. In the framework of the Grievance Redress Mechanism implementation contractors installed boxes for grievances from workers in all construction camps. Similar boxes for population were installed in akimats of Shubarkudyk village, Nogaydy village, and Karaulkeldy village. No records in GRM logbook were made for the reporting period in Lot 1. For lot 2 there were complaint in regards with food quality. The contractor changed the food supplier. On Lot 3, the complaints are verbal from the population due to high dust content near the Nogayty village. Contractor increased watering rate to handle this complaint.

7.2 Recommendations

133. ADB's Mission recommended the CoR to hire qualified Environmental Specialists with enough input to monitor implementation of the Environmental Management Plans on Lots 1–3. In addition, CSC recommends the COR to increase the input of the CSC safeguards specialist since has been involved in the structure of the CSC, since periodic involvement and discontinuity of work schedule of this specialist does not facilitate effective work with local environmental specialists. Remote work partly leads to the fact that not all plans (objective) can be tracked in terms of the implementation and analysis of this work.

Annex 1.

**The monitoring table of non-compliances
elimination**

No.	Section/ Location	Registration date	Category	Description of problem	Corrective action	NCR No.	Non- compliance level	Performing date	Priority	Responsible	Status	Comments
1	Lot 1	12.03.19	Environment	flood control measures are carried out not properly, there is no snow clearance on all culverts	ensure control by the environmental specialist for these works	N1	Minor	14.03.2019	High	Hasan	Close	Comments eliminated
2	Lot 1 Engineer's Office	04.03.19	Environment	Solid collection place is not organized according to the requirements and SanPiN standards, no solid removal	to revise the schedule of solid waste removal, to bring into proper condition the territory of the Engineer's office by organizing the removal of accumulated household waste, to organize places of temporary storage of solid waste	N2	Major	25.03.2019	High	Hasan	close	In progress
3	Lot 2, Karaulkeldy base camp	12.03.19	Social impact	the food does not meet the required standards, provided special meals, the service provider does not know about the	to replace the supplier	N3	Major	20.03.2019	Middle	Pshenichnyi A.N.	Close	the diet is significantly improved, enriched and varied. Provided with milk

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				requirements and standards								
4	Lot 2 Karaulkeldy base camp, residential area	12.03.19	Environment	waste collection and storage places do not meet the requirements and standards, the septic tank has a subsidence of the soil, the well of the water source is not organized in a suitable way (no cover)	bring the waste collection and storage places and septic tank in proper condition. Solid waste removal: check the schedule and make adjustments as the waste are overloaded.	N4	Major	20.03.2019	High	Konstantin	close	In progress
5	Lot 2 Karaulkeldy base camp and production base	12.09.19	Safety	all fire-Figurehting boards in the base camp, in living buildings and production rooms (laboratory, repair shop, etc.) are not completed according to requirements	complete all fire-Figurehting boards	N5	Major	21.03.2019	High	Edil (OHS spec.)	close	In progress
6	Lot 2, Karaulkeldy base camp	12.09.19	Health	the healthcare worker is absent on a permanent basis. The doctor performs a pre-shift inspection	ensure the presence of a healthcare worker on a permanent basis	N6	Major	22.03.2019	High	Edil (OHS spec.)	close	the staff of medical center is provided and the schedule of work of

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				every day from 7.00-12.00.								paramedics is made
7	Lot 3 Nogaity base camp	12.03.19	Environment	Solid collection and storage places do not meet the requirements and standards	bring in a proper condition waste bins area, containers to lable	N7	Major	20.03.2019	High	Hasan	Close	Contractor's letter No. 1033/2 dated 26.03.19 photo report on the implementation: Concreted area, fire-Fighting tools provided, warning signs installed
8	Lot 3 Nogaity base camp	12.03.19	Environment	At a stationary gas station on the territory of the base camp is open to third persons, the area under the gas station is not concreted, there is a persistent smell of fuel	bring to the conditions according to the base camp management plan, a gas station area to concrete	N8	Major	21.03.2019	High	Hasan	Close	Contractor's letter No. 1033/2 dated 26.03.19 photo report on the implementation: area of solid waste temporary storage is cleared, the containers marked

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9	Lot 3 Nogaity base camp	12.03.19	Safety	there are no fire-Figurehting tools at the stationary gas station	provide fire-Figurehting boards	N9	Major	25.03.2019	High	OHS Engineer	Close	Contractor's letter No. 1033/2 dated 26.03.19 photo report on the implementation: fire-Fighting equipment and safety signs have been installed.
10	Lot 1 Todini's subcontractor office	29.03.19	Social impact	the incident at the workplace in the HR-Department. Figureht with technical staff	replacement of HR-Department personnel	N10	Major	18.03.2018	High	project manager	close	conducted discipline work to personnel involved in the conflict
11	Lot 1	16.05.19	Environment	no wastes certificates on site	prepare waste certificates and ensure keeping on the site	N11	Minor	19.05.2019	Low	environmental specialist	Close	written report submitted
12	Lot 3 Nogaity base camp	16.05.19	Environment	no waste bins labeling, no waste certificates	to ensure the constant availability of waste certificates on site	N12	Minor	19.05.2019	Low	environmental specialist	close	written report submitted
13	Lot 1	28.05.19	Environment	no permission for deforestation on the Shubarkuduk detour road	to obtain a felling permit for the area of the Shubarkuduk detour road	N13	Major	30.05.2019	Middle	environmental specialist	Close	permission for deforestation submitted

Annex 2.

Results of measurements of noise and vibration in Lot 1 section

Sampling points	Primary data before project start 24.04.18 Noise dBA Vibration dB	17.01.19	15.02.19	15.03.19	30.04.19	28.05.19	19.06.19
p/b "Zhaksymay» ACP area	56.3 37.9	51.4 (base)	51.0 (base)	48.3 (base)	49.3 (base)	53.0 33.2	52.2
p/b "Zhaksymay» CBP area	56.3					54.1 35.6	54.0
Section km 160	52.4 38.1	49.6 Shieli bridge	50.2 Shieli bridge	48.0 Shieli bridge	-	53.5 35.4	53.0 36.0
Section km 170	52.6 38.0				50.2	52.1 36.2	53.0 36.0
Section km 180	52.5 38.2					51.0 37.0	51.3 36.3
Section km 190	52.7 37.3				49.2	49.3 35.9	50.0 35.0
Section km 200	53.2 37.6				51.3	54.0 35.2	54.5 34.3
Section km 210	53.6 37.9				-	52.4 35.9	51.6 35.0
Section km 220	53.6 38.9				-	51.2 35.9	52.0 32.6

The maximum permissible sound level is 80 dBA
 Permissible equivalent level of vibration acceleration – 95 dB

Laboratory test results of for soil contamination, lot 1

Sampling points	Name of detected parameters	Before the beginning works 24.04.2018	30.04.2019	28.05.2019	19.06.2019	
Km 160	pH, units	7.87	Works on this section was not perform	7.42	7.36	
	Dissolved solids, mg/100gr	0.147		0.129	0.131	
	Petroleum products, mg/100gr	0.01		0.05	0.03	
	Chlorides, mg/100gr	0.05		0.02	0.05	
	Sulfates, mg/100gr	0.462		0.259	0.256	
	Calcium, mg/100gr	0.4		9.0	11.0	
	Magnesium, mg/100gr	0.16		0.2	0.6	
	Carbonates, mg/100gr	0.0		0.0	0.0	
	Bicarbonates, mg/100gr	0.98		0.15	0.11	
	Km 170	pH, units		7.82	7.69	7.58
Dissolved solids, mg/100gr		0.150	0.139	0.135	0.141	
Petroleum products, mg/100gr		0.02	0.02	0.03	0.05	
Chlorides, mg/100gr		0.15	0.03	0.04	0.06	
Sulfates, mg/100gr		0.452	0.263	0.267	0.253	
Calcium, mg/100gr		0.7	9.1	9.5	9.1	
Magnesium, mg/100gr		0.6	0.3	0.5	0.4	
Carbonates, mg/100gr		0.08	0.0	0.0	0.0	
Bicarbonates, mg/100gr		26.0	0.15	0.12	0.15	
Km 180		pH, units	7.20	Works on this section was not perform	7.12	7.18
	Dissolved solids, mg/100gr	0.250	0.115		0.119	
	Petroleum products, mg/100gr	0.021	0.07		0.08	
	Chlorides, mg/100gr	0.06	0.04		0.06	
	Sulfates, mg/100gr	0.450	0.260		0.267	
	Calcium, mg/100gr	1.12	10.2		10.7	
	Magnesium, mg/100gr	5.05	0.4		0.7	
	Carbonates, mg/100gr	0.0	0.0		0.0	
	Bicarbonates, mg/100gr	18.0	0.20		0.23	
	Km 190	pH, units	7.22		6.72	6.69
Dissolved solids, mg/100gr		0.250	0.128	0.125	0.127	
Petroleum products, mg/100gr		0.024	0.04	0.03	0.06	
Chlorides, mg/100gr		0.06	0.02	0.04	0.07	
Sulfates, mg/100gr		0.440	0.265	0.269	0.257	
Calcium, mg/100gr		15.5	0.2	8.4	9.0	
Magnesium, mg/100gr		0.0	0.2	0.2	0.4	
Carbonates, mg/100gr		0.0	0.0	0.0	0.0	
Bicarbonates, mg/100gr		18	0.17	0.19	0.23	
Km 200		pH, units	7.22	6.75	6.70	6.74
	Dissolved solids, mg/100gr	0.250	0.129	0.127	0.130	
	Petroleum products, mg/100gr	0.024	0.03	0.0	0.0	
	Chlorides, mg/100gr	0.06	0.01	0.01	0.03	
	Sulfates, mg/100gr	0.440	0.288	0.290	0.275	
	Calcium, mg/100gr	15.5	8.3	8.0	8.6	
	Magnesium, mg/100gr	0.0	0.2	0.2	0.4	
	Carbonates, mg/100gr	0.0	0.0	0.0	0.0	
	Bicarbonates, mg/100gr	18.0	0.20	0.17	0.19	
Km 210	pH, units	7.78	Work on this section was not carried out			7.41
	Dissolved solids, mg/100gr	0.250				0.129
	Petroleum products, mg/100gr	0.024				0.07
	Chlorides, mg/100gr	0.06				0.03
	Sulfates, mg/100gr	0.439				0.251

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	Calcium, mg/100gr	0.49			9.2
	Magnesium, mg/100gr	0.0			0.4
	Carbonates, mg/100gr	0.04			0.0
	Bicarbonates, mg/100gr	28			0.16
Km 220	pH, units	7.86	7.35	7.72	7.35
	Dissolved solids, mg/100gr	0.260	0.121	0.265	0.121
	Petroleum products, mg/100gr	0.021	0.05	0.043	0.05
	Chlorides, mg/100gr	0.06	0.02	0.14	0.02
	Sulfates, mg/100gr	0.438	0.249	0.476	0.249
	Calcium, mg/100gr	0.50	8.9	1.77	8.9
	Magnesium, mg/100gr	0.0	0.6	0.0	0.6
	Carbonates, mg/100gr	0.03	0.0	0.07	0.0
	Bicarbonates, mg/100gr	26.0	0.17	20.0	0.17
Production base "Zhaksymay» Point 1	pH, units	7.80	7.73	7.68	7.65
	Dissolved solids, mg/100gr	0.144	0.272	0.270	0.268
	Petroleum products, mg/100gr	0.01	0.050	0.049	0.045
	Chlorides, mg/100gr	0.04	0.18	0.16	0.14
	Sulfates, mg/100gr	0.282	0.480	0.481	0.480
	Calcium, mg/100gr	0.9	1.73	1.75	1.81
	Magnesium, mg/100gr	0.9	0.0	0.0	0.0
	Carbonates, mg/100gr	0.0	0.06	0.05	0.06
	Bicarbonates, mg/100gr	0.08	23.0	21.0	23.0
Production base "Zhaksymay» Point 2	pH, units	7.67	7.74	7.70	7.65
	Dissolved solids, mg/100gr	0.150	0.272	0.271	0.268
	Petroleum products, mg/100gr	0.01	0.051	0.049	0.045
	Chlorides, mg/100gr	0.06	0.19	0.17	0.14
	Sulfates, mg/100gr	0.288	0.480	0.483	0.480
	Calcium, mg/100gr	1.8	1.74	1.76	1.81
	Magnesium, mg/100gr	0.8	0.0	0.0	0.0
	Carbonates, mg/100gr	0.0	0.06	0.05	0.06
	Bicarbonates, mg/100gr	0.08	23.0	22.0	23.0

Annex 4

Laboratory test result for water pollution, Lot 1 section

Sampling points	Name of pollutants	MPC standard	Primary results 24.04.2018	30.04.2019	28.05.2019	19.06.2019
river Kenzhaly	pH, units	6.0-9.0	8.34	7.22	7.18	7.21
	Dissolved solids, mg/dm ³	1000	41.50	965.0	995.0	998.1
	Water insoluble substances, mg/dm ³	Not normalized	20	18.5	16.3	19.0
	Chlorides, mg/dm ³	Not more than 350	2 835.0	159.5	195.3	198.0
	Ammonium nitrogen, mg/dm ³	Not more than 2.0	9.05	2.0	1.6	1.8
	Petroleum products, mg/dm ³	Not more than 0.1	0.06	0.003	0.009	0.007
	Total hardness, mg/dm ³	7.0(10)	7.5	6.8	7.0	7.0
	Calcium, mg/dm ³	Not normalized	560	87.0	92.0	94.2
	Magnesium, mg/dm ³	Not normalized	564	32.6	34.0	37.0
	Sulfates, mg/dm ³	Not more than 500	878	292.11	300	297.0
	Nitrates, mg/dm ³	Not more than 45	0.223	0.08	0.010	1.20
	Nitrites, mg/dm ³	Not more than 3.3	0.672	0.12	0.24	0.31
	Ferrum, mg/dm ³	Not more than 3.0	1.75	0.227	0.183	0.189
	Chrome, mg/dm ³	Not more than 0.05	00	0.0	0.0	0.0
	Total phosphorus, mg/dm ³	Not more than 0.0001	0.0	0.0001	0.0	0.0
	Anionic surfactants, mg/dm ³	0.5	0.07	0.03	0.004	0.006
Shieli river	pH, units	6.0-9.0	7.86	7.01	6.88	7.0
	Dissolved solids, mg/dm ³	1000	41.38	1000.0	996.0	986.0
	Water insoluble substances, mg/dm ³	Not normalized	13.0	19.1	18.2	19.3
	Chlorides, mg/dm ³	Not more than 350	182.4	350.0	336.0	327.0
	Ammonium nitrogen, mg/dm ³	Not more than 2.0	6.93	2.0	1.7	1.5
	Petroleum products, mg/dm ³	Not more than 0.1	0.04	0.002	0.002	0.004
	Total hardness, mg/dm ³	7.0(10)	6.4	7.0	7.0	7.0
	Calcium, mg/dm ³	Not normalized	78.0	0.0	0.0	0.0
	Magnesium, mg/dm ³	Not normalized	30	138.0	130.0	126.2
	Sulfates, mg/dm ³	Not more than 500	272	475.0	453.0	436.0

	Nitrates, mg/dm ³	Not more than 45	0.254	1.58	1.66	2.13
	Nitrites, mg/dm ³	Not more than 3.3	0.072	0.15	0.22	0.31
	Ferrum, mg/dm ³	Not more than 3.0	1.12	0.227	0.231	0.256
	Chrome, mg/dm ³	Not more than 0.05	0.0	0.0	0.0	0.0
	Total phosphorus, mg/dm ³	Not more than 0.0001	0.0	0.0	0.0	0.0
	Anionic surfactants, mg/dm ³	0.5	0.02	0.02	0.03	0.06

Annex 5

Results of measurements of atmospheric air, Lot 1

Sampling points	Name of pollutants	Actual concentration Initial measurement before beginning of the Project, 24.04.2018, mg/m³	MPC standard, mg/m³	Concentration, mg/m³					
				17.01.19	15.02.19	15.03.19	30.04.19	28.05.19	19.06.19
Km 160	Inorganic dust 70-20%	0.063	0.3	No work was carried out during these periods				0.0043	0.0156
	Nitrogen dioxide NO ₂	0.062	0.2					0.0024	0.0056
	Sulfur dioxide SO ₂	n/d	0.5					0.0061	0.0070
	Carbon monoxide CO	1.2	5.0					1.7	2.3
	CH ₂ O formaldehyde	0.0013	0.051					0.0012	0.0023
	Hydrocarbons C ₁₂ -C ₁₉	0.093	1					0.0030	0.0231
	Benzene, C ₆ H ₆	0.060	0.3					0.0041	0.0145
	Xylene C ₈ H ₁₀	0.079	0.2					0.0013	0.0106
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.6					0.0073	0.0086
	Hydrogen sulfide, H ₂ S	n/d	0.008					Not detected	Not detected
Km 170	Inorganic dust 70-20%	0.0363	0.3	No work was carried out during these period			0.040	0.0052	0.0186
	Nitrogen dioxide NO ₂	0.0062	0.2				0.016	0.0032	0.0046
	Sulfur dioxide SO ₂	n/d	0.5				Not detected	0.0041	0.0048
	Carbon monoxide CO	1.2	5.0				1.0	2.3	1.8
	CH ₂ O formaldehyde	0.0013	0.051				0.002	0.0011	0.0024
	Hydrocarbons C ₁₂ -C ₁₉	0.093	1				0.034	0.009	0.0234
	Benzene, C ₆ H ₆	0.060	0.3				0.025	0.0066	0.0057
	Xylene C ₈ H ₁₀	0.079	0.2				0.031	0.0077	0.0083
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.6				0.124	0.0081	0.0093
	Hydrogen sulfide, H ₂ S	n/d	0.008	Not detected	Not detected	Not detected			
Km 180	Inorganic dust 70-20%	0.061	0.3					0.0051	0.0254

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	Nitrogen dioxide NO ₂	0.063	0.2	No work was carried out during these period		0.0029	0.0047
	Sulfur dioxide SO2	n/d	0.5			0.0071	0.0063
	Carbon monoxide CO	1.3	5.0			2.0	1.6
	CH2O formaldehyde	0.0012	0.051			0.0047	0.0052
	Hydrocarbons C ₁₂ -C ₁₉	0.095	1			0.0035	0.0364
	Benzene, C6H6	0.063	0.3			0.0031	0.0043
	Xylene C ₈ H ₁₀	0.081	0.2			0.0019	0.0024
	Methylbenzene C ₅ H ₆ -CH ₃	0.2	0.6			0.0066	0.0142
	Hydrogen sulfide, H ₂ S	n/d	0.008			Not detected	n/d
Km 190	Inorganic dust 70-20%	0.063	0.3	No work was carried out during these period	0.042	0.0040	0.0214
	Nitrogen dioxide NO ₂	0.060	0.2		0.014	0.0017	0.0025
	Sulfur dioxide SO2	n/d	0.5		Not detected	0.0083	0.0074
	Carbon monoxide CO	1.4	5.0		2.0	2.4	2.1
	CH2O formaldehyde	0.0013	0.051		0.004	0.009	0.0018
	Hydrocarbons C ₁₂ -C ₁₉	0.097	1		0.033	0.0035	0.0145
	Benzene, C6H6	0.65	0.3		0.027	0.0024	0.0034
	Xylene C ₈ H ₁₀	0.082	0.2		0.029	0.0031	0.0046
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.6		1.22	0.0011	0.0078
	Hydrogen sulfide, H ₂ S	n/d	0.008		Not detected	Not detected	Not detected
Km 200	Inorganic dust 70-20%	0.065	0.3	No work was carried out during these period	0.041	0.0038	0.0056
	Nitrogen dioxide NO ₂	0.062	0.2		0.016	0.0019	0.0027
	Sulfur dioxide SO2	n/d	0.5		Not detected	0.0053	0.0061
	Carbon monoxide CO	1.5	5.0		2.3	2.6	2.2
	CH2O formaldehyde	0.0014	0.051		0.006	0.009	0.0017
	Hydrocarbons C ₁₂ -C ₁₉	0.099	1		0.027	0.025	0.0034
	Benzene, C6H6	0.067	0.3		0.032	0.0030	0.0047
	Xylene C ₈ H ₁₀	0.083	0.2		0.028	0.0019	0.0039

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	Methylbenzene C ₅ H ₆ -CH ₃	0.4	0.6					0.124	0.0033	0.0051
	Hydrogen sulfide, H ₂ S	n/d	0.008					Not detected	Not detected	Not detected
Km 210	Inorganic dust 70-20%	0.067	0.3	No work was carried out during these period				0.0043	0.0168	
	Nitrogen dioxide NO ₂	0.064	0.2					0.0015	0.0046	
	Sulfur dioxide SO2	n/d	0.5					0.0018	0.0027	
	Carbon monoxide CO	1.6	5.0					3.0	2.7	
	CH2O formaldehyde	0.0013	0.051					0.004	0.0019	
	Hydrocarbons C ₁₂ -C ₁₉	0.1	1					0.0018	0.0178	
	Benzene, C ₆ H ₆	0.069	0.3					0.0063	0.0076	
	Xylene C ₈ H ₁₀	0.085	0.2					0.0010	0.0023	
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.6					0.0089	0.0078	
	Hydrogen sulfide, H ₂ S	n/d	0.008					Not detected	Not detected	
Km 220	Inorganic dust 70-20%	0.068	0.3	No work was carried out during these period				0.0040	0.0246	
	Nitrogen dioxide NO ₂	0.065	0.2					0.0023	0.0029	
	Sulfur dioxide SO2	n/d	0.5					0.0052	0.0076	
	Carbon monoxide CO	1.7	5.0					1.03	1.4	
	CH2O formaldehyde	0.0014	0.051					0.0010	0.0017	
	Hydrocarbons C ₁₂ -C ₁₉	0.1	1					0.0061	0.0056	
	Benzene, C ₆ H ₆	0.070	0.3					0.0083	0.0079	
	Xylene C ₈ H ₁₀	0.087	0.2					0.0047	0.0051	
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.6					0.0092	0.0079	
	Hydrogen sulfide, H ₂ S	n/d	0.008					Not detected	n/d	
PB Zhaksymai ACP	Inorganic dust and Suspended particles from June	0.0402	0.3						0.0471	
	Nitrogen dioxide NO ₂	0.0301	0.2						0.0321	
	Sulfur dioxide SO2	n/d	0.5						0.0311	
	Carbon monoxide CO	1.7	5.0						1.6	
	CH2O formaldehyde	0.0013	0.051						0.009	

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	Hydrocarbons C ₁₂ -C ₁₉	0.1	1						0.024
	Benzene, C ₆ H ₆	n/d	0.3						-
	Xylene C ₈ H ₁₀	n/d	0.2						-
	Methylbenzene C ₅ H ₆ -CH ₃	n/d	0.6						-
	Hydrogen sulfide, H ₂ S	n/d	0.008						Not detected
PB Zhaksymai CBP	Inorganic dust and Suspended particles from May	Not planned	0.3						0.0486
	Nitrogen dioxide NO ₂		0.2						0.0487
	Sulfur dioxide SO ₂		0.5						0.0378
	Carbon monoxide CO		5.0						2.0
	CH ₂ O formaldehyde		0.051						0.0013
	Hydrocarbons C ₁₂ -C ₁₉		1						0.041
	Benzene, C ₆ H ₆		0.3						-
	Xylene C ₈ H ₁₀		0.2						-
	Methylbenzene C ₅ H ₆ -CH ₃		0.6						-
	Hydrogen sulfide, H ₂ S		0.008						Not detected
Residential area									
vill. Shubarkuduk windward	Inorganic dust: 70-20%	0.0398	0.3					0.0019	0.0157
	Nitrogen dioxide	0.0268	0.2					0.022	0.0026
	Sulphur dioxide	n/d	0.5					0.0061	0.0076
	Carbon monoxide	1.6	5.0					2.0	1.4
	Formaldehyde	0.0012	0.051					0.0070	0.0076
	Hydrocarbons C ₁₂ -C ₁₉	0.99	1					0.0081	0.0065
	Hydrogen sulphide	n/d	0.008					not detected	n/d
vill. Shubarkuduk leeward	Inorganic dust: 70-20%	0.04	0.3					0.0024	0.0186
	Nitrogen dioxide	0.0270	0.2					0.0031	0.0037
	Sulphur dioxide	n/d	0.5					0.0072	0.0083

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	Carbon monoxide	1.7	5.0					2.2	2.0
	Formaldehyde	0.0012	0.051					0.0079	0.0083
	Hydrocarbons C12-C19	0.1	1					0.0088	0.0075
	Hydrogen sulphide	n/d	0.008					Not detected	n/d
vill. Kopa vill. windward	Inorganic dust: 70-20%	0.0398	0.3					0.0043	0.0196
	Nitrogen dioxide	0.0312	0.2					0.0022	0.0031
	Sulphur dioxide	n/d	0.5					0.0054	0.0049
	Carbon monoxide	1.5	5.0					1.8	1.3
	Formaldehyde	0.0013	0.051					0.0016	0.0020
	Hydrocarbons C12-C19	0.099	1					0.0025	0.0021
	Hydrogen sulphide	n/d	0.008					Not detected	n/d
vill. Kopa vill. leeward	Inorganic dust: 70-20%	0.0402	0.3					0.0052	0.0213
	Nitrogen dioxide	0.0315	0.2					0.0030	0.0046
	Sulphur dioxide	n/d	0.5					0.0063	0.0057
	Carbon monoxide	1.5	5.0					2.3	1.9
	Formaldehyde	0.0014	0.051					0.0024	0.0027
	Hydrocarbons C12-C19	0.1	1					0.0033	0.0034
	Hydrogen sulphide	n/d	0.008					Not detected	n/d
PB Zhaksymai	Inorganic dust: 70-20%	Not planned	0.3	0.042	0.045	0.040	0,042/0,044	0.0451/0.0486	Works Not carried out
	Nitrogen dioxide		0.2	0.0154	0.0156	0.0141	0.0154/0.05155	0.0345/0.0435	
	Sulphur dioxide		0.5	Not detected	Not detected	Not detected	Not detected	0.0078/0.0082	
	Carbon monoxide		5.0	1.30	1.32	0.31	1.30/1.30	2.1/2.8	
	Formaldehyde		0.051	0.001	0.0010	0.0010	0.001/0.001	0.004/0.011	
	Hydrocarbons C12-C19		1	0.22	0.20	0.25	0.22/0.23	0.103/0.108	

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	Hydrogen sulphide		0.008	Not detected	Not detected	Not detected	Not detected	Not detected	
Shieli bridge Km 182+306	Inorganic dust: 70-20%	Not planned	0.3	0.040	0.036	0.030	No work was carried out		
	Nitrogen dioxide		0.2	0.0132	0.0124	0.0104			
	Sulphur dioxide		0.5	Not detected	Not detected	Not detected			
	Carbon monoxide		5.0	1.34	1.30	0.87			
	Formaldehyde		0.051	0.0001	0.0011	0.0013			
	Hydrocarbons C12-C19		1	0.25	0.21	0.28			
	Hydrogen sulphide		0.008	Not detected	Not detected	Not detected			
Kenzhaly bridge Km 205+575	Inorganic dust: 70-20%	Not planned	0.3	No work was carried out		0.034	No work was carried out		
	Nitrogen dioxide		0.2			0.0187			
	Sulphur dioxide		0.5			not detected			
	Carbon monoxide		5.0			1.34			
	Formaldehyde		0.051			0.0010			
	Hydrocarbons C12-C19		1			0.25			
	Hydrogen sulphide		0.008			not detected			

Summary data from environmental monitoring checklists
 Environmental monitoring checklist

Lot 1

Checklist for Lot 1 site inspection		
Date of site visit: 4.03.2019, 12.03.2019, 18.04.2019, 08.05.2019 20.05.2019, 5.06.2019	Engineer's representative: Imbarova Sara Temirbek Zhenisgul Contractor's representative: Hassan Kurais Nazerke	Engineer's ref.No. Contractor's ref.No.
Weather Conditions: by forecast		
Work currently in progress:		
The problems related to environment	Possible reasons	Proposed measures to reduce the risk
Increased dustiness on the roads	The dust suppression schedule is not kept, the overload of dump trucks, the lack of water resources.	Control over the schedule of dust suppression, control over the work of the excavator

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
Contractor's base camp						
1						Septic tanks are cleaned daily
2	All wastewater is sent to septic tanks or service water tanks	✓				Control by the environmental specialist
3	All the dangerous liquids stored in a prescribed place on an impermeable base with effluent collection					provided
4	Solid hazardous materials are stored in a safe place in the work areas	✓				Organize concreted special areas, install fencing to store hazardous materials in accordance with the requirements.
5	Drains accumulate in the drainage system and are disposed of by the Contractor	✓				According to the EMP
6	All vehicles entering and leaving the base camp are subject to control	✓				Mechanic and OHS inspector
7	Local communities and organizations are informed of the construction schedule and any noise-raising activities on a regular basis through workers and other activities	✓				Monthly meetings in the Akimat

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
8	Open containers for storage of materials are covered with canopies	✓				Containers are installed with covers
9	Open burning is prohibited	✓				
10	Fire Figurehting equipment <ul style="list-style-type: none"> ▪ Sand bucket and shovel ▪ Foam extinguisher ▪ Protective coating in canteen 	✓				Fire extinguishers with terms of unsuitability, no audit and replacement of fire extinguishers
11	Access of other people to the town is prohibited by the installation of fencing and security organazing	✓				At the gate is the checkpoint, the contract with the security company
12	All employees are provided with personal protective equipment (PPE)	✓				
13	Smoking is prohibited except in Smoking rooms	✓				Repairing territory has a designated Smoking area.
14	Relevant road signs and warning signs on the site and in hazardous areas	✓				
15	Drinking water is provided to all employees from commercial and licensed sources.	✓				Needs assessment is carried out regularly
16	Protective clothes of all employees are washed on a daily basis	✓				Protective clothes of employees are washed as necessary
17	All employees are provided with three meals a day	✓				
18	Canteen with sanitary conditions in base camp	✓				Sanitary days are held
19	First-aid posts and first-aid kit in base camp and in the working areas	✓				First aid kits are replenished as needed. The records of requests for medical care is kept
20	Health of all employees is under control of the doctor in base camp, and the corresponding services are provided, monthly medical examinations are also carried out	✓				In the medical point installed video surveillance for the daily control of the workers and maintained the daily log of the medical examination (Alcotest, pressure, etc.).
21	The whole area is cleared, there is no excess waste, except for designated areas for waste disposal	✓				Base camp territory is cleaned daily from the excess of solid waste, and stored in the designated area.
22	Providing a place for rest in base camp	✓				There are rest rooms
23	Child labour (below 15 years)		✓			Not applicable on site
Production site						

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
1	The bitumen and chemical materials warehouse is located away from the watercourse and the dam walls are impenetrable and can contain 110% of the tank volume	✓				
2	Liquid waste from the asphalt plant are kept in the established tank and they emptied specialised suction equipment ≤MTTSTH≥ Lyman	✓				Export by a specialized company for disposal according to the contract
3	Bitumen is stored in a specialised place and bent in concrete to a volume of 110%	✓				Bitumen storage is concreted Used periodically
4	Solid waste from the asphalt plant is stored at the designated places and disposed of in accordance with approved procedures	✓				With the periodic export for disposal on landfill
5	The area of the plant is engraved for the purpose of reducing dust	✓				
6	The area of the plant is watered for the purpose of reducing dust	✓				According to the schedule of dust control
7	The plant cannot discharge wastewater into any watercourse; impervious concrete pools will be built to receive such water	✓				
8	All workers of asphalt, concrete plant and crusher are provided with protective masks	✓				
9	All workers of asphalt, concrete plant and crusher use protective masks		✓	✓		Employees are provided, but do not use. Poor production culture
10	Sands and fractions for concrete and asphalt are stored in a wet and covered place	✓				
11	In asphalt, concrete plants and crushers there are fire-Figurehting equipment		✓			Fully understaffed
12	Plant or equipment causing high levels of vibration are built properly, maintained and managed accordingly	✓				In accordance with technical regulations
13	River/canal fenced for the protection of water resources		✓		✓	No need
GAS STATION						
1	Refueling will be strictly controlled and allowed only at the gas station and workshop	✓				
2	Space for storage tanks of fuel protected, and they are impermeable, tank cover closed	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
3	Gas station equipped with fire-Figurehting equipment to be checked weekly		✓	✓		Check schedule not met
4	The gas station has warning signs	✓		✓		
5	The gas station is equipped with a special basket for excess waste	✓				
Contractor's workshop and car wash						
1	Liquid hazardous materials are stored in the designated place in workshop	✓				The site is concreted
2	Solid hazardous materials are stored in the designated place in the workshop	✓				
3	There are special containers for the collection of used petroleum products and hydraulic fluids	✓				Provided in places of possible spill
4	The used petroleum products are collected in a concreted canister with a volume of up to 110% and the canisters are cleaned in accordance with the approved procedures	✓				
5	The workshop is equipped with a drainage system	✓				
6	Each transport is inspected and maintained on an ongoing basis	✓				Chief mechanic under the supervision of a OHS specialist
7	All construction equipment complies with European Standards and is equipped with modern noise suppression equipment		✓	✓		
8	The noise suppression equipment of all equipment is checked and maintained in accordance with the approved procedures		✓	✓		Not available
9	All workshop workers are provided with welding equipment and personal protective equipment	✓		✓		
10	All technical water is collected in the concreted tank and the tank is cleaned in accordance with the approved procedures		✓	✓		
The Project Road						
1	All the roads targeted for construction work watered with the water truck	✓		✓		Increase the intensity of watering and the number of water carriers, special control of areas locating near settlements

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
2	On the project road in appropriate places there are flags for the passage of cattle, sheep and other animals		✓		✓	It is recommended to install warning signs in frequently used areas for cattle
3	Sections of culverts and bridges, equipped with safety tapes and twisting signs		✓		✓	
4	Fencing and access control services are installed at all workplaces where it is necessary	✓				
5	Storage of waste of any type, as well as Parking of transports is not allowed at a distance of 100 m from any flow (including drainage or irrigation facilities)	✓				
6	Work areas and hazardous areas are equipped with all relevant road signs and warning signs	✓				
7	Construction machinery and plants are properly maintained to reduce gas emissions	✓				According to the schedule of PEM are monitoring emissions
8	Noise control measures in special facilities	✓				PPE provided: ear plugs
Quarries						
1	Quarries are provided with temporary drainage	✓				
2	200 m from the nearest settlements, all construction work stopped from 22: 00 to 6: 00 a.m.	✓				
3	Crushed stone of all size are extracted only from approved quarries	✓				
4	Extraction of crushed stone fraction is carried out in 100 m from the river or watercourse					No fact
5	Stack does not exceed 3 m in height	✓				
6	All open-body vehicles are used for the transportation of materials with possible dust formation, designed for these purposes with well-chosen folding bodies	✓				The control of the senior mechanic
7	During the construction works the volume of noise is limited according to national standards	✓				Schedule of works on objects with high noise and vibration
8	Materials with possible dust formation do not load exceeding the level of folding bodies and close with a clean tarpaulin	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
9	All vehicles, production equipment and devices comply with Euro exhaust emission standards		✓			Equipment rented from villagers does not meet the standards
10	All temporary acquired lands are restored					Upon completion of construction works
11	All material residues and contaminated land are collected and disposed of in accordance with approved procedures	✓				
12	During the delivering and using materials, it is watering	✓				Control by the environmental specialist
13	Any direct sites damaged as a result of a dump of soil, are restored to an original look	✓				
14	The riverbanks are protected from the contractor's materials storages or temporary stacks	✓				
15	The negative effects or disruption due to construction work is monitored, with an acceptable level in accordance with the standards	✓				Control by the ecologist and project Manager
16	Access road to quarries, quarries, borrow pits and traffic conditions are serviced according to the approved standards		✓		✓	Dust suppression is not provided, there is no flagman
17	Draining and draining water, avoiding flooding or causing damage to other works or services causing erosion	✓				
Flora and Fauna						
1	Trees and shrubs that are outside the construction site, but within the road reserve, are usually protected from damage	✓				
2	None of the ancient trees were cut down during the construction works					On the territory of the construction site there are no ancient plantations
3	Cutting is not carried out without the prior permission of the relevant local authorities	✓				Cutting down of green planting is carried out on the basis of the logging ticket On the section of Shubarkuduk detour road there is a plot of forest plantations. Obtained a vegetation clearing permit dated since 10.06.2019 to 31.09.2019 for the section Km 127+46 to Km 137+60

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No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
4	Trees and shrubs are cut down and removed only if they interfere with the necessary temporary or permanent work					Trees and shrubs do not interfere with the construction, so cutting is not required
5	Construction work is not carried out on the construction sites of the bridge during the harvest (specify Yes or No construction work in the transition, specify the date)		✓			The construction of bridges does not affect the cultivation and harvesting, as they are located in remote places.
6	Construction on river sections occurs only during low flow to minimize pollution	✓				

Annex 7

Results of measurements of noise and vibration on Lot 2 section

Sampling points	Before starting work 24.04.18, dBa	15.01.2019 dBa	23.02.2019 dBa	18.03.2019 dBa	30.04.2019 dBa	30.05.2019 dBa	19.06.2019 dBa
Km 236	51.4	52.4	46.8	52.9	52.3	53.4	50.7
Km 246	52.4	50.0	50.4	52.4	53.2	52.1	49.9
Km 255	52.4	52.1	45.6	45.6	46.6	45.3	51.1
Km 265	52.4	51.0	45.8	50.7	52.0	53.0	50.0
Km 275	52.4	50.3	47.0	49.8	51.3	51.0	50.3
Karaulkeldy Production Base	52.4	51.1	48.1	50.1	48.1 50.2 51.3 50.4	48.9 51.4 50.2 53.1	
Residential area of Karaulkeldy vill.	52.4	49.3	46.3	51.3	51.3	51.2	51.0
Residential area of Zharly vill.	Measurements were not planned	50.4	45.8	50.5	-	50.4	50.3
Quarry 2		51.2	46.2	55.8	-	51.0	
Quarry 3		-	-	-	52.2	52.0	53.5
Quarry 4		-	-	-	54.5	53.4	50.0
Quarry 5		50.5	47.1	54.2	51.2	51.0	51.2
Quarry 6		51.7	48.0	53.3	50.3	49.4	53.0

Maximum allowable sound level - 80 dBA

Results of measurements of vibration on Lot 2 section

Sampling points	Before starting work 24.04.2018, dB	15.01.2019 dB	23.02.2019 dB	18.03.2019 dB	30.04.2019 dB	30.05.2019 dB
Km 236	37.2	37.0	36.5	39.9	36.0	35.2
Km 246	36.2	35.2	34.6	37.1	36.2	35.4
Km 255	37.2	36.2	37.0	38.4	36.4	36.0
Km 265	36.2	36.4	36.4	38.1	36.4	36.1
Km 275	37.6	35.4	36.1	37.5	35.7	34.6
Karaulkeldy Production Base	35.6	35.4	36.8	38.1	36.8 37.2 36.3 35.4	37.0 36.3 36.4 35.0
Residential area of Karaulkeldy vill.	37.6	36.6	36.0	37.2	36.4	36.0
Residential area of Zharly vill.	Measurement was not planned	35.8	35.3	38.5	34.9	35.2
Quarry 2		36.2	35.7	38.1	-	-
Quarry 3		-	-	-	35.2	31.6
Quarry 4		-	-	-	37.2	36.2
Quarry 5		35.8	35.0	37.9	35.6	35.2
Quarry 6		35.0	35.2	38.9	36.6	36.0

Allowed equivalent vibration acceleration level - 95 dB

Annex 8

Soil test result for Lot 2 section

Sampling points	Name of pollutants	Baseline data	30.04.19	30.05.19	19.06.19
1	2	3	4	5	6
Aktobe –Atyrau road section, 236 km.	pH, units	7.91	7.02	7.07	No work was carried out
	Dissolved solids, mg/100gr	0.150	0.152	0.154	
	Petroleum products, mg/100gr	0.01	0.02	0.04	
	Chlorides, mg/100gr	0.04	0.03	0.02	
	Sulfates, mg/100gr	0.814	0.817	0.820	
	Calcium, mg/100gr	0.6	0.8	0.6	
	Magnesium, mg/100gr	0.2	0.1	0.1	
	Carbonates, mg/100gr	0.0	0	0	
Aktobe –Atyrau road section, 245 km.	Bicarbonates, mg/100gr	0.6	0.4	0.5	
	pH, units	8.06	8	7.85	8.0
	Dissolved solids, mg/100gr	0.153	0.154	0.152	0.148
	Petroleum products, mg/100gr	0.021	0.022	0.024	0.020
	Chlorides, mg/100gr	0.04	0.05	0.03	0.06
	Sulfates, mg/100gr	1.22	1.23	1.26	1.14
	Calcium, mg/100gr	0.5	0.7	0.8	0.11
	Magnesium, mg/100gr	0.1	0.1	0	0.2
Aktobe –Atyrau road section, 255 km.	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	0.56	0.53	0.54	0.036
	pH, units	8.08	7.47	7.40	7.36
	Dissolved solids, mg/100gr	0.15	0.152	0.154	0.0158
	Petroleum products, mg/100gr	0.15	0.018	0.016	0.021
	Chlorides, mg/100gr	0.04	0.02	0.03	0.05
	Sulfates, mg/100gr	0.782	0.786	0.783	0.802
	Calcium, mg/100gr	0.3	0.5	0.6	0.4
Aktobe –Atyrau road section, 265 km	Magnesium, mg/100gr	0.10	0.1	0.1	0.1
	Carbonates, mg/100gr	0	0	0	0.0
	Bicarbonates, mg/100gr	0.80	0.9	0.9	0.21
	pH, units	7.90	7.23	7.21	7.34
	Dissolved solids, mg/100gr	0.159	0.159	0.161	0.157
	Petroleum products, mg/100gr	0.012	0.014	0.012	0.08
	Chlorides, mg/100gr	0.04	0.05	0.04	0.05
	Sulfates, mg/100gr	0.491	0.819	0.815	0.746
	Calcium, mg/100gr	0.4	0.4	0.5	0.7
	Magnesium, mg/100gr	0.1	0.1	0.04	0.02
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	0.72	2.0	3.0	4.2
	pH, units	7.79	7.02	7.06	7.28

Aktobe –Atyrau road section, 275 km.	Dissolved solids, mg/100gr	0.160	0.162	0.160	0.178
	Petroleum products, mg/100gr	0.010	0.010	0.013	0.011
	Chlorides, mg/100gr	0.04	0.06	0.04	0.014
	Sulfates, mg/100gr	0.460	0.459	0.456	0.461
	Calcium, mg/100gr	0.6	0.8	0.6	0.8
	Magnesium, mg/100gr	0.10	0.11	0.3	0.5
	Carbonates, mg/100gr	0	0	0	0.0
	Bicarbonates, mg/100gr	0.6	0.61	0.58	0.47
Quarry 3	pH, units	7.80	7.45	7.42	7.34
	Dissolved solids, mg/100gr	0.166	0.172	0.170	0.172
	Petroleum products, mg/100gr	0.07	0.06	0.08	0.010
	Chlorides, mg/100gr	0.06	0.04	0.05	0.08
	Sulfates, mg/100gr	0.481	0.483	0.480	0.473
	Calcium, mg/100gr	0.42	0.3	0.4	0.6
	Magnesium, mg/100gr	0.18	0.19	0.21	0.23
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	0.93	0.96	0.93	0.87
Quarry 4	pH, units	8.02	7.62	7.59	7.49
	Dissolved solids, mg/100gr	0.176	0.179	0.178	0.170
	Petroleum products, mg/100gr	0.03	0.08	0.06	0.07
	Chlorides, mg/100gr	0.07	0.05	0.03	0.05
	Sulfates, mg/100gr	0.484	0.480	0.478	0.482
	Calcium, mg/100gr	0.45	0.6	0.5	0.7
	Magnesium, mg/100gr	0.17	0.18	0.5	0.20
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.35	0.92	0.90	0.83
Quarry 5	pH, units	8.0	7.78	7.80	7.72
	Dissolved solids, mg/100gr	0.181	0.169	0.165	0.152
	Petroleum products, mg/100gr	0.05	0.06	0.08	0.06
	Chlorides, mg/100gr	0.07	0.07	0.05	0.04
	Sulfates, mg/100gr	0.490	0.480	0.481	0.473
	Calcium, mg/100gr	0.8	0.40	0.38	0.35
	Magnesium, mg/100gr	0.20	0.16	0.19	0.14
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.42	0.92	0.90	0.78
Quarry 6	pH, units	7.96	8.0	7.89	7.80
	Dissolved solids, mg/100gr	0.175	0.170	0.171	0.165
	Petroleum products, mg/100gr	0.04	0.05	0.06	0.07
	Chlorides, mg/100gr	0.06	0.08	0.07	0.010
	Sulfates, mg/100gr	0.481	0.486	0.483	0.400
	Calcium, mg/100gr	0.7	0.47	0.450	0.52
	Magnesium, mg/100gr	0.19	0.20	0.19	0.21
	Carbonates, mg/100gr	0	0	0	0.0

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	Bicarbonates, mg/100gr	1.33	1.37	1.35	1.21
PB Zhaksymai Point 1 (North)	pH, units	8.05	7.32	7.29	7.18
	Dissolved solids, mg/100gr	0.225	0.190	0.192	0.184
	Petroleum products, mg/100gr	0.07	0.064	0.063	0.051
	Chlorides, mg/100gr	0.10	0.23	0.22	0.20
	Sulfates, mg/100gr	0.495	0.7	0.8	0.6
	Calcium, mg/100gr	0.5	0.36	0.34	0.30
	Magnesium, mg/100gr	0.17	0.25	0.21	0.27
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.75	1.45	1.42	1.09
PB Zhaksymai Point 2 (South)	pH, units	7.92	8.0	7.83	7.92
	Dissolved solids, mg/100gr	0.175	0.164	0.166	0.157
	Petroleum products, mg/100gr	0.073	0.051	0.050	0.062
	Chlorides, mg/100gr	0.09	0.056	0.058	0.067
	Sulfates, mg/100gr	0.488	0.55	0.53	0.90
	Calcium, mg/100gr	0.6	0.8	0.6	0.10
	Magnesium, mg/100gr	0.18	0.27	0.25	0.20
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.90	1.49	1.46	1.38
PB Zhaksymai Point 3 (West)	pH, units	8.07	7.9	7.11	7.0
	Dissolved solids, mg/100gr	0.186	0.187	0.190	0.194
	Petroleum products, mg/100gr	0.077	0.05	0.06	0.03
	Chlorides, mg/100gr	0.11	0.16	0.14	0.18
	Sulfates, mg/100gr	0.484	0.52	0.50	0.55
	Calcium, mg/100gr	0.62	0.9	0.11	0.10
	Magnesium, mg/100gr	0.28	0.26	0.25	0.31
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.93	1.68	1.66	1.58
PB Zhaksymai Point 4 (East)	pH, units	8.02	8.1	8.0	8.03
	Dissolved solids, mg/100gr	0.175	0.154	0.151	0.143
	Petroleum products, mg/100gr	0.067	0.06	0.08	0.06
	Chlorides, mg/100gr	0.074	0.079	0.082	0.096
	Sulfates, mg/100gr	0.486	0.6	0.5	0.8
	Calcium, mg/100gr	0.55	0.8	0.9	0.10
	Magnesium, mg/100gr	0.27	0.2	0.3	0.5
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.75	1.46	1.48	1.37
Residential zone of Karaulkeldy vill.	pH, units	8.05	7.85	7.89	7.93
	Dissolved solids, mg/100gr	0.225	0.152	0.153	0.158
	Petroleum products, mg/100gr	0.07	0.04	0.05	0.09
	Chlorides, mg/100gr	0.10	0.06	0.08	0.011
	Sulfates, mg/100gr	0.495	0.819	0.814	0.800
	Calcium, mg/100gr	0.5	0.5	0.4	0.6

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	Magnesium, mg/100gr	0.17	0.3	0.2	0.3
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.75	0.4	0.5	0.9
Residential zone of Zharly vill.	pH, units	7.92	8.2	8.0	8.2
	Dissolved solids, mg/100gr	0.175	0.18	0.16	0.19
	Petroleum products, mg/100gr	0.073	0.04	0.06	0.04
	Chlorides, mg/100gr	0.09	0.03	0.04	0.09
	Sulfates, mg/100gr	0.488	0.494	0.491	0.498
	Calcium, mg/100gr	0.6	0.8	0.9	0.11
	Magnesium, mg/100gr	0.18	0.15	0.17	0.23
	Carbonates, mg/100gr	0.0	0	0	0.0
	Bicarbonates, mg/100gr	1.90	0.67	0.70	0.59

Results of chemical analysis of water (natural) Lot 2

Karaulkeldy river

Name of pollutants	Baseline data 24.04.2018	MPC standard, mg/dm ³	15.03.19	30.04.2019	30.05.19	19.06.19
1	2	3	4	5	6	7
pH, unit	8.20	6.0-9.0	7.20	7.20	7.16	8.0
Dissolved solids, mg/dm ³	896.0	1000	982.20	886.0	880.0	920.0
Water insoluble substances, mg/dm ³	18.0	Not normalized	6.2	17.0	20.0	22.0
Chlorides, mg/dm ³	328.4	Not more than 350	316.3	332.4	328.2	293.0
Ammonium nitrogen, mg/dm ³	0.528	Not more than 0.2	0.272	0.426	0.420	0.369
Petroleum products, mg/dm ³	0.041	Not more than 0.1	0.017	0.043	0.038	0.018
Total hardness, mg/dm ³	7.01	7.0(10)	5.8	7.01	7.02	7.0
Calcium, mg/dm ³	194	Not normalized	168.2	185.0	181.0	165.0
Magnesium, mg/dm ³	93.6	Not normalized	82.4	90.6	90	79.0
Sulfates, mg/dm ³	410.0	Not more than 500	385.0	402.0	397.0	415.0
Nitrates, mg/dm ³	3.57	Not more than 45	4.8	2.59	2.61	2.45
Nitrites, mg/dm ³	0.195	Not more than 3.3	0.168	0.186,	0.180	0.241
Ferrum, mg/dm ³	0.125	Not more than 3.0	0.130	0.122	0.113	0.256
Chrome, mg/dm ³	0.0	Not more than 0.05	0	0	0	0.0
Total phosphorus mg/dm ³	0.0	Not more than 0.0001	0	0	0	0.0
Anionic surfactants, mg/dm ³	0.008	0.5	0.004	0.007	0.009	0.0013

Annex 10

Atmospheric air test result, Lot 2

Sampling points	Name of pollutants	Baseline data 24.04.18	MPC standard, mg/m ³	17.01.19 mg/m ³	23.02.19 mg/m ³	15.03.19 mg/m ³	30.04.19 mg/m ³	30.06.19 mg/m ³	19.06.19 mg/m ³
Section km 236	Inorganic dust: 70-20%	0.058	0.3	0.040	0.046	0.064	0.039	0.0036	0.0185
	Nitrogen dioxide	0.057	0.2	0.015	0.10	0.06	0.018	0.0020	0.023
	Sulphur dioxide	n/d	0.5	n/d	n/d	0.001	n/d	0.0062	0.0059
	Carbon oxide	1.2	5.0	1.0	1.1	1.3	3.0	2.0	2.4
	formaldehyde	0.0011	0.051	0.001	0.001	0.008	0.002	0.004	0.0010
	Hydrocarbons C ₁₂ -C ₁₉	0.089	1	0.035	0.028	0.028	0.032	0.0034	0.0158
	Benzene	0.056	0.3	0.024	0.007	0.009	0.026	0.0023	0.0254
	Xylene	0.074	0.2	0.032	0.013	0.021	0.038	0.0042	0.0178
	Methylbenzene	0.3	0.6	0.123	0.046	0.053	0.3	0.0033	0.0317
Section km 246	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
	Inorganic dust: 70-20%	0.062	0.3	0.032	0.016	0.038	0.028	0.0029	0.0315
	Nitrogen dioxide	0.055	0.2	0.025	0.024	0.065	0.033	0.0036	0.0057
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0059	0.0245
	Carbon oxide	1.1	5.0	1.23	1.06	1.32	2.0	1.0	1.0
	formaldehyde	0.0012	0.051	0.001	0.001	0.008	0.0014	0.0015	0.0026
	Hydrocarbons C ₁₂ -C ₁₉	0.064	1	0.040	0.042	0.028	0.068	0.0071	0.148
	Benzene	0.053	0.3	0.044	0.031	0.015	0.056	0.0053	0.0068
	Xylene	0.070	0.2	0.145	0.004	0.006	0.024	0.0029	0.0093
Section km 255	Methylbenzene	0.2	0.6	0.145	0.098	0.078	0.1	0.0024	0.0256
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
	Inorganic dust: 70-20%	0.060	0.3	0.032	0.012	0.023	0.031	0.0030	0.0256
	Nitrogen dioxide	0.054	0.2	0.030	0.005	0.02	0.034	0.0038	0.0148
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0051	0.0067
	Carbon oxide	1.3	5.0	1.0	1.0	1.2	1.0	1.7	1.9
	formaldehyde	0.0012	0.051	0.0010	0.0010	0.002	0.0012	0.0016	0.0024
	Hydrocarbons C ₁₂ -C ₁₉	0.063	1	0.056	0.054	0.08	0.062	0.060	0.0612
	Benzene	0.55	0.3	0.055	0.008	0.065	0.057	0.0052	0.0069
	Xylene	0.061	0.2	0.023	0.020	0.040	0.025	0.0027	0.0034

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	Methylbenzene	0.3	0.6	0.1	0.201	0.42	0.1	0.1	0.1
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
Section km 265	Inorganic dust: 70-20%	0.052	0.3	0.032	0.006	0.018	0.031	0.0033	0.0274
	Nitrogen dioxide	0.055	0.2	0.031	0.032	0.042	0.029	0.0028	0.0034
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0044	0.0051
	Carbon oxide	1.0	5.0	1.2	1.08	1.16	1.4	1.6	2.4
	formaldehyde	0.0010	0.051	0.0010	0.0010	0.001	0.0013	0.0017	0.0013
	Hydrocarbons C ₁₂ -C ₁₉	0.062	1	0.043	0.037	0.048	0.040	0.043	0.0417
	Benzene	0.052	0.3	0.034	0.016	0.082	0.037	0.0038	0.0047
	Xylene	0.073	0.2	0.061	0.008	0.01	0.059	0.0060	0.0073
	Methylbenzene	0.1	0.6	0.12	0.054	0.026	0.2	0.3	0.2
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
Section km 275	Inorganic dust: 70-20%	0.054	0.3	0.032	0.006	0.023	0.032	0.0031	0.0124
	Nitrogen dioxide	0.058	0.2	0.031	0.024	0.037	0.033	0.0035	0.0043
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	n/d	0.0178
	Carbon oxide	1.2	5.0	1.0	1.2	0.92	1.0	2.1	2.0
	formaldehyde	0.0010	0.051	0.001	0.001	0.004	0.004	0.006	0.0017
	Hydrocarbons C ₁₂ -C ₁₉	0.076	1	0.035	0.024	0.024	0.024	0.0026	0.0489
	Benzene	0.057	0.3	0.024	0.008	0.005	0.022	0.0024	0.0189
	Xylene	0.069	0.2	0.051	0.005	0.002	0.049	0.0053	0.0098
	Methylbenzene	0.2	0.6	0.2	0.08	0.012	0.3	0.1	0.0145
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
SPZ border (North) Production base	Inorganic dust: 70-20%	0.094	0.3	0.33	0.035	0.015	0.031	0.0033	0.0236
	Nitrogen dioxide	0.064	0.2	0.030	0.0024	0.024	0.032	0.0029	0.0032
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0018	0.0035
	Carbon oxide	0.76	5.0	0.42	0.06	0.042	0.43	0.40	0.49
	formaldehyde	0.02	0.051	0.013	0.0026	0.0020	0.0011	0.0010	0.0024
	Hydrocarbons C ₁₂ -C ₁₉	0.089	1	0.056	0.060	0.042	0.056	0.0013	0.0456
	Benzene	0.075	0.3	0.045	0.050	0.023	0.046	0.0041	0.0036
	Xylene	0.091	0.2	0.081	0.050	0.090	0.082	0.0079	0.0062
	Methylbenzene	0.2	0.6	0.1	0.1	0.07	0.1	0.001	0.0056
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
	Inorganic dust: 70-20%	0.096	0.3	0.030	0.038	0.025	0.033	0.039	0.0269

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Karaulkeldy Production Base SPZ border (South) Production base	Nitrogen dioxide	0.066	0.2	0.033	0.030	0.020	0.034	0.0032	0.0039
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0021	0.0048
	Carbon oxide	0.77	5.0	0.36	0.07	0.038	0.39	1.02	1.23
	formaldehyde	0.03	0.051	0.0012	0.001	0.0015	0.0013	0.0015	0.0019
	Hydrocarbons C ₁₂ -C ₁₉	0.090	1	0.052	0.064	0.044	0.053	0.0019	0.0489
	Benzene	0.077	0.3	0.050	0.055	0.025	0.051	0.0056	0.0048
	Xylene	0.092	0.2	0.073	0.043	0.060	0.074	0.0083	0.0078
	Methylbenzene	0.1	0.6	0.1	0.1	0.08	0.1	0.06	0.0063
SPZ border (East) Production base	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
	Inorganic dust: 70-20%	0.097	0.3	0.042	0.040	0.020	0.040	0.0046	0.0316
	Nitrogen dioxide	0.068	0.2	0.031	0.026	0.020	0.035	0.0047	0.0040
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0027	0.0019
	Carbon oxide	0.74	5.0	0.40	0.08	0.030	0.042	1.4	1.0
	formaldehyde	0.01	0.051	0.0017	0.001	0.001	0.0018	0.0020	0.0026
	Hydrocarbons C ₁₂ -C ₁₉	0.091	1	0.060	0.0055	0.054	0.059	0.0025	0.0308
	Benzene	0.097	0.3	0.044	0.053	0.030	0.044	0.0051	0.0053
	Xylene	0.095	0.2	0.084	0.049	0.075	0.083	0.0090	0.0086
	Methylbenzene	0.3	0.6	0.1	0.1	0.009	0.1	0.0040	0.0070
SPZ border (West) Production base	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
	Inorganic dust: 70-20%	0.095	0.3	0.039	0.042	0.025	0.038	0.0051	0.0345
	Nitrogen dioxide	0.070	0.2	0.037	0.035	0.028	0.037	0.0049	0.0028
	Sulphur dioxide	n/d	0.5	-	n/d	n/d	n/d	0.0035	0.0030
	Carbon oxide	0.80	5.0	0.41	0.06	0.033	0.41	0.53	0.87
	formaldehyde	0.02	0.051	0.0014	0.001	0.001	0.0014	0.0026	0.0030
	Hydrocarbons C ₁₂ -C ₁₉	0.092	1	0.055	0.060	0.055	0.058	0.0030	0.0329
	Benzene	0.078	0.3	0.054	0.050	0.025	0.055	0.0061	0.0059
	Xylene	0.093	0.2	0.075	0.054	0.072	0.075	0.0093	0.0073
	Methylbenzene	0.2	0.6	0.2	0.1	0.1	0.2	0.002	0.00965
SPZ border (West) Production base	Hydrogen sulphide	n/d	0.008	-	n/d	n/d	n/d	n/d	n/d

Atmospheric air test result, Lot 2

Sampling points	Name of pollutants	MPC standard, mg/m ³	30.06.19 mg/m ³
ACP*	SPM	0.3	0.124
	Nitrogen dioxide	0.2	0.0247
	Sulphur dioxide	0.5	0.0080
	Carbon oxide	5.0	1.7
	formaldehyde	0.051	0.0013
	Hydrocarbons C ₁₂ -C ₁₉	1	0.101
	hydrogen sulphide	n/d	n/d
CBP*	SPM	0.3	0.0948
	Nitrogen dioxide	0.2	0.0312
	Sulphur dioxide	0.5	0.0083
	Carbon oxide	5.0	1.8
	formaldehyde	0.051	0.0013
	Hydrocarbons C ₁₂ -C ₁₉	1	0.103
	hydrogen sulphide	n/d	n/d

- According to the Air Pollution Management Plan at these facilities is provided for a measurement periodicity of 1 quarterly. By recommendation of the ADB national consultant, inorganic dust is replaced by suspended particles

Annex 11

Atmospheric air test result, Lot 2

Sampling points	Name of pollutants	MPC, mg/m ³	Baseline data 24.04.2018		17.01.19 mg/m ³		23.02.2019 mg/m ³		15.03.19 mg/m ³		30.04.19 mg/m ³		30.05.19 mg/m ³		19.06.19 mg/m ³	
			w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w	l/w	w/w	l/w
Karaulkeldy residential zone	Inorganic dust: 70-20%	0.3	0.0325	0.0328	0.300	0.0324	0.030	0.0327	0.020	0.025	0.0302	0.0332	0.0306	0.0312	0.0256	0.0286
	Nitrogen dioxide	0.2	0.0254	0.0256	0.020	0.027	0.020	0.025	0.030	0.035	0.018	0.022	0.0019	0.0021	0.0023	0.0028
	Sulphur dioxide	0.5	n/d	n/d	n/d	-	n/d	n/d	n/d	n/d	n/d	n/d	0.0031	0.0038	0.0040	0.0056
	Carbon oxide	5.0	1.4	1.5	1.0	1.0	1.0	1.0	0.08	1.0	1.0	2.0	1.4	2.1	1.7	2.4
	formaldehyde	0.05	0.0012	0.0014	0.0010	0.011	0.0010	0.001	0.0020	0.001	0.0012	0.003	0.0018	0.0023	0.0022	0.0029
	Hydrocarbons C ₁₂ -C ₁₉	1	0.095	0.0097	0.10	0.12	0.10	0.11	0.20	0.15	0.12	0.14	0.10	0.13	0.28	0.36
	Hydrogen sulphide	0.008	n/d	n/d	n/d	-	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d
			w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w*	l/w**	w/w*	l/w**
Zharly Residential zone	Inorganic dust: 70-20%	0.3	0.034	0.0341	0.036	0.040	0.026	0.051	0.12	0.034	0.027	0.053	0.033	0.0056	0.0314	0.0329
	Nitrogen dioxide	0.2	0.03	0.0302	0.0134	0.0125	0.0108	0.0120	0.0094	0.007	0.0109	0.0122	0.0111	0.0123	0.0120	0.0134
	Sulphur dioxide	0.5	0	0	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	0.0027	0.0032	0.0034	0.0039
	Carbon oxide	5.0	1.6	1.7	1.2	1.3	1.1	1.6	0.86	1.2	1.1	1.5	1.2	1.9	1.4	2.0
	formaldehyde	0.05	0.0015	0.0014	0.0010	0.0010	0.0010	0.0011	0.002	0.003	0.0009	0.0011	0.0010	0.0014	0.0026	0.0035
	Hydrocarbons C ₁₂ -C ₁₉	1	0.1	0.2	0.10	0.12	0.10	0.14	0.15	0.21	0.12	0.15	0.16	0.21	0.31	0.35
	Hydrogen sulphide	0.008	0	0	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d	n/d

* w/w – windward part

* l/w – leeward part

n/d – not defined/not detected

Annex 12

Atmospheric air test results of Lot 2 borrow pits

Sampling points	Name of pollutants	Baseline data (prior construction) 24.04.2018	MPC standard, mg/m ³	17.01.19 mg/m ³	23.02.19 mg/m ³	15.03.19 mg/m ³	30.04.19 mg/m ³	30.05.19 mg/m ³	19.06.19 mg/m ³
Borrow pit No.2	Inorganic dust: 70-20%	0.088	0.3	0.040	0.037	0.027	No work was carried out during these periods		
	Nitrogen dioxide	0.074	0.2	0.033	0.007	0.004			
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d			
	Carbon oxide	1.5	5.0	1.1	1.2	1.4			
	formaldehyde	0.0013	0.051	0.0013	0.0021	0.003			
	Hydrocarbons C ₁₂ -C ₁₉	0.092	1	0.062	0.005	0.022			
	Benzene	0.065	0.3	0.054	0.017	0.009			
	Xylene	0.092	0.2	0.042	0.051	0.040			
	Methylbenzene	0.3	0.6	0.1	0.101	0.08			
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d			
Borrow pit No.3	Inorganic dust: 70-20%	0.042	0.3	No work was carried out during these periods			0.042	0.0046	0.0470
	Nitrogen dioxide	0.035	0.2				0.035	0.0039	0.0051
	Sulphur dioxide	n/d	0.5				n/d	0.0071	0.0067
	Carbon oxide	2.2	5.0				2.2	1.7	2.1
	formaldehyde	0.0017	0.051				0.0017	0.0020	0.0018
	Hydrocarbons C ₁₂ -C ₁₉	0.055	1				0.055	0.0051	0.0265
	Benzene	0.038	0.3				0.038	0.0048	0.0072
	Xylene	0.2	0.2				0.2	0.0035	0.0047
	Methylbenzene	n/d	0.6				n/d	0.003	0.0148
	Hydrogen sulphide	n/d	0.008				n/d	n/d	n/d
Borrow pit No. 4	Inorganic dust: 70-20%	0.041	0.3	No work was carried out during these periods			0.041	0.0044	0.0278
	Nitrogen dioxide	0.033	0.2				0.033	0.0037	0.0047
	Sulphur dioxide	n/d	0.5				n/d	0.0029	0.0086
	Carbon oxide	2.3	5.0				2.3	2.0	2.6
	formaldehyde	0.0013	0.051				0.0013	0.0015	0.0023
	Hydrocarbons C ₁₂ -C ₁₉	0.053	1				0.053	0.0059	0.0368
	Benzene	0.049	0.3				0.049	0.0051	0.0043
	Xylene	0.035	0.2				0.035	0.0035	0.0058

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	Methylbenzene	0.1	0.6				0.1	0.3	0.0489
	Hydrogen sulphide	n/d	0.008				n/d	n/d	n/d
Borrow pit No. 5	Inorganic dust: 70-20%	0.090	0.3	0.040	0.027	0.018	0.038	0.0043	0.0248
	Nitrogen dioxide	0.081	0.2	0.046	0.006	0.004	0.030	0.0034	0.0046
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0052	0.0087
	Carbon oxide	1.6	5.0	1.2	1.05	1.3	1.3	1.2	2.8
	formaldehyde	0.0013	0.051	0.0010	0.0010	0.0030	0.0012	0.0016	0.0028
	Hydrocarbons C ₁₂ -C ₁₉	0.094	1	0.045	0.040	0.050	0.054	0.0058	0.0067
	Benzene	0.072	0.3	0.054	0.053	0.045	0.050	0.0047	0.0050
	Xylene	0.095	0.2	0.040	0.038	0.028	0.034	0.0039	0.0043
	Methylbenzene	0.3	0.6	0.2	0.3	0.08	0.3	0.1	0.2
Quarry 6	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d
	Inorganic dust: 70-20%	0.090	0.3	0.32	0.046	0.035	0.027	0.0029	0.0219
	Nitrogen dioxide	0.081	0.2	0.030	0.031	0.02	0.031	0.0035	0.0049
	Sulphur dioxide	n/d	0.5	n/d	n/d	n/d	n/d	0.0053	0.0040
	Carbon oxide	1.6	5.0	1.0	1.0	0.85	2.4	2.1	3.1
	formaldehyde	0.0013	0.051	0.003	0.001	0.006	0.0013	0.0016	0.0025
	Hydrocarbons C ₁₂ -C ₁₉	0.094	1	0.035	0.007	0.008	0.051	0.047	0.078
	Benzene	0.072	0.3	0.054	0.031	0.04	0.054	0.0061	0.0073
	Xylene	0.095	0.2	0.070	0.070	0.082	0.033	0.0037	0.0027
	Methylbenzene	0.3	0.6	0.1	0.1	0.07	0.1	0.04	0.09
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d	n/d	n/d

Summary data from environmental monitoring checklists

Lot 2

Environmental monitoring checklist

Checklist for Lot 2 site inspection		
Date of site visit: 4.03.2019, 11.03.2019, 18.04.2019, 08.05.2019 16.05.2019, 5.06.2019	Engineer's representative: Imbarova Sara Temirbek Zhenisgul Contractor's representative: Anuar Embergenov Daniar, environmental site specialist	Engineer's ref.No. Contractor's ref.No.
Weather Conditions: by forecast		
Work currently in progress:		
The problems related to environment	Possible reasons	Proposed measures to reduce the risk
Increased dustiness on the roads	The dust suppression schedule is not kept, the overload of dump trucks, the lack of water resources.	Control over the schedule of dust suppression, control over the work of the excavator
Violation of waste removal schedule	Insufficient number of containers, not taken into account the increase in the number of people in base camp	Revision of Waste removal schedule Installation of additional number of containers

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
Contractor's base camp						
1						Septic tanks are cleaned daily
2	All wastewater is sent to septic tanks or service water tanks	✓				Control by the environmental specialist
3	All the dangerous liquids stored in a prescribed place on an impermeable base with effluent collection		✓	✓		In progress
4	Solid hazardous materials are stored in a safe place in the work areas	✓				Organize concreted special areas, install fencing to store hazardous materials in accordance with the requirements.
5	Drains accumulate in the drainage system and are disposed of by the Contractor	✓				According to the EMP
6	All vehicles entering and leaving the base camp are subject to control	✓				Mechanic and OHS inspector

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
7	Local communities and organizations are informed of the construction schedule and any noise-raising activities on a regular basis through workers and other activities		✓		✓	
8	Open containers for storage of materials are covered with canopies	✓				Containers are installed with covers
9	Open burning is prohibited		✓	✓		Subcontractor burns solid waste from the kitchen
10	Fire Figurehting equipment <ul style="list-style-type: none"> ▪ Sand bucket and shovel ▪ Foam extinguisher ▪ Protective coating in canteen 		✓	✓		Sufficient numbers of fireFigurehting shields not provided in base camp
11	Access of other people to the town is prohibited by the installation of fencing and security organazing	✓				At the gate is the checkpoint, the contract with the security company
12	All employees are provided with personal protective equipment (PPE)	✓				
13	Smoking is prohibited except in Smoking rooms	✓				Repairing territory has a designated Smoking area.
14	Relevant road signs and warning signs on the site and in hazardous areas		✓	✓		Places for installation of signs are defined
15	Drinking water is provided to all employees from commercial and licensed sources.	✓				Needs assessment is carried out regularly
16	Protective clothes of all employees are washed on a daily basis	✓				Protective clothes of employees are washed as necessary According to sanitary and hygienic norms washing at least 2 times a week
17	All employees are provided with three meals a day	✓				The food service provider has been replaced. The quality of food improved
18	Canteen with sanitary conditions in base camp	✓				Sanitary days are held
19	First-aid posts and first-aid kit in base camp and in the working areas	✓				First aid kits are replenished as needed. The records of requests for medical care is kept
20	Health of all employees is under control of the doctor in base camp, and the corresponding services are provided, monthly medical examinations are also carried out	✓				In the medical point installed video surveillance for the daily control of the workers and maintained the daily log of the medical examination (Alcotest, pressure, etc.).

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
21	The whole area is cleared, there is no excess waste, except for designated areas for waste disposal	✓				Base camp territory is cleaned daily from the excess of solid waste, and stored in the designated area.
22	Providing a place for rest in base camp	✓				There are rest rooms
23	Child labour (below 15 years)		✓			Not applicable on site
Production site						
1	The bitumen and chemical materials warehouse is located away from the watercourse and the dam walls are impenetrable and can contain 110% of the tank volume	✓				
2	Liquid waste from the asphalt plant are kept in the established tank and they emptied specialised suction equipment ≤MTTSTH≥ Lyman	✓				Export by a specialized company for disposal according to the contract
3	Bitumen is stored in a specialised place and bent in concrete to a volume of 110%	✓				Bitumen storage is concreted Used periodically
4	Solid waste from the asphalt plant is stored at the designated places and disposed of in accordance with approved procedures	✓				With the periodic export for disposal on landfill
5	The area of the plant is engraved for the purpose of reducing dust	✓				
6	The area of the plant is watered for the purpose of reducing dust	✓				According to the schedule of dust control
7	The plant cannot discharge wastewater into any watercourse; impervious concrete pools will be built to receive such water	✓				
8	All workers of asphalt, concrete plant and crusher are provided with protective masks	✓				
9	All workers of asphalt, concrete plant and crusher use protective masks	✓				
10	Sands and fractions for concrete and asphalt are stored in a wet and covered place	✓				
11	In asphalt, concrete plants and crushers there are fire-Figurehting equipment		✓			Fully understaffed
12	Plant or equipment causing high levels of vibration are built properly, maintained and managed accordingly	✓				In accordance with technical regulations

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
13	River/canal fenced for the protection of water resources		✓		✓	no need
GAS STATION						
1	Refueling will be strictly controlled and allowed only at the gas station and workshop	✓				
2	Space for storage tanks of fuel protected, and they are impermeable, tank cover closed	✓				According to the technical regulations
3	Gas station equipped with fire-Figurehting equipment to be checked weekly		✓	✓		Check schedule not met
4	The gas station has warning signs	✓		✓		
5	The gas station is equipped with a special basket for excess waste		✓	✓		Purchase of necessary containers
Contractor's workshop and car wash						
1	Liquid hazardous materials are stored in the designated place in workshop	✓				The site is concreted
2	Solid hazardous materials are stored in the designated place in the workshop	✓				
3	There are special containers for the collection of used petroleum products and hydraulic fluids	✓				Provided in places of possible spill
4	The used petroleum products are collected in a concreted canister with a volume of up to 110% and the canisters are cleaned in accordance with the approved procedures	✓				
5	The workshop is equipped with a drainage system	✓				
6	Each transport is inspected and maintained on an ongoing basis	✓				Chief mechanic under the supervision of a OHS specialist
7	All construction equipment complies with European Standards and is equipped with modern noise suppression equipment		✓	✓		
8	The noise suppression equipment of all equipment is checked and maintained in accordance with the approved procedures		✓	✓		Not available
9	All workshop workers are provided with welding equipment and personal protective equipment	✓				
10	All technical water is collected in the concreted tank and the tank is cleaned					No car wash

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	in accordance with the approved procedures					
The Project Road						
1	All the roads targeted for construction work watered with the water truck	✓		✓		Increase the intensity of watering and the number of water carriers, special control of areas locating near settlements
2	On the project road in appropriate places there are flags for the passage of cattle, sheep and other animals		✓		✓	It is recommended to install warning signs in frequently used areas for cattle
3	Sections of culverts and bridges, equipped with safety tapes and twisting signs		✓		✓	
4	Fencing and access control services are installed at all workplaces where it is necessary	✓				
5	Storage of waste of any type, as well as Parking of transports is not allowed at a distance of 100 m from any flow (including drainage or irrigation facilities)	✓				
6	Work areas and hazardous areas are equipped with all relevant road signs and warning signs	✓				
7	Construction machinery and plants are properly maintained to reduce gas emissions	✓				According to the schedule of PEM are monitoring emissions
8	Noise control measures in special facilities	✓				PPE provided: ear plugs
Quarries						
1	Quarries are provided with temporary drainage	✓				
2	200 m from the nearest settlements, all construction work stopped from 22: 00 to 6: 00 a.m.	✓				
3	Crushed stone of all size are extracted only from approved quarries	✓				
4	Extraction of crushed stone fraction is carried out in 100 m from the river or watercourse					No fact
5	Stack does not exceed 3 m in height	✓				
6	All open-body vehicles are used for the transportation of materials with possible dust formation, designed for	✓				The control of the senior mechanic

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	these purposes with well-chosen folding bodies					
7	During the construction works the volume of noise is limited according to national standards	✓				Schedule of works on objects with high noise and vibration
8	Materials with possible dust formation do not load exceeding the level of folding bodies and close with a clean tarpaulin	✓				
9	All vehicles, production equipment and devices comply with Euro exhaust emission standards		✓			Equipment rented from villagers does not meet the standards
10	All temporary acquired lands are restored					Upon completion of construction works
11	All material residues and contaminated land are collected and disposed of in accordance with approved procedures	✓				
12	During the delivering and using materials, it is watering	✓				Control by the environmental specialist
13	Any direct sites damaged as a result of a dump of soil, are restored to an original look	✓				
14	The riverbanks are protected from the contractor's materials storages or temporary stacks	✓				
15	The negative effects or disruption due to construction work is monitored, with an acceptable level in accordance with the standards	✓				Control by the ecologist and project Manager
16	Access road to quarries, quarries, borrow pits and traffic conditions are serviced according to the approved standards		✓		✓	Dust suppression is not provided, there is no flagman
17	Draining and draining water, avoiding flooding or causing damage to other works or services causing erosion	✓				
Flora and Fauna						
1	Trees and shrubs that are outside the construction site, but within the road reserve, are usually protected from damage					No greenery
2	None of the ancient trees were cut down during the construction works					On the territory of the construction site there are no ancient plantations
3	Cutting is not carried out without the prior permission of the relevant local authorities					Such works are not provided
4	Trees and shrubs are cut down and removed only if they interfere with the					No requirement

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No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	necessary temporary or permanent work					
5	Construction work is not carried out on the construction sites of the bridge during the harvest (specify Yes or No construction work in the transition, specify the date)		✓			The construction of bridges does not affect the cultivation and harvesting, as they are located in remote places. There is spring-well and no work impact to it
6	Construction on river sections occurs only during low flow to minimize pollution	✓				

Annex 14

Results of measurements of noise and vibration on Lot 3 section

Sampling points	Baseline (prior construction) 24.04.18, dBa	15.01.19 dBa	23.02.19 dBa	18.03.19 dBa	30.04.2019 dBa	30.05.2019 dBa	19.06.2019 dBa
p/b Nogaity ACP area	53.4	50.6 base Nogaity	50.8 base Nogaity	44.3 base Nogaity	52.3 (base)	52.3	51.6
p/b Nogaity CBP area	53.4					51.1	52.0
Section km 275	53.6				52.2 (280 km)	53.1	54.0
Section km 285	52.6				50.3 (280 km)	51.4	52.0
Section km 300	53.2				51.2	51.4	52.3
Section km 310	53.4				-	52.3	51.5
Section km 320	-				-	51.6	51.4

Maximum allowable sound level - 80 dBA

Results of measurements of vibration on Lot 3 section

Sampling points	Baseline (prior construction) 24.04.19, dB	30.05.19 dB	19.06.2019 dB
p/b Nogaity	38.0	35.2	36.0
ACP	38.4	37.8	-
CBP area	38.4	37.5	-
Section km 275	38.4	35.3	36.2
Section km 285	38.3	34.0	35.0
Section km 300	38.7	32.6	33.0
Section km 310	38.9	35.0	34.6
Section km 320	39.4	35.8	34.0

Allowed equivalent vibration acceleration level - 95 dB

Annex 15

Laboratory test results of for soil contamination, Lot 3

Sampling points	Name of detected parameters	Before the beginning of Construction Works 24.04.2018		30.04.2019		28.05.2019	19.06.2019
Production base "Nogayty", point 1 point 1 - East, point 2 –South the beginning of the measurements August 2018	pH, units	7.33	7.38	7.78	7.79	7.59	7.52
	Dissolved solids, mg/100gr	0.194	0.193	0.276	0.278	0.275	0.277
	Petroleum products, mg/100gr	0.028	0.030	0.057	0.056	0.045	0.038
	Chlorides, mg/100gr	0.253	0.256	0.28	0.29	0.20	0.22
	Sulfates, mg/100gr	0.471	0.488	0.580	0.581	0.450	0.447
	Calcium, mg/100gr	0.82	0.79	1.82	1.84	1.70	1.73
	Magnesium, mg/100gr	0.75	0.77	0.0	0.0	0.0	0.0
	Carbonates, mg/100gr	0.090	0.090	0.06	0.06	0.06	0.08
	Bicarbonates, mg/100gr	68.0	68.0	32.0	33.0	16.0	19.0
Km 280	pH, units	7.30		7.30		No work was carried out during these periods	
	Dissolved solids, mg/100gr	0.211		0.211			
	Petroleum products, mg/100gr	0.031		0.031			
	Chlorides, mg/100gr	0.252		0.252			
	Sulfates, mg/100gr	0.455		0.455			
	Calcium, mg/100gr	0.86		0.86			
	Magnesium, mg/100gr	0.74		0.74			
	Carbonates, mg/100gr	0.073		0.073			
	Bicarbonates, mg/100gr	58.0		58.0			
	pH, units	7.80				7.32	7.0

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May and June km 275	Dissolved solids, mg/100gr	0.257	No work was carried out	0.198	0.165
	Petroleum products, mg/100gr	0.020		0.025	0.08
	Chlorides, mg/100gr	0.07		0.260	0.06
	Sulfates, mg/100gr	0.448		0.397	0.462
	Calcium, mg/100gr	0.50		0.93	0.11
	Magnesium, mg/100gr	0.0		0.62	0.13
	Carbonates, mg/100gr	0.0		0.065	0.0
	Bicarbonates, mg/100gr	27.0		53.0	0.57
km 285	pH, units	7.30	No work was carried out	7.30	7.21
	Dissolved solids, mg/100gr	0.215		0.215	0.213
	Petroleum products, mg/100gr	0.027		0.027	0.022
	Chlorides, mg/100gr	0.251		0.251	0.248
	Sulfates, mg/100gr	0.453		0.453	0.446
	Calcium, mg/100gr	0.86		0.86	0.83
	Magnesium, mg/100gr	0.70		0.70	0.66
	Carbonates, mg/100gr	0.072		0.072	0.076
	Bicarbonates, mg/100gr	56.0		56.0	0.43
km 290 Baseline data observed in July, 2018	pH, units	7.5	7.31	No work was carried out	
	Dissolved solids, mg/100gr	0.457	0.213		
	Petroleum products, mg/100gr	0.02	0.029		
	Chlorides, mg/100gr	0.40	0.248		
	Sulfates, mg/100gr	0.527	0.457		
	Calcium, mg/100gr	0.50	0.85		
	Magnesium, mg/100gr	0.39	0.73		

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	Carbonates, mg/100gr	0.0	0.075		
	Bicarbonates, mg/100gr	0.20	59.0		
km 300 Baseline data, April, 2018	pH, units	7.32	6.33	6.35	6.37
	Dissolved solids, mg/100gr	0.279	0.216	0.218	0.214
	Petroleum products, mg/100gr	0.017	0.032	0.031	0.026
	Chlorides, mg/100gr	0.09	0.245	0.247	0.256
	Sulfates, mg/100gr	0.470	0.458	0.458	0.460
	Calcium, mg/100gr	0.78	0.82	0.80	0.76
	Magnesium, mg/100gr	1.6	0.77	0.75	0.80
	Carbonates, mg/100gr	0.2	0.073	0.076	0.075
	Bicarbonates, mg/100gr	28.0	61.0	57.0	0.55
km 310	pH, units	6.40	-	6.40	6.36
	Dissolved solids, mg/100gr	0.223	-	0.223	0.219
	Petroleum products, mg/100gr	0.021	-	0.021	0.023
	Chlorides, mg/100gr	0.238	-	0.238	0.241
	Sulfates, mg/100gr	0.420	-	0.420	0.416
	Calcium, mg/100gr	0.72	-	0.72	0.74
	Magnesium, mg/100gr	0.69	-	0.69	0.72
	Carbonates, mg/100gr	0.082	-	0.082	0.085
	Bicarbonates, mg/100gr	50.0	-	50.0	48.0
km 320 Baseline data observed in April, 2018	pH, units	7.20	-	7.0	7.13
	Dissolved solids, mg/100gr	0.250	-	0.219	0.221
	Petroleum products, mg/100gr	0.017	-	0.026	0.029
	Chlorides, mg/100gr	0.08	-	0.250	0.253

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	Sulfates, mg/100gr	0.462	-	0.380	0.372
	Calcium, mg/100gr	0.71	-	0.75	0.80
	Magnesium, mg/100gr	1.1	-	0.63	0.58
	Carbonates, mg/100gr	0.08	-	0.076	0.081
	Bicarbonates, mg/100gr	32.0	-	55.0	53.0

Annex 16

Results of measurements of atmospheric air, Lot 3

Sampling points	Name of pollutants mg/m ³	Actual concentration Initial measurement before beginning of the Project	MPC standard, mg/m ³	Concentration					
				17.01.19 mg/m ³	15.02.19 mg/m ³	15.03.19 mg/m ³	30.04.19 mg/m ³	28.05.19 mg/m ³	19.06.19 mg/m ³
Zharly vill. 100 m windward Baseline data observed in April, 2018	Inorganic dust 70-20%	0.0348	0.3	0.0300	0.0301	0.024	-	-	-
	Nitrogen dioxide NO ₂	0.0265	0.2	0.0254	0.0246	0.0154	-	-	-
	Sulfur dioxide SO ₂	n/d	0.5	n/d	n/d	n/d	-	-	-
	Carbonaceous oxide CO	1.5	5.0	2.21	2.18	1.45	-	-	-
	Formaldehyde CH ₂ O	0.0013	0.051	0.0011	0.0001	0.0001	-	-	-
	Hydrocarbons C ₁₂ -C ₁₉	0.098	1	0.103	0.102	0.124	-	-	-
	Hydrogen sulfide, H ₂ S	n/d	0.008	n/d	n/d	n/d	-	-	-
Zharly vill. 100 m leeward Baseline data observed in April, 2018	Inorganic dust 70-20%	0.0349	0.3	0.0301	0.0303	0.020	-	-	-
	Nitrogen dioxide NO ₂	0.0269	0.2	0.0250	0.0244	0.0144	-	-	-
	Sulphur dioxide SO ₂	n/d	0.5	n/d	n/d	n/d	-	-	-
	Carbonaceous oxide CO	1.6	5.0	1.98	2.01	1.57	-	-	-

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	Formaldehyde CH ₂ O	0.0014		0.051	0.0010	0.0010	0.0010	-	-	-
	Hydrocarbons C ₁₂ -C ₁₉	0.099		1	0.101	0.130	0.130	-	-	-
	Hydrogen sulfide, H ₂ S	n/d		0.008	n/d	n/d	n/d	-	-	-
April, point 1 From May to ACP area	Inorganic dust 70-20%	0.0401		0.3	No work was carried out			0.0300	-	-
	Suspension	0.0292		0.3				-	0.0365	0.0256
	Nitrogen dioxide NO ₂	n/d		0.2				0.0254	0.0235	0.0242
	Sulfur dioxide SO ₂	1.6		0.5				0.0	0.0613	0.0489
	Carbonaceous oxide CO	0.0012		5.0				2.21	1.8	1.21
	Formaldehyde CH ₂ O	0.2		0.051				0.0011	0.0020	0.0031
	Hydrocarbons C ₁₂ -C ₁₉	n/d		1				0.103	0.209	0.219
	Hydrogen sulfide, H ₂ S	0.0401		0.008				0.0	n/d	n/d
April, point 2 From May to CBP area	Inorganic dust 70-20%	Measurment was not planed		0.3	No work was carried out			0.0301	-	-
	Suspension			0.3				-	0.0411	0.0315
	Nitrogen dioxide NO ₂			0.2				0.0250	0.0251	0.0256
	Sulphur dioxide SO ₂			0.5				0.0	0.0613	0.0517
	Carbonaceous oxide CO			5.0				1.98	2.0	2.4
	Formaldehyde CH ₂ O			0.051				0.0010	0.0026	0.0045
	Hydrocarbons C ₁₂ -C ₁₉			1				0.101	0.213	0.226
	Hydrogen sulfide, H ₂ S			0.008				0.0	0.0	0.0
	Inorganic dust 70-20%	0.071	0.079	0.3				0.038	0.0051	0.0215
	Nitrogen dioxide NO ₂	0.069	0.072	0.2				0.013	0.0021	0.0071
	Sulphur dioxide SO ₂	n/d	0	0.5				0.0	0.0082	0.0064

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(April, the measurement was carried out km 280 Baseline data observed in July, 2018 Right column) May and June km 275 –baseline data observed in April, 2018. Left column	Carbonaceous oxide CO	1.7	1.4	5.0	No work was carried out		2.1	1.7
	Formaldehyde CH ₂ O	0.0013	0.0015	0.051		0.004	0.004	0.009
	Hydrocarbons C ₁₂ -C ₁₉	0.13	0.3	1		0.022	0.0031	0.0361
	Benzene, C ₆ H ₆	0.074	0.084	0.3		0.028	0.0039	0.0047
	Xylene C ₈ H ₁₀	0.090	0.096	0.2		0.026	0.0047	0.0053
	Methylbenzene C ₅ H ₆ -CH ₃	0.2	0.2	0.6		0.121	0.0026	0.0034
	Hydrogen sulfide, H ₂ S	n/d	n/d	0.008		0.0	0.0	n/d
(April, the measurement was carried out at 290 km, baseline measurements were carried out in July 2018, right column) May and June km 285 baseline measurements were carried out in April 2018, left column	Inorganic dust 70-20%	0.069	0.077	0.3	No work was carried out	0.042	0.0052	0.0156
	Nitrogen dioxide NO ₂	0.067	0.071	0.2		0.009	0.0019	0.0026
	Sulphur dioxide SO ₂	n/d	0	0.5		0.0	0.0	n/d
	Carbonaceous oxide CO	1.6	1.6	5.0		3.7	2.0	2.3
	Formaldehyde CH ₂ O	0.0012	0.011	0.051		0.003	0.009	0.0011
	Hydrocarbons C ₁₂ -C ₁₉	0.12	0.17	1		0.018	0.0036	0.0026
	Benzene, C ₆ H ₆	0.072	0.081	0.3		0.026	0.0028	0.0034
	Xylene C ₈ H ₁₀	0.088	0.1	0.2		0.023	0.0041	0.0057
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.3	0.6		0.120	0.0029	0.0217
	Hydrogen sulfide, H ₂ S	n/d	0	0.008		0.0	0.0	n/d
km 300	Inorganic dust 70-20%	0.067		0.3		0.045	0.041	0.0264
	Nitrogen dioxide NO ₂	0.068		0.2		0.015	0.018	0.045
	Sulphur dioxide SO ₂	n/d		0.5		0.0	0.0	0.0031
	Carbonaceous oxide CO	1.6		5.0		2.7	2.3	1.6
	Formaldehyde CH ₂ O	0.0013		0.051		0.003	0.006	0.0014

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	Hydrocarbons C ₁₂ -C ₁₉	0.12	1	No work was carried out	0.019	0.020	0.037
	Benzene, C ₆ H ₆	0.073	0.3		0.030	0.032	0.041
	Xylene C ₈ H ₁₀	0.089	0.2		0.024	0.021	0.049
	Methylbenzene C ₅ H ₆ -CH ₃	0.2	0.6		0.123	0.045	0.053
	Hydrogen sulfide, H ₂ S	n/d	0.008		0.0	0.0	n/d
km 310	Inorganic dust 70-20%	0.068	0.3	No work was carried out during these periods		0.0043	0.0361
	Nitrogen dioxide NO ₂	0.069	0.2			0.0047	0.0052
	Sulphur dioxide SO ₂	n/d	0.5			0.0081	0.0090
	Carbonaceous oxide CO	1.6	5.0			2.4	2.1
	Formaldehyde CH ₂ O	0.0012	0.051			0.0010	0.0016
	Hydrocarbons C ₁₂ -C ₁₉	0.13	1			0.0023	0.0178
	Benzene, C ₆ H ₆	0.074	0.3			0.0040	0.0038
	Xylene C ₈ H ₁₀	0.088	0.2			0.0061	0.0081
	Methylbenzene C ₅ H ₆ -CH ₃	0.2	0.6			0.0049	0.0073
	Hydrogen sulfide, H ₂ S	n/d	0.008			0.0	n/d
km 320	Inorganic dust 70-20%	PB	0.3	no work was carried out during these periods		0.0054	0.0253
	Nitrogen dioxide NO ₂	0.071	0.2			0.0073	0.0069
	Sulphur dioxide SO ₂	n/d	0.5			0.0029	0.0042
	Carbonaceous oxide CO	1.7	5.0			1.6	1.8
	Formaldehyde CH ₂ O	0.0013	0.051			0.0021	0.0036
	Hydrocarbons C ₁₂ -C ₁₉	0.13	1			0.0019	0.0189
	Benzene, C ₆ H ₆	0.075	0.3			0.0038	0.0043
	Xylene C ₈ H ₁₀	0.089	0.2			0.0065	0.0069
	Methylbenzene C ₅ H ₆ -CH ₃	0.3	0.6			0.0044	0.0057
	Hydrogen sulfide, H ₂ S	n/d	0.008			0.0	n/d

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PB Nogaity 100 m windward Baseline data observed in August, 2018	Inorganic dust 70-20%	0.080	0.3	0.0300	0.0301	0.024	no work was carried out during these periods
	Nitrogen dioxide NO ₂	0.076	0.2	0.0254	0.0246	0.0154	
	Sulfur dioxide SO ₂	n/d	0.5	n/d	n/d	n/d	
	Carbonaceous oxide CO	2.1	5.0	2.21	2.18	1.45	
	Formaldehyde CH ₂ O	0.0013	0.051	0.0011	0.0001	0.0001	
	Hydrocarbons C ₁₂ -C ₁₉	0.14	1	0.103	0.102	0.124	
	Hydrogen sulfide, H ₂ S	n/d	0.008	n/d	n/d	n/d	
PB Nogaity 100 m leeward Baseline data observed in August, 2018	Inorganic dust 70-20%	0.077	0.3	0.0301	0.0303	0.020	No work was carried out during these periods
	Nitrogen dioxide NO ₂	0.068	0.2	0.0250	0.0244	0.0144	
	Sulphur dioxide SO ₂	n/d	0.5	n/d	n/d	n/d	
	Carbonaceous oxide CO	2.1	5.0	1.98	2.01	1.57	
	Formaldehyde CH ₂ O	0.0014	0.051	0.0010	0.0010	0.0010	
	Hydrocarbons C ₁₂ -C ₁₉	0.15	1	0.101	0.130	0.130	
	Hydrogen sulfide, H ₂ S	n/d	0.008	n/d	n/d	n/d	

Report on the training "Environmental and social protection measures»

Date and location: 22.05.2019, conference room of Lot 3 office, Nogaity

Participants: 11 participants from Lot 1,2 and 3. List is attached

Agenda: attached

Training topics: Standards and regulations, ensuring compliance with standards and documenting information.

Coaches: Sara, Zhenisgul (CSC)

Training program

11.00 Introduction. Safety, security and protective measures

11.15-11.45 Session 1. Safety and security standards and regulations

11.45 - 12.15 Session 2. Organization of work on compliance with standards 12.15-13.15 lunch

13.15 - 14.00 Session 3. documentation of works, preparation of analytical reports.

14.00 Session 4. Feedback, questions/answers

On the process:

Room was provided by Lot 3, in Todini office Nogaity base camp. The room is bright and comfortable. Participants were provided with water, lunch, coffee breaks. The trainers decided to hold sessions on environmental and social protection measures in full because it is necessary for all Contractor's personnel to bring information on environmental education, and sessions on Health and Safety, and road Safety to be held in a narrow format only with the participation of specialists in these sphere. So, after the sessions on social and environmental protection measures, environmental specialists from all Lots left the hall and went to inspect the site, with the permission of the Lot 3 specialist, for the execution of previously issued verbal instructions for elimination.

Content-wise:

The presentation was provided for the sessions. We held an interactive General discussion. After reviewing the socio-environmental standards, the coach presented photos from the sites to work in a General group to identify non-conformities and identify the necessary measures to mitigate/prevent negative impacts on the environment and on humans. Then we conducted the final part of the questions and answers and feedback from the participants and the coach.

Upon completion of the training, the environmental specialists went to the base camp.

Photos:



Photo 1. in the General group exercise to identify violations of the proposed photo



Photo 2. During the discussion of risks and their consequences

Summary data from environmental monitoring checklists
 Environmental monitoring checklist

Lot 3

Checklist for Lot 3 site inspection		
Date of site visit: 4.03.2019, 14.03.2019, 18.04.2019, 08.05.2019 16.05.2019, 7.06.2019	Engineer's representative: Imbarova Sara Temirbek Zhenisgul Contractor's representative: Hassan Kurais Nurgul, SMS environmental specialist	Engineer's ref.No. Contractor's ref.No.
Weather Conditions: by forecast		
Work currently in progress:		
The problems related to environment	Possible reasons	Proposed measures to reduce the risk
Increased dustiness on the roads	The dust suppression schedule is not kept, the overload of dump trucks, the lack of water resources.	Control over the schedule of dust suppression, control over the work of the excavator
Violation of waste removal schedule	Insufficient number of containers, not taken into account the increase in the number of people in base camp	Revision of Waste removal schedule Installation of additional number of containers
Stationary gas station does not comply with Technical regulations (TR)	Did not take into account TR	Bring everything in line with the requirements of TR

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
Contractor's base camp						
1	Status of septic tanks					Septic tanks are cleaned daily
2	All wastewater is sent to septic tanks or service water tanks	✓				Control by the environmental specialist
3	All the dangerous liquids stored in a prescribed place on an impermeable base with effluent collection		✓	✓		In progress
4	Solid hazardous materials are stored in a safe place in the work areas	✓				Organize concreted special areas, install fencing to store hazardous materials in accordance with the requirements.
5	Drains accumulate in the drainage system and are disposed of by the Contractor	✓				According to the EMP

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
6	All vehicles entering and leaving the base camp are subject to control	✓				Mechanic and OHS inspector
7	Local communities and organizations are informed of the construction schedule and any noise-raising activities on a regular basis through workers and other activities		✓		✓	
8	Open containers for storage of materials are covered with canopies	✓				Containers are installed with covers
9	Open burning is prohibited		✓	✓		Subcontractor burns solid waste from the kitchen
10	Fire Fighting equipment <ul style="list-style-type: none"> ▪ Sand bucket and shovel ▪ Foam extinguisher ▪ Protective coating in canteen 	✓				Log of fire extinguishers replacement
11	Access of other people to the town is prohibited by the installation of fencing and security organizing	✓				At the gate is the checkpoint, the contract with the security company
12	All employees are provided with personal protective equipment (PPE)	✓				
13	Smoking is prohibited except in Smoking rooms	✓				Repairing territory has a designated Smoking area.
14	Relevant road signs and warning signs on the site and in hazardous areas		✓	✓		Places for installation of signs are defined
15	Drinking water is provided to all employees from commercial and licensed sources.	✓				Needs assessment is carried out regularly
16	Protective clothes of all employees are washed on a daily basis	✓				Protective clothes of employees are washed as necessary According to sanitary and hygienic norms washing at least 2 times a week
17	All employees are provided with three meals a day	✓				
18	Canteen with sanitary conditions in base camp	✓				Sanitary days are held
19	First-aid posts and first-aid kit in base camp and in the working areas	✓				First aid kits are replenished as needed. The records of requests for medical care is kept
20	Health of all employees is under control of the doctor in base camp, and the corresponding services are provided, monthly medical examinations are also carried out	✓				In the medical point installed video surveillance for the daily control of the workers and maintained the daily log of the medical examination (Alcotest, pressure, etc.).

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
21	The whole area is cleared, there is no excess waste, except for designated areas for waste disposal	✓				Base camp territory is cleaned daily from the excess of solid waste, and stored in the designated area.
22	Providing a place for rest in base camp	✓				There are rest rooms
23	Child labour (below 15 years)		✓			Not applicable on site
Production site						
1	The bitumen and chemical materials warehouse is located away from the watercourse and the dam walls are impenetrable and can contain 110% of the tank volume	✓				
2	Liquid waste from the asphalt plant are kept in the established tank and they emptied specialised suction equipment ≤MTTSTH≥ Lyman	✓				Export by a specialized company for disposal according to the contract
3	Bitumen is stored in a specialised place and bent in concrete to a volume of 110%	✓				Bitumen storage is concreted Used periodically
4	Solid waste from the asphalt plant is stored at the designated places and disposed of in accordance with approved procedures	✓				With the periodic export for disposal on landfill
5	The area of the plant is engraved for the purpose of reducing dust	✓				
6	The area of the plant is watered for the purpose of reducing dust	✓				According to the schedule of dust control
7	The plant cannot discharge wastewater into any watercourse; impervious concrete pools will be built to receive such water	✓				
8	All workers of asphalt, concrete plant and crusher are provided with protective masks	✓				
9	All workers of asphalt, concrete plant and crusher use protective masks	✓				
10	Sands and fractions for concrete and asphalt are stored in a wet and covered place	✓				
11	In asphalt, concrete plants and crushers there are fire-Figurehting equipment		✓	✓		Fully understaffed
12	Plant or equipment causing high levels of vibration are built properly, maintained and managed accordingly	✓				In accordance with technical regulations

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
13	River/canal fenced for the protection of water resources		✓		✓	no need
GAS STATION						
1	Refueling will be strictly controlled and allowed only at the gas station and workshop	✓				
2	Space for storage tanks of fuel protected, and they are impermeable, tank cover closed	✓				According to the technical regulations
3	Gas station equipped with fire-Figurehting equipment to be checked weekly		✓	✓		Check schedule not met
4	The gas station has warning signs	✓		✓		
5	The gas station is equipped with a special basket for excess waste		✓	✓		Purchase of necessary containers
Contractor's workshop and car wash						
1	Liquid hazardous materials are stored in the designated place in workshop	✓				The site is concreted
2	Solid hazardous materials are stored in the designated place in the workshop	✓				
3	There are special containers for the collection of used petroleum products and hydraulic fluids	✓				Provided in places of possible spill
4	The used petroleum products are collected in a concreted canister with a volume of up to 110% and the canisters are cleaned in accordance with the approved procedures	✓				
5	The workshop is equipped with a drainage system	✓				
6	Each transport is inspected and maintained on an ongoing basis	✓				Chief mechanic under the supervision of a OHS specialist
7	All construction equipment complies with European Standards and is equipped with modern noise suppression equipment		✓	✓		
8	The noise suppression equipment of all equipment is checked and maintained in accordance with the approved procedures		✓	✓		Not available
9	All workshop workers are provided with welding equipment and personal protective equipment	✓				
10	All technical water is collected in the concreted tank and the tank is cleaned					No car wash

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	in accordance with the approved procedures					
The Project Road						
1	All the roads targeted for construction work watered with the water truck	✓		✓		Increase the intensity of watering and the number of water carriers, special control of areas locating near settlements
2	On the project road in appropriate places there are flags for the passage of cattle, sheep and other animals		✓		✓	It is recommended to install warning signs in frequently used areas for cattle
3	Sections of culverts and bridges, equipped with safety tapes and twisting signs		✓		✓	
4	Fencing and access control services are installed at all workplaces where it is necessary	✓				
5	Storage of waste of any type, as well as Parking of transports is not allowed at a distance of 100 m from any flow (including drainage or irrigation facilities)	✓				
6	Work areas and hazardous areas are equipped with all relevant road signs and warning signs	✓				
7	Construction machinery and plants are properly maintained to reduce gas emissions	✓				According to the schedule of PEM are monitoring emissions
8	Noise control measures in special facilities	✓				PPE provided: ear plugs Work time limit
Quarries						
1	Quarries are provided with temporary drainage	✓				
2	200 m from the nearest settlements, all construction work stopped from 22: 00 to 6: 00 a.m.	✓				
3	Crushed stone of all size are extracted only from approved quarries	✓				
4	Extraction of crushed stone fraction is carried out in 100 m from the river or watercourse					No fact
5	Stack does not exceed 3 m in height	✓				
6	All open-body vehicles are used for the transportation of materials with possible dust formation, designed for	✓				The control of the senior mechanic

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	these purposes with well-chosen folding bodies					
7	During the construction works the volume of noise is limited according to national standards	✓				Schedule of works on objects with high noise and vibration
8	Materials with possible dust formation do not load exceeding the level of folding bodies and close with a clean tarpaulin	✓				
9	All vehicles, production equipment and devices comply with Euro exhaust emission standards		✓			Equipment rented from villagers does not meet the standards
10	All temporary acquired lands are restored					Upon completion of construction works
11	All material residues and contaminated land are collected and disposed of in accordance with approved procedures	✓				
12	During the delivering and using materials, it is watering	✓				Control by the environmental specialist
13	Any direct sites damaged as a result of a dump of soil, are restored to an original look	✓				
14	The riverbanks are protected from the contractor's materials storages or temporary stacks	✓				
15	The negative effects or disruption due to construction work is monitored, with an acceptable level in accordance with the standards	✓				Control by the ecologist and project Manager
16	Access road to quarries, quarries, borrow pits and traffic conditions are serviced according to the approved standards		✓		✓	Dust suppression is not provided, there is no flagman
17	Draining and draining water, avoiding flooding or causing damage to other works or services causing erosion	✓				
Flora and Fauna						
1	Trees and shrubs that are outside the construction site, but within the road reserve, are usually protected from damage					No greenery
2	None of the ancient trees were cut down during the construction works					On the territory of the construction site there are no ancient plantations
3	Cutting is not carried out without the prior permission of the relevant local authorities					Such works are not provided
4	Trees and shrubs are cut down and removed only if they interfere with the					No requirement

1st Semi-Annual Environmental Monitoring Report 2019
 CAREC corridors 1 and 6 connector "Aktobe–Makat" road reconstruction project (section 160–330)

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	necessary temporary or permanent work					
5	Construction work is not carried out on the construction sites of the bridge during the harvest (specify Yes or No construction work in the transition, specify the date)		✓			The construction of bridges does not affect the cultivation and harvesting, as they are located in remote places.
6	Construction on river sections occurs only during low flow to minimize pollution	✓				



**The practical part of the Contractor's training, Lot 1
Isolation of contaminated soil with a shovel. Base "Zhaksymay»**



Pile driving on SP 05 on Shieli bridge, Lot 1, Km 182+306



Anti flood measures at Km 204



Dismantling of the bridge structure at Km 182+306 for subsequent removal to a special area



Production base Lot 2 Karaulkeldy Km 242+00



In the framework of the flood protection works planned cleanup culvert, Lot of 2 at Km 252



meeting at Lot 2 chaired by the head of the PMC N. Kyrykbaev on the results of the environmental pre-audit of the national consultant of ADB



Concrete placement under the stationary gas stations and security measures at the Production base Lot 3 Nogait



Marking of waste containers on Lot 3 PB Nogaity, April
FLM tanks, Lot 3 Nogaity village



FLM tanks, Lot 3 Nogaity village



Filthiness in base cap of Lot 3, Nogaity, April



After cleaning-up the territory of Lot 3 base camp, Nogaity, April



Unproper condition of the Production base terrotory on Lot 1, May



Production base territory after waste fly-tipping removal and soil filling, May



Dust concentration on Lot 3 section



During bridge works, Nogaity river, CH 140+29



Safety road signs on sections of Kenzhaly river, Lot 1



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Ref. ATB1,3-1260
 Date: 20.03.2019

To: Todini Costruzioni Generali S.p.A
 Attn: Mr. Baris Arslan

To: Todini Costruzioni Generali S.p.A
 Attn: Mr. M. Budan

Cc: Committee for Roads, MIID
 Attn: Mr. Barmakov S.

Cc: AktobeZholLaboratory
 Attn: Mr. Karimbaev K.

Cc: PMC "NC "KazAvtoZhol"
 Attn: Mr. Krykbaev N.

Project: CAREC Corridors 1 and 6 Connector Road (Aktobe-Makat) Reconstruction Project
 Loan No. 3416-KAZ
 Contract: No. 001-ADB/CW-2017, 003-ADB/CW-2017

Subject: Non-conformances as result of Engineer's environmental and social audit

Dear Sir,

This notice to correct is given in accordance with clause 15.1. GCC and as a result of environmental and social audit conducted by the Engineer from 4 to 12 March. You should bring all identified non-conformances into proper condition within the specified time frame. The environmental specialist on Lot 1 and Lot 3 should submit a written report about elimination of non-conformances with detailed description and attachment of photographs. Otherwise, the Engineer will be forced to remove responsible person from the Site, in particular site manager and environmental specialist due to ignorance of the Engineer's Instructions.

Lot 1

Issue description	Correction action	No. of notice to correct	Level of non-conformity	Due date	Priority
Place for collection of solid waste according to the requirements and norms of SanPin is not arranged, removal of solid waste is not being done, but is incinerated in a container	revise schedule for removal of solid waste, put in proper condition territory of the Engineer's office by arrangement removal of accumulated household waste, arrange temporary storage facilities for solid waste, ensure fencing of the territory and improve Engineer's Office	N2	Essential	25.03.2019	High

Lot 3

In base camp, places for collection and storage of solid domestic waste do not meet requirements and standards (photo 1)	bring in proper condition places of collection of solid waste, all containers to be marked	N7	Essential	25.03.2019	High
Stationary gas station	bring inot condition	N8	Essential	25.03.2019	High



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on the territory of the base camp is open for unauthorized access, site under the gas station is not concreted, there is a persistent smell of fuels and lubricants, there are no fire safety equipment. (photo 2)	according to the camp management plans, to concrete ground under gas station, install safety signs, and bring into compliance with regulations for stationary gas stations				
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Photo 1. Storage of solid waste in the Nogayty base camp Lot 3



Photo 2. Stationary gas station on the territory of the base camp Nogayty, Lot 3

Yours sincerely,

Kim Jin Woo
 Supervision Consultant Team Leader





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№ АТБ1,3-1260
Дата: 20.03.2019

Кому: Тодии Коструциони Дженерали С.п.А
Вним: Г-на Барыша Арслана

Кому: Тодии Коструциони Дженерали С.п.А
Вним: Г-на М. Будана

Копия: Комитет автомобильных дорог, МИИР
Вним: Г-на Бармакова С.

Копия: «АктобеЖолЛаборатория»
Вним: Г-на Каримбаева К.

Копия: КУП – НК «Казавтожол»
Вним: Г-на Крыкбаева Н.

Проект: Проект реконструкции дороги Актобе – Макат, соединяющей коридоры ЦАРЭС 1 и 6
Заём № 3416-KAZ
Контракт № 001-ADB/CW-2017, 003-ADB/CW-2017

Тема: Несоответствия по результатам экологического и социального аудита Инженера

Уважаемый господин,

Это уведомление об исправлении дано в соответствии с подпунктом 15.1. ОУК и по результатам экологического и социального аудита проведенного Инженером в период с 4 по 12 марта. Вам надлежит привести все выявленные несоответствия в надлежащее состояние в указанные сроки. Экологу на участках Лот 1 и Лот 3 следует об устранении несоответствий направить письменный отчет с подробным описанием и приложением фотографий. В противном случае Инженер будет вынужден удалить ответственное лицо с Участка, в особенности начальника участка и Эколога за игнорирование Указаний Инженера.

Лот 1

Описание вопроса	Корректирующее действие	№ увед. о несоот.	Уровень несоответствия	Дата выполнения	Приоритет
не организовано место сбора ТБО согласно требованиям и нормам СанПин, вывоз ТБО не производится, а сжигается в контейнере	пересмотреть график вывоза ТБО, привести в надлежащее состояние территорию офиса Инженера организовав вывоз скопившегося бытового мусора, организовать места временного складирования ТБО, обеспечить ограждение территории и благоустройство офиса Инженера	N2	Существенный	25.03.2019	Высокий



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Лот 3

В вахтовом городке места сбора и хранения ТБО не соответствуют требованиям и нормам (фото 1)	привести в надлежащее состояние места сбора ТБО, все контейнеры подписать	N7	Существенный	25.03.2019	Высокий
На стационарной АЗС на территории вахтового городка открыт для постороннего доступа, площадка под АЗС не бетонирована, присутствует устойчивый запах ГСМ, отсутствуют средства противопожарной безопасности. (фото 2)	привести в соответствие планам управления вахтовым городком, площадку под АЗС бетонировать, установить знаки безопасности, привести в соответствие техническому регламенту стационарных АЗС	N8	Существенный	25.03.2019	Высокий



Фото 1. Место складирования ТБО в вахтовом городке Ногайты Лот 3



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Фото 2. Стационарная АЗС на территории вахтового городка Ногайты , Лот 3

С уважением,

Ким Джин Ву
Руководитель Инженерной Группы по Надзору за Строительством