Environmental Monitoring Report

Project Number: 48424-002
March 2020

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 Investments and Development, Republic of Kazakhstan and the Asian Development Bank.

Semi-Annual Environmental Monitoring Report

Project No.: 3416-KAZ
Reporting Period: July-December 2019

REPUBLIC OF KAZAKHSTAN: CAREC CORRIDORS 1 AND 6 CONNECTOR "AKTOBE-MAKAT" ROAD RECONSTRUCTION PROJECT (SECTION KM160-330)

Funded by ASIAN DEVELOPMENT BANK

Prepared by DONGSUNG ENGINEERING CJ., LTD / ZS ENGINEERING Construction Supervision Consultant Seoul, Korea / Astana, Kazakhstan for the Committee of Roads of the Ministry of Industry and Infrastructure Development of the Republic of Kazakhstan and the Asian Development Bank

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

CONTENT

ABBREVIATIONS

RK	-	Republic of Kazakhstan
MIID	-	Ministry of Industry and Infrastructure Development
CoR	-	Committee of Roads
KAZh	-	JSC “NC “KazAvtoZhol”
ADB	-	Asian Development Bank
CAREC	-	Central Asian Regional Economic Cooperation
PMC	-	Project Manager Consultant
CSC	-	Construction Supervision Consultant
RSE	-	Republic State Enterprise
ECP	-	Environmental Control Program
EMP		Environmental Management Plan
PEM	-	Plan of Environmental Monitoring
EMP	-	Environmental Management Plan
MPC	-	Maximum Permissible Concentration
MPL	-	Maximum Permissible Level
SAEMR		Semi-annual Environmental Monitoring Report
SHS	-	Sanitary-Hygienic Standard
SSEMP	-	Site-specific environmental management plan
ND	-	Normative Document
SPZ	-	Sanitary Protection Zone
SZ	-	Settlement Zone

1 INTRODUCTION

1.1 Preamble

1. This report is a semi-annual review of environmental monitoring under CAREC corridors 1 and 6 connector “Aktobe-Makat” road reconstruction project (section 160-330, Lot 1-3). The report is the fourth report from the beginning of the project for the second half of 2019.

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. In the previous report for the first half of 2019, it was noted about forced measure from the Employer to conclude an additional agreement for Lot 2 dated April 29, 2019 which indicates measures to build Contractor’s potential in order to bring the planned indicators of physical progress. In June, the Contractor demonstrated certain indicators, showing reduction in the delay of planned work on the project. This acceleration of work was also subsequently in the second half of this year. Concern about the pace of work in this area still remain. But 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 and was built in 1970-1980. The length of the section is 459 km, basically road has category III/IV, and 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 also 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.

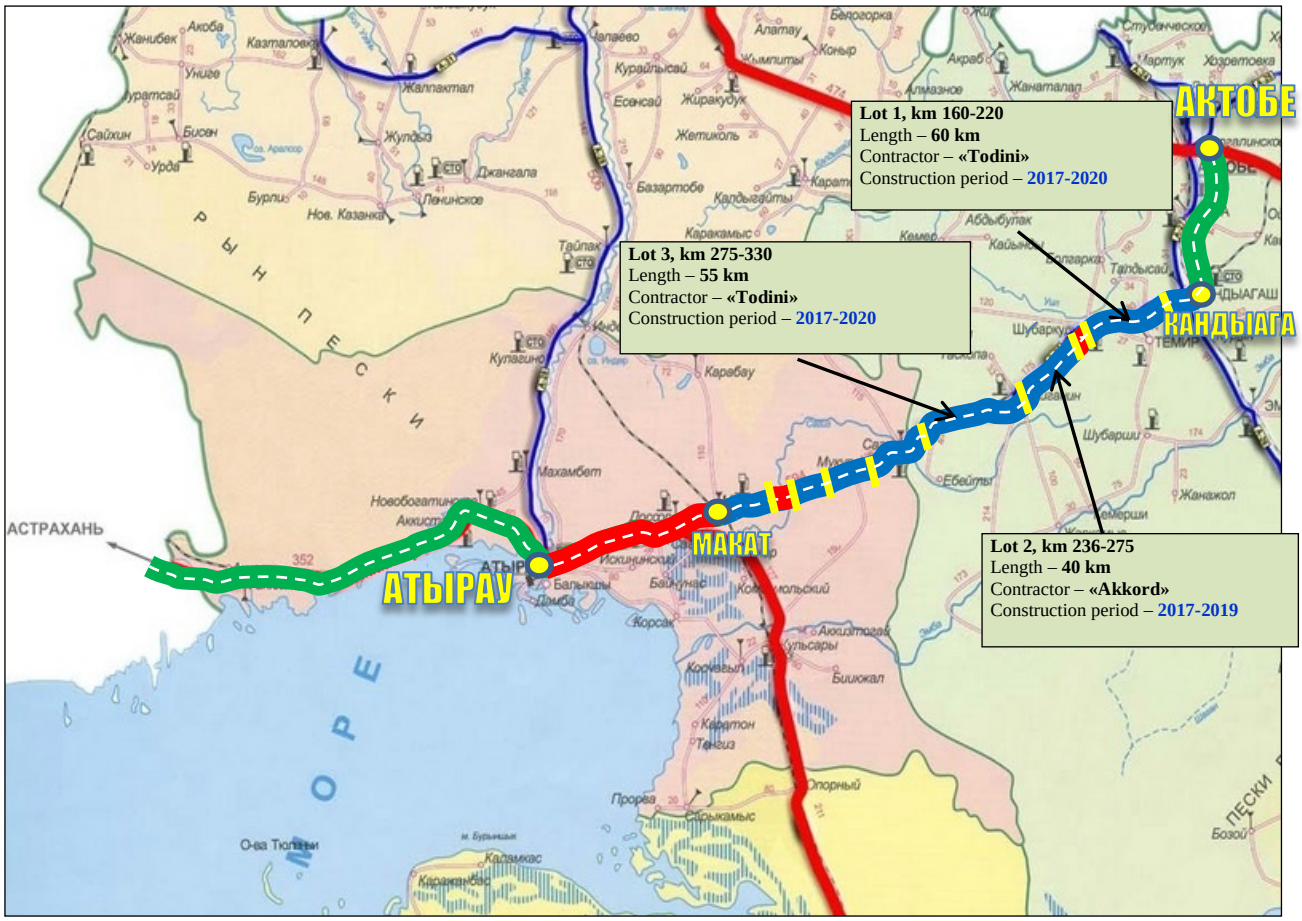

Figure 1. Location of project road

6. The project is financed by the Asian Development Bank (ADB) in the framework of 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 which 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).

Table№ 1. Main characteristics of the project

Project components	Lot 1	Lot 2	Lot 3
Contractor	JSC “Todini Costruzioni Generali S.p.A.” (Italy).	OJSC “ICICAkkord” (Azerbaijan).	JSC “Todini Costruzioni Generali S.p.A.” (Italy).
Subcontractor approved by the Engineer	Seni Medas Stroy	-	Seni Medas Stroy
Location	km 160-220	km 236-275	km 275-330
Length	60,8 km	40,1 km	55,0 km
Road category	II category		
Pavement	Highly Porous Asphalt Concrete Coarse-Grained Porous Asphalt Concrete SMA-20		
Number of lanes	1/1		
Lane width Shoulder width	3,75 meters 3,75 meters		
Structures:			
Overpass	-	1	-
RMD	1		1
Bridge	3	1	3
Others:			
Culverts	17	20	18
Box culverts	14	13	4
Rest areas	5	2	4
Bus shelters	6	8	2
Design standards: Designed speed Width of the right of way	120 km/h 100 meters		

10. Lot 1: Km160 - km220 (Shubarkuduk - Karauylkeldy villages): This section includes reconstruction of the road from category III to category II with a total length of 60, 833 km and construction of one bypass. A detour of Shubarkuduk (km 172+600 to km 181+100) will take place along the new rout. Figure 2 below shows the layout of Lot 1.

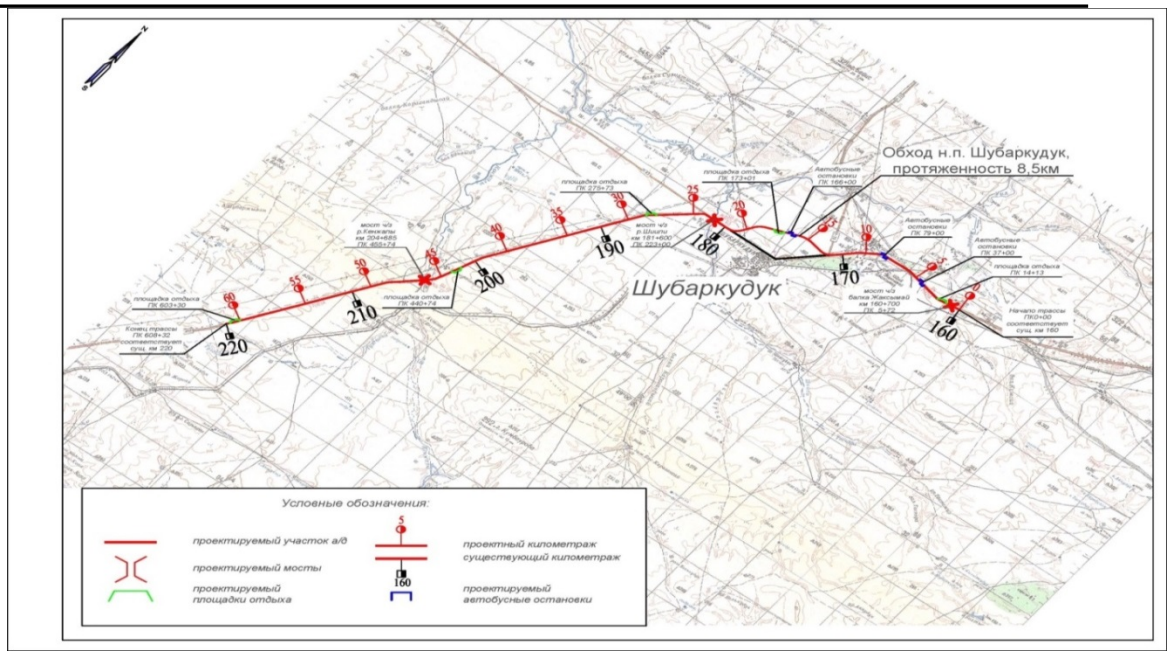

Figure 2. Lot 1 section scheme

11. Lot 2: km 236 - km 275 (Karauylkeldy 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 Karauylkeldy (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 of the lot 2.

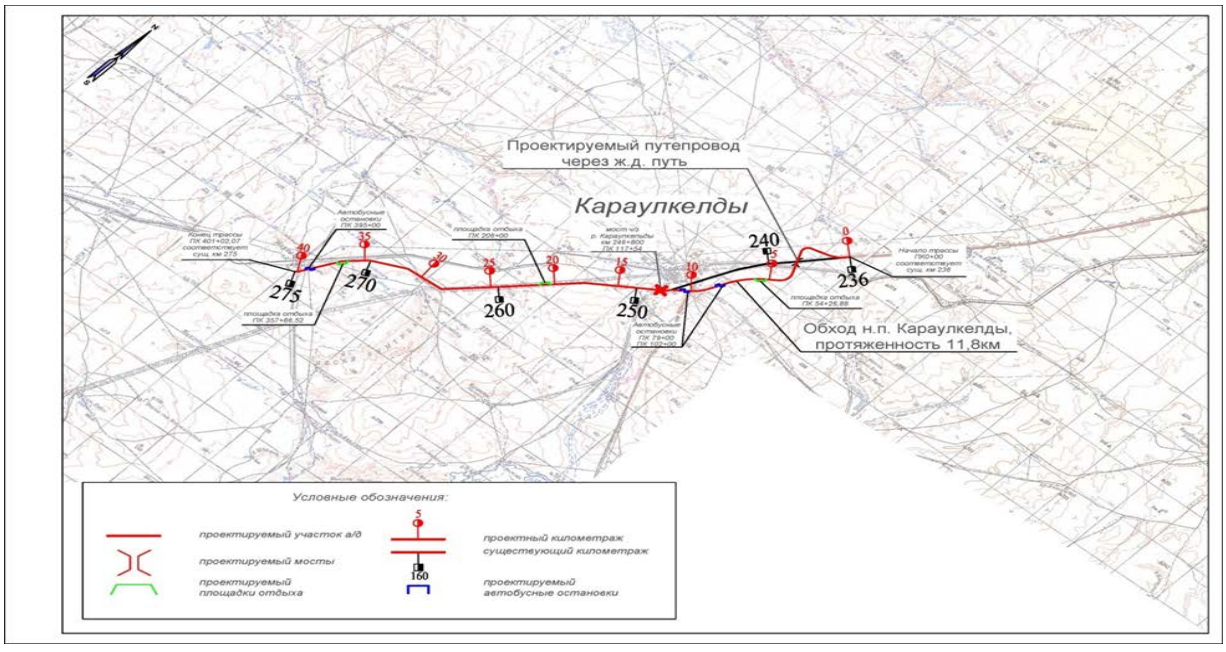

Figure 3. Lot 2 section scheme.

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. Lot 3 section scheme.

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 “AktobeZhol Laboratory”. 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 Protection Measures

Organization	Representative	Contact data
ADB HQ Project department/group	Nurlan Dzhenchuraev	ndjenchuraev@adb.org
ADB office in RK	ADB RETA Consultant Malika Babadzhanova	mbabadjanova1.consultant@adb.org
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 "	Natalya Novosadova Environmental and safeguards measures specialist	+7 702 268 98 08 aktobe_kns1@mail.ru
JSC "Todini Kostruktsioni 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	Completion date

JSC “Todini Costruzioni Generali S.p.A.” (Italy)	№ 001-ADB/CW-2017	160-220	60	07.09.2017	28.11.2018	July 2020 (972 days)
OJSC “ICIC Akkord” (Azerbaijan)	№ 002-ADB/CW-2017	236 -275	39	16.08.2017	28.11.2017	January 2020 (790 days)
JSC “Todini Costruzioni Generali S.p.A.” (Italy)	№ 003-ADB/CW-2017	275-330	55	07.09.2017	28.11.2018	June 2020 (942 days)

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

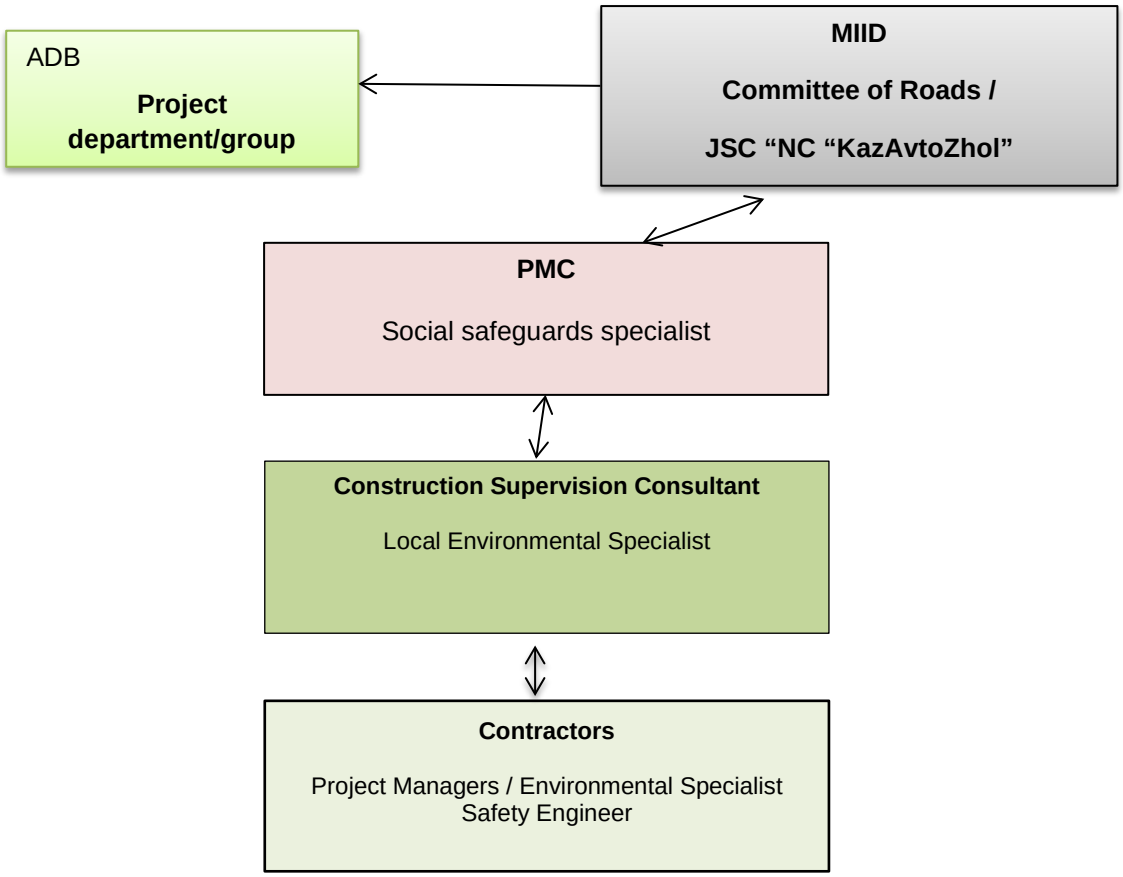

Figure 5. Organization chart of project coordination

2.3 Project Activities During Current Reporting Period

18. The following types of work were performed on Lot 1 during the reporting period: binder course Km 168 + 490-204 + 780,base course Km 168 + 360- 211 + 200, laying the bottom layer of the base at Km 170+ 030-211 + 510, geotextile Km 173 + 080-212 + 800, construction of subgrade Km 181 + 500-220 + 00, culverts installation at Km 208 + 906, 210 + 485, 214 + 024, 214+ 962, 215 + 805, 218 + 835, Bridges and overpasses on Km 160 + 541, 182 + 306, 205 + 586.

19. During the reporting period Lot 1, by status as of December 30, employs 281 people on the project. The subcontracting organization has 24 people.

20. Table 4 below provides data on the status of construction work for the reporting period on Lot 1.

Table 4. 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 I half of 2019	% of execution	Balance
Todini lot 1 (km 160 -220)	cost	Mln. tg	11 396,3	2 648,69	4228,69	60	4818,92
	Wearing course	Km	60,8	7,41	36,12	67,61%	17,3
	Binder course	Km	60,8	8,03	41,93	79,36	10,9
	Base course	Km	60,8	9,96	40,53	79,68	10,33
	additional layer (geotextile)	Km	60	12,62	39,32	81,86	8,71
	Subgrade	thou m^3	1 789,587	706,14	1029,2	95	54,25
	Culvert	pcs	34	16	16	2	2
	bridges and overpass	pcs	3	0,85	0,75	75	25
	RMD	pcs	1	0,26	0,25	70	30
	% execution of construction works	**%**	**100**	**23,22**	**21,78**	**65**	**35**

21. The following works were executed on the Lot 2 section during reporting period: procurement of materials: Crushed stone -136 558 m^3, concrete products -191.3 m^3, Bitumen - 5320 tons. Excavation work on the site from Km 236 to Km 275, base layer of C4 (mix of crushed stone and sand) in the sections PK 15 + 00 - 23 + 80, PK 39 + 00 - 68 + 00, PK 72 + 90 - 74 + 30 , PK114 + 40 - 117 + 20, Km 246 + 68 - 246.84, Km 247 + 84 - 247 + 90, Km 257 + 43 - 275 + 00. Asphalt concrete works (highly porous and porous) on PK 17 + 80 - 23 + 70, PK 40 + 00 - 92 + 60, PK 114 + 60 - 117 + 20, KM 246 + 68 - 248 + 00, KM 257 + 42 - 275 +00

22. On the Overpass Km 238 + 75, work was carried out on the installation of columns of Support No. 3, installation of crossbars, installation of truss platforms on all supports, slabs on all spans, installation of back walls on Support No. 1,4, construction of cones on Support No. 1,4, cone strengthening on Support No. 4 and partially strengthening of the cone of the Support No. 1.

23. On the Bridge Km 246 + 65, installation of the crossbar on all supports, installation of sub-truss platforms on all supports, installation of back walls Support No. 1,4, installation of the deck slab on all spans and installation of approach slabs on Support No. 1,4, construction of asphalt concrete pavement in two layers. Installation of culverts and cattle passes 9 pcs.

24. During the reporting period, Lot 2, as of December 30, 429 people were mobilized. The subcontractor mobilized 203 people.

25. Table 5 below provides data on the status of construction work for the reporting period on Lot 2.

Table 5. 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 I half of 2019	% of execution	Balance
AKKORD Lot 2 (km 236-275)	cost	mln tg	8 012,31	1 176,039	4 658,213	72,82	27,18
	Wearing course	km	40,1	1,14	31,89	82,3	17,7
	Binder course	km	40,1	1,17	33,33	86	14
	Base course	km	40,1	2,14	32,75	87	13
	additional layer (Geotextile)	km	40,1	2,18	32,77	87,1	13
	Subgrade	thou m3	1 699,49	685,32	955,72	96,5	3,5
	Culvert	pcs	33	6	27	100	0
	bridges and overpass	pcs	2	0,48	1,29	88,8	11,2
	RMD	pcs	1	0	0	0	100
	% execution of construction works	**%**	**100**	**14,68**	**58,14**	**72,82**	**27,18**

26. The following types of construction work were carried out on Lot 3: base course Km 282 + 80-67 + 20, sub-base Km 314 + 50-46 + 90, additional layer (geotextile) Km 335 + 10-32 + 60, subgrade Km 275 + 200-490 + 50, installation of all culverts in the amount of 22 pieces was completed, work on bridges and overpasses on Km 289 + 029, Km 303 + 809 and Km 321 + 420. RMD construction works Km 302 + 00.

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

28. Table 6 below provides data on the status of construction work for the reporting period on Lot 3.

Table 6. 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 I half of 2019	% of execution	Balance
Todini lot 3 (km 275-330)	cost	mln tg	9 878,0	1 408,27	3215,128	46,77	53,23
	Wearing course	Km	55,142	0	26,72	48,46	51,54
	Binder course	km	55,142	3,40	25,18	51,83	48,17
	Base course	km	55,142	3,80	27,44	56,65	43,35
	additional layer (geotextile)	km	55,142	3,80	29,40	60,208	39,79
	Subgrade	thou m^3	1 293	604,00	630,22	95,45	4,55
	Culvert	pcs	22	11	9	100	0
	bridges and overpass	pcs	3	0,33	1,81	71,33	28,67
	RMD	pcs	1	0,26	0,22	48	52
	% execution of construction works	**%**	**100**	**14,25**	**32,52**	**46,77**	**53,23**

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

2.4 Description of Any Design Changes

30. During the reporting period in July Lot 1 submitted 2 requests for variation orders. First Variation Order No. 1 (VO1-001) for relocation of the communication lines at the rest area. On PK 14, by the recommendation of the cable owner of the local line KazakTelecom JSC, cable relocation was requested because this cost will be cheaper for the employer than the protective work. On PK 440 KazakTelecom TUSM-14 line protection and additional pipes. The second Variation Order No. 2 (VO1-002) for geotechnical investigation for bridge work as an additional scope of work and change of the piles length on the PK 455 + 82 bridge.
31. On Lot 2, in July, request for variation order was submitted for changing the scope of work on PK 350 + 12.80 related to the work with protection of the Beeline fiber-optic cable and installing additional pipes.
32. On Lot 3 in July, two Variation Orders were submitted for changing the scope of work related to the relocation and protection of communication lines. Variation Order No. 1 (VO3-002) on PK 260 for relocation/protection of communication lines at the rest area and Variation Order No. 2 (VO3-004) for Engineering and geotechnical investigation for bridge works (Zharly, Nogayty and Airyk) as additional scope of work associated with change of the piles length to 15 meters due to loose soil.

2.5 Description of Any Changes in Agreed Construction Methods

33. During the reporting period, there were no significant changes in agreed 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

34. At Lot 1 and Lot 3, international environmental specialist from the general contractor Hassan Kurais and local specialist Budanova Nurgul are constantly on the site. Lot 2, Anuar Embergenov works remotely from Aktobe.

35. 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.

36. Contractor's environmental specialists organize work for the Production Environmental Monitoring, procedure of soil and water sampling, measuring the pollution of air 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. On the Lot 1 site, monthly instrumental measurements were taken with exception of December due to the lack of construction work for this period. At Lot 2, instrumental measurements were carried out and reports were submitted for June, July and August. On Lot 3 instrumental measurements were carried out and reports for July, August, September and October were submitted. In November and December, instrumental measurements were not carried out due to the lack of construction work in these periods.

37. Lot 1, Lot 2 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. Contractors entered into agreements for instrumental measurements and preparation of reports on industrial environmental monitoring

38. 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, in particular, 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.

39. In addition to PEM 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.

40. Novosadova Natalya 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, EMP reports. On Lot 1, 5 monthly EMP reports are submitted, except for December, in which measurements were not taken due to the lack of construction work on the

site. Lot 2 submitted monthly EMP reports for July and August. Lot 3 EMP reports are submitted for July, August, September and October. In November and December, construction work was not carried out on the site, respectively, instrumental measurements were not carried out.

41. Together with the PMC environmental management expert conducted an site-specific environmental protection plans.

3.2 On-site audit (site inspections)

42. 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 7. 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**
22.08.2019	Dust suppression at the production base to increase the multiplicity. Eliminate the spontaneous storage of solid waste at the laboratory and in the area of the mechanical repair shop	23.08.2019	Recommendation: permission for the right to use subsurface resources for the extraction of common mineral resources in borrow pits No. 1-7 expires on January 20, 2020. An application for extension of the permit period should be submitted.	24.08.2019	To increase dust suppression rate at the Nogaity settlement and in the construction base. Conduct lectures among staff on environmental protection measures
03.10.2019	On the production base, inconsistencies were identified: -fuel spills; -Unauthorized disposal of asphalt plant waste (spent liquid waste); -Lack of disposal/reuse of production waste for	03.10.2019	Remarks from previous audit corrected: Solid waste removal control, equipment of fire panels Remarks: Spontaneous places of solid household waste at the locations of	04.10.2019	The remarks of the previous period have been eliminated: compliance with regulations at the gas station area: the area is concreted, warning signs are installed, instructions and contacts for warning in case of emergency are posted, fire safety at a local gas station,

	dust suppression in the asphalt plant zone in the design and construction of the asphalt plant		subcontracting organizations		control over the collection and removal of solid waste was ensured. Remark: dust suppression in the construction camp and the road leading to the camp
29.10.2019	Monitoring of the implementation of the EMP in together with PMC. Revealed on the territory of the Zhaksymay PB: There is no organized place for temporary storage of solid waste and production waste; Conditions have been created for the segregation of solid waste and waste, but there are facts of open burning of solid waste; local fuel spills; in the residential area: to eliminate organized places for temporary storage of industrial waste; places of temporary storage of solid waste are not organized.	30.10.2019	Monitoring of the EMP implementation together with PMC. There are no comments to the EMP implementation	30.10.2019	Monitoring of the EMP implementation together with PMC. In the base camp: Low illumination of premises and office; Lack of visual information stands and emergency alerts in case of emergency
12.11.2019	CSC environmental specialist inspected the site. Contractor's environmental specialist eliminated all remarks from the monitoring of CSC and PMC (from 29.10.2019);	12.11.2019	Septic tanks are in good condition Solid waste containers are marked There is a log for the export of solid waste There are passports of waste.	15.11.2019	Contractor's environmental specialist eliminated all remarks from the monitoring of CSC and PMC (dated 29.10.2019); Solid waste containers are marked,There is a

	Contractor’s environmental specialist was instructed in providing measures to prevent fuel and lubricant spills; Measures for the unorganized disposal of liquid waste from the plant are included in the next construction season; Local environmental specialist provides a monthly report on the implementation of the EMP measures		Environmental specialist at the site works remotely. No monthly EMP report		log for export of solid waste There are passports of waste. Local environmental specialist submits a monthly report on the implementation of the EMP measures
04.12.2019	Borrow pits monitoring. Recommendation: Early warning of the Engineer during instrumental measurements	04.12.2019	Borrow pits monitoring. Recommendation: Early warning of the Engineer during instrumental measurements No monthly EMR report	6.12.2019	Borrow pits monitoring. Recommendation: Early warning of the Engineer during instrumental measurements
18.12.2019	Recommendation of the ADB consultant to prepare an EMR using a new template of ADB in progress. Engineer's Recommendation: start preparation of the final EMR period (according to the new ADB format)	19.12.2019	Recommendation of ADB consultant to prepare an EMR using a new template of ADB in progress. Engineer's Recommendation: start preparation of the final EMR period (according to the new ADB format)	21.12.2019	Recommendation of ADB consultant to prepare an EMR using a new template of ADB in progress. Engineer's Recommendation: start preparation of the final EMR period (according to the new ADB format)
22.08.2019	Dust suppression at the production base to increase the multiplicity. Eliminate the spontaneous storage of solid waste at the	23.08.2019	Recommendation: permission for the right to use subsurface resources for the extraction of common mineral resources in borrow	24.08.2019	To increase dust suppression rate at the Nogaity settlement and in the construction base. Conduct lectures among staff on

	laboratory and in the area of the mechanical repair shop,		pits No. 1-7 expires on January 20, 2020. An application for extension of the permit period should be submitted.		environmental protection measures

43. 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.

44. 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)

45. 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.

46. During the site visit in the reporting period, together with environmental specialists and with the participation of the PMC safeguards specialist Aliya Zeynullina, categorization of non-conformity were identified as significant. So, according to Lot 1, the following non-conformities were revealed.

- Local fuel and lubricant spills at the Zhaksymay production base in the area of the mechanical repair shop and at the fuel and lubricant storage site

Figure 6. Fuel and oil spills to the concrete foundation at the Zhaksymay PB, October 2019

- Failure to equip fire shields with resources to eliminate emergency fuel and oil spills

Figure 7. Unequipped fire shield at the asphalt plant, October 2019

- There is a spontaneous disposal of production waste on the territory of asphalt plant

Figure 8. Unorganized spontaneous disposal of liquid industrial waste in “Zhaksymay” PB, October 2019

- There is no control over the segregation of waste and solid waste at the site of the Contractor’s laboratory; residues of waste incineration are observed.

Figure 9. Violation of the requirements of the EC RK on the prohibition of burning solid waste, October 2019

47. Lot 2, in the previous reporting period, the Engineer's instructions were issued on replacing the lid of the septic tank, bringing the septic tank into proper condition, since around the septic tank soil has settled and there is a chance of soil subsidence. Irrational use of water from the underground source organized from a well at the construction site was also noted. Water flowed through a hose to neighboring territory. The reason for lack of a plug/valve is associated with unstable operation of the pump installed in the well. The Engineer recommends bringing the mechanisms in proper condition, eliminating inefficient use of water resources. 3 comments were also formulated from the ADB national consultant: prepare waste passport, reconsider number of containers since it does not correspond to the number of people living in the construction camp, and prepare the PEM in the new form recommended by ADB.

48. According to the discrepancies described above, the environmental specialist carried out work to bring the PEM in compliance with waste management (number of containers for solid waste was increased, container labeling was completed, sites for containers were organized, septic tank was restored), water resources management (the water well was equipped accordingly to eliminate unauthorized spills and irrational use. A responsible specialist has been appointed, who constantly monitors work at the well). PEM in progress. During the ADB mission (01.10.2019), the project manager indicated completion date of the project on June 30, 2020, the Engineer recommended that activities to complete the project be included in the PEM.

49. During the reporting period on Lot 2 inspections of the site has revealed following discrepancies: there is no control over compliance with the process of segregation of waste from the subcontractor on the territory of the construction camp of the contractor, fire safety shields were not completed on the territory of the repair base, PEM reports for September, October and November were not presented.

50. For Lot 3, the discrepancies identified in the previous period: violation of the Technical Regulations (TR) for the construction of stationary gas stations, as well as the lack of measures to prevent fuel and oil spills were eliminated in the working order. Contractor’s environmental specialist conducted educational work among the personnel, brought into compliance with TR construction of the stationary gas station and its operation. However, during the visit to the site during the reporting period, the Engineer drew attention to local soil pollution on the production

part of the construction camp. It was recommended that the contractor’s environmental specialist ensure constant monitoring of the work in the mechanical repair shop and at the stationary gas station where local soil contamination is noted.

51. 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.

52. 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 31 December 2019, Lot 1 had 5 appeals. All were closed. Lot 2 - there are no appeals and complaints. Lot 3 received 1 appeal. It is closed. There are no open complaints and appeals on the Project.

53. During the reporting period, 8 non-conformities with environmental safeguards at the sites were recorded. In annex 19 Notice-Letters are attached. For section of Lot 1 - 4, Lot 2 - 2 and on the Lot 3 - 2 non-conformities. Table 8 below provides information on tracking of environmental issues during the reporting period, incrementally, taking into account the start of the project. Table 8.1. 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 8. 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	24
Closing percentage	100%
Open Issues for the Reporting Period	8
Closed Issues for the Reporting Period	8

Table 8.1. Data for previous period 1-nd half of 2019

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

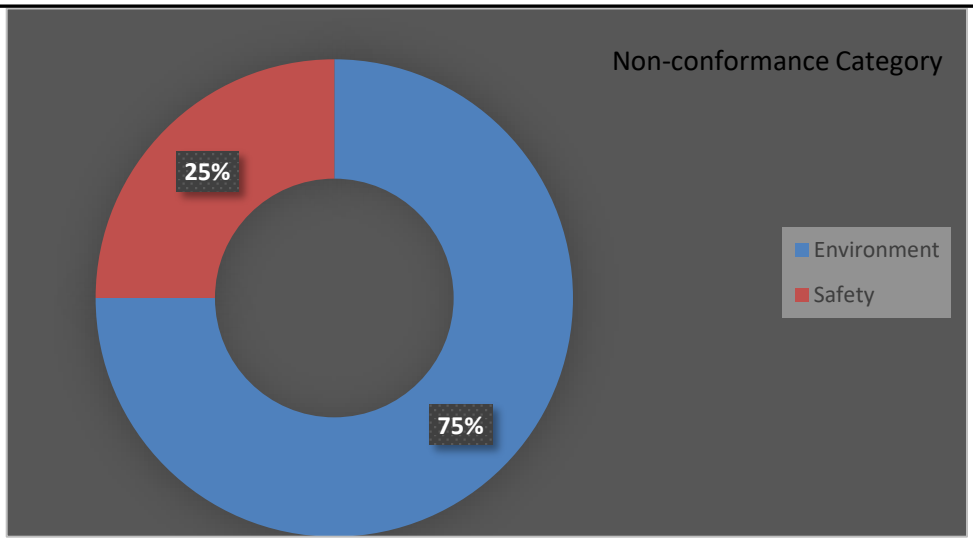

Figure.10 Non-conformance category diagram

54. The diagram in Fig. 6 shows the categorization of non-conformities for the reporting period. Compared to the previous period (first half of 2019), when environmental protection accounted 62%, 75% of the total number of identified non-conformities were recorded in the reporting period. Security in the previous period accounted 15%, in the reporting period - 25%. Positive dynamics in social impact and health safety is noted. If in the previous period accounted 15% and 8% respectively, then in the reporting period for these two categories there were no non-conformities. This positive dynamics by categories of social impact and health safety is the result of active monitoring and evaluation of the sites by the Engineer and the Contractor's responsible specialists. Similar work should be strengthened by environmental specialists at the sites.

3.4 Tendency (general directions)

55. 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 carried out immediately and written reports were provided with photographs of the results of the actions taken. 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

56. 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.

57. 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 MONITORINGOverview of monitoring conducted during the current period

58. The works on production 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 indicators of the working area, atmospheric air and sources of air emissions, surface , natural waters, as well as analysis of soil and physical factors.

59. 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 indicators obtained prior to the start of construction work.

60. 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 indicators. 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.

61. Reconstruction of the road (construction works) according to 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.

62. 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). Lot 2 Contractor submitted results of PEM to the CSC for the June (submitted in August, when the CSC had already completed semi-annual report and therefore data for June were not included), July, August and September. Lot 1 PEM reports for June, July, August, September, October and November are submitted. Lot 3 PEM reports are submitted for July, August, September and October.

63. 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. 1-14.

4.1.1 Environmental measurements on Lot № 1

4.1.1.1 Noise and vibration

64. On lot 1, measurements of vibration and noise level, soil sampling was carried out in accordance with the approved scheme of sampling points. Figure 11 below shows a diagram with sampling points and measurements of vibration and noise levels.

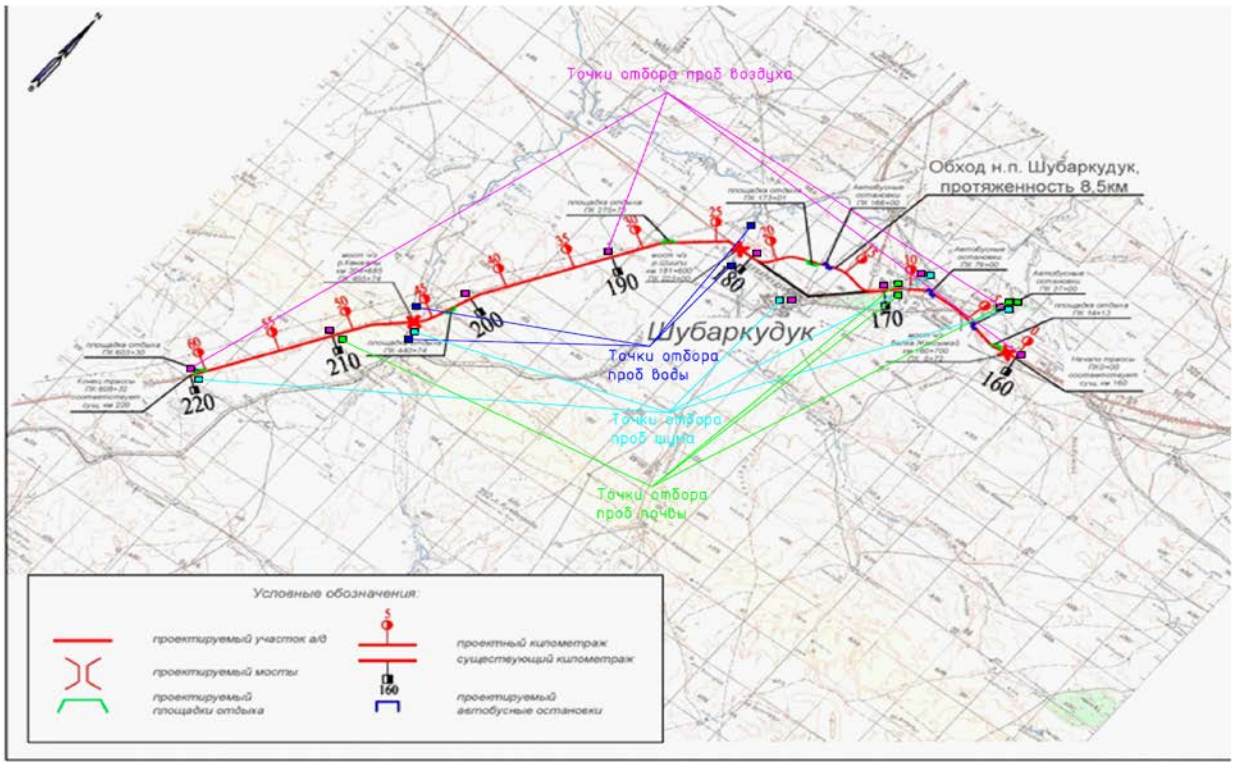

Figure 11: Situation diagram with water sampling points (dark blue), noise and vibration measurements (light blue), air (pink) and soil sampling (green) on Lot 1

65. Dynamics of changes in noise and vibration on Lot 1 areas during the reporting period are represented by instrumental measurements for the period July, August, September, October and November. 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."

66. 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.

67. 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 55.0 dB in July at the work site on km 200 and the lowest within the limits of 51.6 dB in October at the work site km 190. 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. Data of the test reports are in the appendix 1

68. 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.

69. 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.

70. 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.7 are within 31.7 -38.3 dB. The highest value was recorded at the Zhaksymay Production Base in October, and the lowest value was also recorded in October at KM 170. 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

71. 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.

72. Soil samples were taken from Zhaksimay Production Base Km 168, road sections Km 160, Km 170, Km 180, Km 190, Km 200, Km 210. At Km 210 instrumental measurements were not taken in July, August and September due to the lack of construction work at this site. 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.

73. Analysis of the data from the measurement test reports carried out in the framework of the PEM shows that, similarly to the previous period, in the first half of the year there is an excess of calcium in soil samples taken at Km 170, Km 180, Km 210 and magnesium in soil samples from Km 160, Km 170, Km 190, Km 200 and Km 220 in comparison with the data carried out before start of the Project.

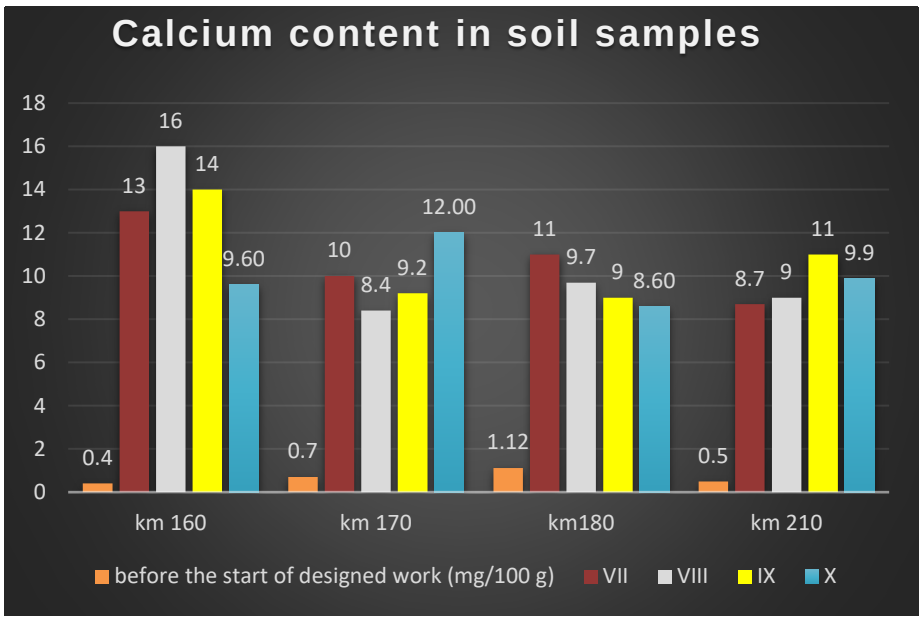

Figure 12. Dynamics of changes of calcium content in soil samples - Lot 1 road section

74. During the primary measurement at Km 160, a calcium value of 0.4 mg / 100 g was recorded. But in July this indicator was already 13.0 mg/100 g, in August - 16.0 mg/100 g, in September - 14.0 mg/100 g and in October - 9.6 mg/100 g. On Km 170 earlier was recorded 0.7 mg/100 g, in July this indicator was already 10.0 mg/100 g, in August - 8.4 mg/100 g, in September - 9.2 mg/100 g and in October - 12.0 mg/100 g. At Km 180, the primary indicator for calcium was 1.12 mg/100 g, in July this indicator decreased to 1.0 mg/100 g, in August it rose to 9.7 mg/100 g, in September - 9.0 mg/100 g and in October 8.6 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 serious impact on the person and on the area where construction works are being carried out. The negative impact is possible on the cultivated plants, but there are no growing crops in these areas.

75. The Figure 13 below shows dynamics of changes in the magnesium content in soil samples, where increase in values was found in these areas.

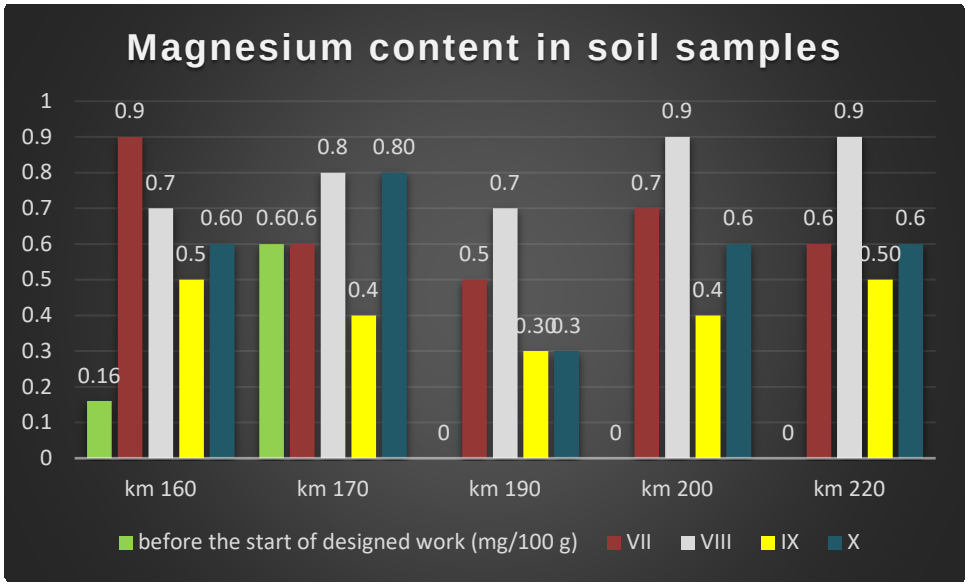

Figure 13. Dynamics of changes in the magnesium content in soil samples Lot 1.

76. On Km 160, at the initial measurement before start of the project, measurements of magnesium content showed 0.16 mg/100 g, and in July magnesium content 0.9 mg/100 g was recorded in this area, then there is a decrease in August and September to 0.7 and 0.5, respectively, and in October a slight increase to 0.6 mg/100 g. On Km 170 there is an increase in August and October to 0.8 mg/100 g. On Km 190, magnesium content increased in August to 0.7 mg/100 g. On Km 200 and Km 220 was an increase in magnesium content in August and October to 0.9 mg/100 g and 0.6 mg/100 g, respectively. Such changes in magnesium content as well as in calcium are due to content of these substances in materials used for construction of the embankment at construction sites. Increase in magnesium does not have a serious impact on humans and terrain where construction works are carried out. Negative impact is possible on cultivated plants, but there are no growing crops in these areas.

77. 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 indicators is classified as “safe” because MPC exceeding were not recorded for all defined pollution indicators. And according to the protocols of instrumental measurement of radiological indicators, the level of contamination by radioactive substances is defined as the natural level.

78. During reporting period on Lot 1 out of 10 borrow pits, excavation was done from all 10 designed borrow pits according to the production plans. Cultivation work is carried out on

borrow pit No. 1. During the reporting period the technical land reclamation stage was completed, including planning, slope formation. Detailed information for all borrow pits is presented below in table 9. In Appendix 2, data from the measurement protocols are attached.

Table 9. Information about borrow pits on Lot 1 by status as of December 31, 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	12 000	80%
2	Borrow pit 2	49+59	1033		4,99	126,5	11 100	0%
3	Borrow pit 3	73+61		188	3,99	104,9	17 300	0%
4	Borrow pit 4	146+94		403	3,99	104,9	33 000	0%
5	Borrow pit 5	203+47		745	15,9	406,8	61 600	0%
6	Borrow pit 6	294+05	1038		15,9	406,8	97 700	0%
7	Borrow pit 7	351+20	319		3,95	104,0	79 900	0%
8	Borrow pit 8	391+46	1010		15,9	422,5	107 100	0%
9	Borrow pit 9	466+32		162	3,99	104,9	23 876	0%
10	Borrow pit 10	556+75		148	3,99	100,9	90 130	0%

4.1.1.3 Water quality

79. Main regulatory and methodological documents that guided monitoring of natural waters in the Shieli River km 181+600, Kenzhaly river km 204+500 and Zhaksymai river km 160+500: No. 209 dated March 16, 2015. Water sampling was carried out according to GOST RK GOST R 51592-2003 “Water. General requirements for sampling." Water sampling was carried out during reporting period from Shieli and Kenzhaly rivers in July, September and October. In November and December water was not taken due to weather conditions and due to lack of work in this area. No water samples were taken from Zhaksymay river due to lack of water during the monitoring periods.

80. According to the laboratory data of the Measurement Protocols, all indicators has no excess of permissible norms. Compared with the values obtained during measurement period before start of construction work, there is also no excess of values for all measured indicators.

81. At this site level of pollution does not exceed indicators obtained as a result of measurements before start of construction and MPC for each of the determined indicators. Laboratory indicators are presented in Appendix No. 3.

4.1.1.4 Air quality

82. Measurements of air pollution level on Lot 1 site were carried out in accordance with the approved sampling scheme. Measurements were carried out according to the following indicators: 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. 4.

83. During reporting period, measurements of the air pollution level at the following points were carried out on this lot: Km 160, Km 170, Km 180, Km 190, Km 200, Km 210, Km 220, at the Shubarkudyk and Kopa villages. Frequency of measurements was monthly for July, August, September, and October. And in November, only on the Bridges near the Shieli River at Km 182+306 and the Bridge across Kenzhaly River at Km 205+575 and measuring points: at Km 168 at the Zhaksymay production base where asphalt and concrete plants are located.

84. Obtained laboratory data for the reporting period in samples from Km 160, Km 170, Km 180, show absence of excesses in the level of air pollution by all indicators at all points. Do not exceed values obtained before the start of construction work and with MPC.

85. Measurements at Km 190, Km 200, Km 210, Km 220, at Shubarkudyk and Kopa villages indicate a slight excess of the values for carbon monoxide primary measurements made before start of construction work in 2018, but do not exceed the MPC of 5 mg/m ^{3}. The following figure 14 shows the excesses in the indicated sections.

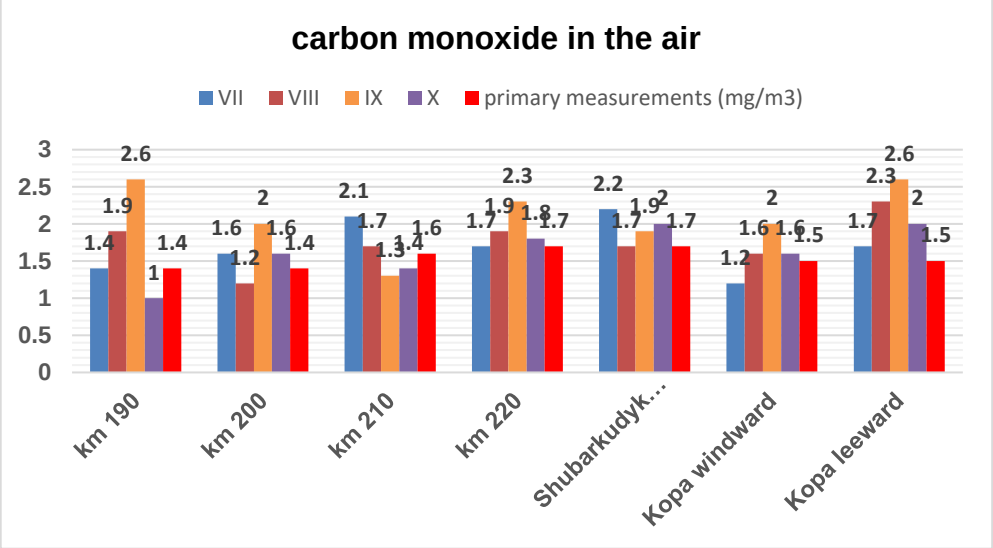

Figure 14. Dynamics of changes in the content of carbon monoxide in the air on Lot 1 site.

86. The relief of the road, the mode of movement of construction equipment and the actual technical condition of the equipment have a significant impact on carbon monoxide emissions. Considering the fact that during acceleration and braking airborne monoxide content increases by almost 8 times in the exhaust gases, and construction work in the areas mainly work in this mode, it is understandable that excess of carbon monoxide in the areas eith intensive work was carried out during this period.

87. Analysis of the data shows that due to heavy traffic of construction equipment and vehicles, maximum concentrations of carbon monoxide were recorded in July and September. In these months there were adverse weather conditions for the dispersion of carbon monoxide concentrations.

88. It should be noted that distribution of harmful gases is a short-term nature, and with decrease or cessation of equipment movement, their content also decreases. All air pollution in a relatively short time passes into safer forms.

4.1.2 Environmental measurements on Lot 2

4.1.2.1 Noise and vibration

89. Instrumental measurements of vibration and noise were carried out during July, August, September and October at the points: NW of Karauylkeldy village, NW of Zharly village, Karauylkeldy production base (at four points), Km 236, Km 246, Km 255, Km 265, Km 275, borrow pit sections No. 3 (Km246), No. 4 (Km 250+220), No. 5 (Km 254) and No. 6 (Km 260). The noise level and vibration acceleration do not exceed permissible values at all measurement points. Appendix No. 6 to this report includes laboratory measurements from protocols.

4.1.2.2 Soils

90. 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. 3, 4, 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.

91. 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.

92. 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. 7 shows results of laboratory tests. Controlled substances: Dense residue, pH, petroleum products, chlorides, sulfates, calcium, magnesium, carbonates, bicarbonates. Analysis of the measurement data protocols shows insignificant excesses relative to the initial measurements on the chloride content in soil samples from Km 236, 245, Km 265, Km 275, from borrow pit No. 5, PB “Zhaksymay” northern point, south and west. There is also a slight excess of sulfates in soil samples from Km 265, borrow pit No. 5, and Zhaksymay PB from the north and west sides of the base camp.

93. 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.

94. 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 10. Information about borrow pit on Lot 2 by status as of December 31, 2019

№	Name	KM/PK	Location	Reserves			Extraction
				m	thousand m^3	ha	thousand m^3
1	К1	km238+300 / PK23+00	125,5	2,70	423,1	15,67	125,5
1a	К1А	km240+200 / PK42+00	7,7	2,69	328,7	12,22	7,7
2	К2	km242+000 / PK60+00	0,0	2,70	956,1	35,41	0,0
3	К3	km246+000 / PK93+00	0,0	2,70	346,1	12,82	0,0
4	К4	km250+220 / PK143+00	33,8	2,70	312,7	11,58	33,8
5	К5	km254+340 / PK183+60	5,3	2,70	430,7	15,95	5,3

6	К6	km261+100 / PK251+00	170,8	2,70	904,7	33,51	170,8
6a	К6А	km267+600 / PK316+00	124,8	2,69	321,7	11,96	124,8
7	К7	km271+100 / PK351+00	147,6	2,70	181,7	6,73	147,6
Total:					**4 206**	**156**	**615,47**

4.1.2.3 Water quality

95. 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 determined indicators. Appendix No. 8 presents the results of analyzes based on protocols.

4.1.2.4 Air quality

96. 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 indicators exceed the MAC. Level of ambient air pollution was measured at borrow pits No. 3 Km 246, No. 4 Km 250+220, No. 5 Km 254+340 and No. 6 Km 261+340. All measurements were carried out from July to October. The analysis of laboratory data from the protocols of air pollution at all the above-mentioned measurement points did not record the excess of MAC for all determined indicators.

97. 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% SiO_2 do not exceed the established standards in industrial and residential areas.

98. 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 “suspended particles”. At the ACP and CBP sections, measurements were carried out for this indicator from July, in August, in September and October. All data do not exceed the MPC for suspended particles. Data from the protocols is attached in Appendix 9.

4.1.3 Environmental measurements on Lot No.3

99. On Lot 3 site, instrumental measurements were carried out by a certified laboratory, which carried out these works on Lot 1, since there was one contractor on these lots. All regulatory and methodological approaches are the same as those presented in Lot 1.

4.1.3.1 *Noise and vibration*

100. Measurements on the level of noise and vibration acceleration were carried out at the following points: ACP, Production base "Nogaity", CBP section, km 275, km 285, km 300, km 310, km 320, northwestern of Zharly village, northwestern of Nogaity village. According to the results of measurements (Appendix No. 11) for the reporting period, there was no excess of the MPD. Measurements on the noise level are noted in the range of 49.7-54 dBa with a maximum

allowable sound level of 80 dBa. And the values of vibration acceleration at the above measurement points are noted within 32.5-38.8 dB with a permissible equivalent level of vibration acceleration - 95 dB.

4.1.3.2 *Soil*

101. 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.

102. Instrumental measurements of soil pollution were carried out at the following points: Nogaity Production Base Km 301 points South and East, road sections Km 275, Km 285, Km 300, Km 310, km 310 and Km 330. Appendix No. 12 presents the data with laboratory research protocols. An analysis of the data shows that at all controlled points for the reporting period, MPC exceeded.

103. Excavation work from borrow pits was carried out in the quantities planned for production work. Detailed information is presented below in Table No. 11. According to these data, during reporting period, the Contractor made excavation in addition to the previous 5 borrow pits from another 4 borrow pits: No. 13, No. 14, No. 18 and No. 19.

Table 11. Information about borrow pits on Lot 3 by status as of December 31, 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	120550	0%
2	Borrow pit 12	125+64	491		15,9	422,5	111500	0%
3	Borrow pit 13	161+50	285		3,99	100,9	135610	0%
4	Borrow pit 14	244+83	357		4,02	101,6	125300	0%
5	Borrow pit 15	304+79	285		3,99	153,9	195680	0%
6	Borrow pit 16	354+69	276		3,99	104,9	145800	0%
7	Borrow pit 17	404+22	194		16	409,4	122650	0%
8	Borrow pit 18	478+12	1340		15,9	406,8	182412	0%
9	Borrow pit 19	522+16	313		3,98	104,6	94900	0%

4.1.3.3 Water quality

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

4.1.3.4 Air Quality

105. Monitoring of air pollution was carried out in areas where construction work was carried out during reporting period: km275, km 285, Km 300; Km 310; Km 320, ACP & CBP. Appendix No. 13 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 determined indicators. 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 Tendency (general direction)

106. During reporting period, no 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 noted.

107. 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. This work is carried out jointly with health & safety specialists.

4.3 Summary of monitoring results

108. 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 content of pollutants (water, soil, air, health, flora and fauna) do not exceed MAC. The measures taken by the contractors to reduce environmental impact are sufficient. The activities of the Contractors exert an acceptable load on the environment.

109. 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. Work continued during reporting period.

110. 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 on an ongoing basis monitors activities in the camp, on construction sites and in borrow pits. During the audits in this area, no significant non-conformities were identified.

111. On the Lot 1 and Lot 3 sections, the tandem “international and local environmental specialists” also showed good interaction in the previous period and did not have such result in the reporting period. Weakened work on monitoring the implementation of the waste management plan. For the reporting period, the identified non-conformities in both areas relate to compliance with the schedules for removal of solid waste, waste segregation, and they belong to the category of quickly eliminated.

112. 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 12.

Table 12. Environmental Compliance Monitoring on Lot 1, Lot 2 and Lot 3

№	Location	Issue	Recommended Remedial Action	Implementations / Compliance	Progress
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.	Base camp is provided and fulfilled.	Provided on Lot 1, Lot 2 and Lot 3

			Transportation to septic tanks for processing and disposal		On Lot2 septic tank is in good condition.
4		Kitchen and dining room	Providing adequate ventilation, taps and hygiene of places for receiving preparation and eating, storage of products	On Lot 3 and Lot 2, the construction of its own dining room and outsourcing of food services and catering services of a third party. On Lot 1, a complex with all conditions rented from local resident	Lot1 has its own dining room, Lot 2 has its own dining room and Lot 3 is a rental space with catering and catering services.
5		Drainage in base camp	Provision of water drainage in the camp. Avoid accumulation of water inside the camp.	The complex rented on Lot 1 has all necessary connections to the tap system Lot 2 and Lot 3 have a drainage and wastewater system	Correspond s 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.	Lot 1 rented a complex of buildings of a local resident, with provision of export and disposal. Fire shields provided on production base of all sections. Monitoring the implementation of the waste management plan in all areas.	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	For Lot 2 to extend the permit for excavation from borrow pits	Application for renewal filed	Only for Lot 2
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

113. Resource use during the reporting period on the lots 1, 2 and 3.

Table 13. Amount of used resources for the 1st half of 2019

Sections / Resources	Lot 1	Lot 2	Lot 3
Electricity, kWh	10 230	377 630	28300
Natural gas, thn m^3	399,2	992	-
Drinking water, m^3	45	190,4	2300
Water for technical needs, m^3	988,2	392,5	6 570

4.4.2 Cumulative use of resources

114. On Lot 1, electricity consumption in the second half of the year decreased by 3% compared with the previous period. For natural gas, there has been a significant increase in consumption associated with the intensive operation of the ACP. For drinking water, there is also a significant increase in demand. The need for process water is doubled due to increase of dust suppression ratio in the sections.

115. Lot 2, according to the data on the use of resources for second half of the year, the contractor increased electricity consumption by 2.4 times compared to the previous half. Natural gas, there is a 2-fold reduction associated with reduction in staff for the period of winter maintenance on the project. In the reporting period, drinking water consumption exceeded 2.4 times. Process water consumption exceeded 2 times associated with increase of the dust suppression ratio.

116. Lot 3, a decrease in electricity consumption by 13 times is also observed compared to the previous period of work. Water consumption for technical needs in this area decreased by 14 times. This is due to reduction in the dust suppression period at the construction site to 4 months of actual work. In November dust suppression was not required due to weather conditions.

4.5 Waste management

117. 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" on the basis of contract No. 02/05-18 dated May 2, 2018. However, monitoring shows that from time to time in these areas schedule for removal of solid waste and industrial waste is not observed, there are cases of unauthorized burning of waste, and there is also no place for collection of liquid waste from production of waste water for reuse for dust suppression. This type of waste is not included in the project documentation since it was planned to use waste in dust suppression. This circumstance is formulated by the recommendation to the environmental specialists of the contractor to include work on arrangement of a container or concrete foundation for accumulation of liquid waste from the ACP. Table 13 below provides information on the types and quantity of solid waste collected from the site during the reporting period.

118. 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. Table 14 below provides information on types and quantity of solid waste collected from the site during the reporting period. Monitoring at this site showed lack of monitoring by the environmental specialists of the contractor on detail of the subcontractors (arrangement of the railway dead end, maintenance of equipment, food services) that carried out open burning of solid waste, local fuels and lubricants in the service area of the equipment.

119. **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

120. 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 14. Information on removal of household waste for second half of 2019 - Lot 1

№	Waste	Unit	Waste classification	Quantity	Method of waste disposal
1	Solid waste	tn	Non-hazardous	9	Removal to the landfill

Table 15. 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	Non-hazardous	13,12	Removal to the landfill
2	Used batteries	tn	Hazardous	-	

3	Oiled rags	tn	Hazardous	0,355	Deliver to the special organization Zelenstroy LLP
4	Waste filters	tn	Hazardous	0,139	Deliver to the special organization Zelenstroy LLP
5	Construction waste	tn	Non-hazardous	0,351	Deliver to the special organization Zelenstroy LLP
6	Scrap metal	tn	Non-hazardous	1,169	Deliver to the special organization Zelenstroy LLP
7	Antifreeze	Thous. L.	Hazardous	0,151	Deliver to the special organization Zelenstroy LLP
8	Oil contaminated soil	tn	Hazardous	0,415	Deliver to the special organization Zelenstroy LLP

Table 16. Information about removal of production and consumption waste for the second half of 2019 - Lot 3

№	Waste	Unit	Waste classification	Quantity	Method of waste disposal
1	Solid waste	tn	Non-hazardous	1,2	Removal to the landfill

4.5.2 Cumulative Waste production

121. Composition of the total waste generation in Lot 1 is only solid waste. No other data was provided by the contractor. Lot 2 shows composition of the waste reflected below in Fig. 15. Lot 3 data are not reflected in the reports of the contractor.

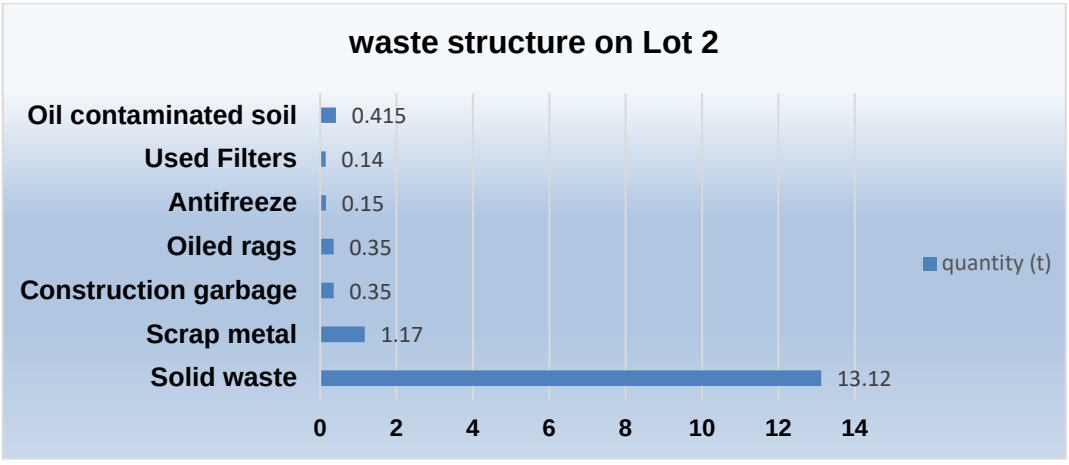

Figure 14. Composition of waste in second half of the year on Lot 2

4.6 Health and safety

4.6.1 Community Health and safety

122. 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 done 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. Workers Health and safety

123. During the reporting period there were 5 incidents with two fatal consequences. Lot 1 recorded 3 accidents, with one death. 2 accidents were recorded in the previous period. All accidents occurred through the fault of drivers and their ignoring traffic rules: violation of the distance and ignoring warning signs installed by the contractor. There were no accidents in Lot 2 in the previous period. During reporting period, one accident was recorded due to driver of the vehicle ignoring the warning signs, the sign restricting entrance to project road leading to the death of vehicle passenger. There were no accidents at Lot 3 in the previous period. During the reporting period one accident was recorded due to violation of traffic rules by a driver of vehicle, exit to the oncoming lane.

124. Table 17 below provides a summary of all incidents that occurred on the project from the very beginning of the construction of the road.

Table 17. Statistics on incidents and accidents on the project

Type	Lot 1	Lot 2	Lot 3
Traffic accident	5	1	1
Accident	0	0	0
Disability	0	0	0
Downtime due to incident	0	0	0
Total:	**5**	**1**	**1**

125. It should be noted that the above accidents occurred due to the fault of the drivers, who ignore signs of the high-speed mode, which prohibit exit on the project road. Monitoring of each incident showed that safety signs were installed on the site in accordance with the approved plan for ensuring safe traffic. Detailed information on the incidents that occurred during the reporting period is presented in Appendix 15.

126. 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.

127. 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

128. The CSC conducted training on issues related to the implementation of the EMP, monitoring of work at sites, regular health and safety instructions, AIDS/HIV issues. Workers had on-the site trainings during accompanying consultation during environmental inspections of construction

sites. In the course of the inspections, the ESs of CSC and PMC drew the attention of the environmental specialists of the contractors to the indicators for the implementation of environmental protection measures and explained how to identify potential risks of a negative environmental impacts.

5 FUNCTIONING OF THE SSEMP

5.1 Review of SSEMP

129. SS EMPs of Lots 1,2 and 3 in the reporting period were not changed. The activities announced in the SS EMPs were carried out by the contractors and in the proper order and quality.

130. The analysis of the work of environmental specialists of contracting organizations shows that during the reporting period they performed an adequate work on the site to ensure the implementation of the EMP. The environmental specialists of the contractors for Lot 1 and Lot 3 took into account 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.

131. During the reporting period, the environmental specialists of all Lots ensured timely submission of reports on industrial environmental monitoring of independent laboratory.

132. Based on the results of corrective actions the CSC developed a series of measures for the subsequent period January-June 2020. 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. Action Plan for the January-June of 2020

Actions	Time-frame	Responsible	Expected result
Ensure presence of the Engineer during the PEM Written notice about timing of PEM	According to the PEM schedule	Contractor's Environmental Specialist	Compliance with the sampling process, sampling point schemes.
Reports for the PEM laboratory and contractor's reports should include information on solid waste management (volumes, type, classification of waste, disposal method, location, etc.) photo fixation with dates and time indicated on the photo for monitoring, sampling and instrumental measurements	Monthly, according to the PEM schedule	Contractor's Environmental Specialist on Lot 3	Improved quality of PEM reports and reports of the contractor's environmental specialist
Develop final EMP for all three sites which will reflect measures for the reconstruction and restoration of areas for temporary use (construction camps, production sites, storage of materials, etc.)	20.05.2020	Contractor's Environmental Specialist	Agreed and approved final EMP
At the ACP of Lot 1 site, provide a place for accumulation/collection of liquid production waste and arrange a process (regulation) for the reuse of liquid waste for dust suppression and other technical needs	15.04.2020	Contractor's Environmental Specialist on Lot 1 Site manager	Reuse of resources, promotion of sustainable development, efficient use of resources in production.
On concrete platforms for storage of fuels and lubricants,	30.03.2020	Contractor's Environmental	Application of best practices for preventive

install/fill boards with a height of at least 20 cm along the perimeter of the site		Specialists Lot 1,2,3	measures for emergency spills of fuels and lubricants,
To obtain extension to the right of subsoil use for the extraction of common minerals in borrow pits No. 1-7, which expires on January 20, 2020.	20.01.2020	Lot 2 Environmental Specialist	Compliance with the requirements of EC RK
Conducting outreach to subcontractors and environmental service providers and EMP activities	01.06.2020	Environmental Specialists for all lots	Environmental education, providing access to information on EMP, compliance with environmental standards and the Bank's operational policy
Post-construction environmental audit	10.07.2020	CSC together with PMC	Audit report

5.2 Advanced methods (good practices)

133. In the process of the site monitoring the CSC noted on Lot 2 as a good practice the organization of environmental unit. A local environmental specialist was mobilized to the site, who was entrusted with the work of daily monitoring of dust suppression schedule, the schedule of solid waste removal, gardening the base camp and educating environmental literacy among workers. This practice did not have a logical continuation due to transfer to another job of the local environmental specialist in October 2019. In subsequent periods, the Contractor did not provide replacement. The site environmental specialist worked remotely from Aktobe.

134. Lot1, Lot 2 and Lot 3: the practice of proper interaction with the local people was applied. Leading specialists of the Contractor participated in meetings of the local akimat on a monthly basis and resolved all issues arising from the local people in the working order. Contractors formed good communication with local public, which allowed them to solve problems within short time, without waiting and ignoring needs and requirements of the local people in obtaining information on the project impact on local people life. This practice has enabled the GRM to work effectively in all areas. Not a single appeal was recorded at the sites. All issues are resolved on the site in the working order.

5.3 Opportunity for improvement

135. At the moment, such areas for this construction project have not been identified.

6 BRIEF CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

136. Application of effective protective measures while implementation of project includes following:

- Construction waste removal and disposal was carried out according to work plans, with the provision of protective measures. All air emissions 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 implementation of the environmental management plan, but it is necessary to pay attention to monitoring the implementation of schedules and plans.
- Proper 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 sprinkler machinery, taking into account all factors affecting the process of dust generation;
- 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 department, expanding the staff of the department from one to three persons. Internal documents were reviewed with the interaction with the safety and health department on educational work at sites among staff and workers.

137. 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. Environmental specialists independently conduct internal audits and issue orders to their units to address inconsistencies and violations. In the second half of the year, a corrective action plan was developed for all sections (Table 18).

6.2 Recommendations

138. The Engineer recommends that the COR review the number of months for CSC environmental safeguards specialist 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.

139. The CSC sent a written request to the Employer and the PMC No. 1757 dated 05.10.2019 regarding extension of the mobilization term for the environmental specialist and social safeguards specialist.

Annex 1.

Results of measurements of noise and vibration in Lot 1section

Sampling points	**Primary data before project start 24.04.18 Noise dBA Vibration dB**	**19.07.19**	**16.08.19**	**19.09.19**	**08.10.19**	**29.11.19**
"Zhaksymay" P/B ACP section	56,3 37,9	51,6	52,0	52,6	51,6	55,0 36,4
"Zhaksymay" P/B CBP section	56,3	52,0	51,3	53,0	53,0	No measurements were taken due to absence of construction work
Section km 160	52,4 38,1	54,2 35,6	53,0 36,0	52,5 36,5	52,6 37,6	
Section km 170	52,6 38,0	52,6 37,3	53,4 36,4	51,6 37,2	53,6 31,7	
Section km 180	52,5 38,2	52,0 35,6	51,7 34,0	52,2 38,0	53,0 37,5	
Section km 190	52,7 37,3	51,6 37,0	52,5 37,9	51,8 37,0	51,6 37,0	
Section km 200	53,2 37,6	55,0 38,0	54,2 36,3	53,0 37,3	52,4 36,4	
Section km 210	53,6 37,9	50,4 37,0	52,2 36,7	51,9 35,7	53,6 37,2	
Section km 220	53,6 38,9	53,5 33,2	52,6 34,6	53,0 37,0	51,6 36,8	
Production base Point 1		- 38,0	- 37,3	- 38,2	- 37,5	
Poimt 2		- 37,6	- 36,8	- 37,0	- 38,3	
Kenzhaly bridge						56,9 35,9
Shieli bridge						54,9 36,0

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

Annex 2

Laboratory test results of for soil contamination, lot 1

Points Selection / measurements	Name of defined (mg / 100 g)	Unit	Before start of the 24.042018	19.07.19	16.08.2019	19.09.19	08.10.19
km 160	pH units		7,87	6,80	7,2	7.16	7.16
	Dense residue	(mg/100 gr)	0,147	0,127	0,114	0.106	0.106
	Petroleum products		0,01	0,05	0,07	0.09	0.013
	Chlorides		0,05	0,010	0,013	0.018	0.026
	Sulphates		0,462	0,275	0,342	0.331	0.336
	Calcium		0,4	13,0	16,0	14.0	9.6
	Magnesium		0,16	0,9	0,7	0.5	0.6
	Carbonates		0,0	0,0	0,0	0.0	0.0
	Bicarbonate		0,98	0,9	0,17	0.23	0.26
km 170	pH units		7,82	7,14	7,48	7.34	7.22
	Dense residue	(mg/100 gr)	0,150	0,136	0,144	0.128	0.112
	Petroleum products		0,02	0,08	0,06	0.09	0.010
	Chlorides		0,15	0,09	0,07	0.013	0.023
	Sulphates		0,452	0,261	0,282	0.310	0.343
	Calcium		0,7	10,0	8,4	9.2	12.0
	Magnesium		0,6	0,6	0,8	0.4	0.8
	Carbonates		0,08	0,0	0,0	0.0	0.0
	Bicarbonate		26,0	0,17	0,22	0.26	0.21
km 180	pH units		7,20	7,42	8,3	8.16	7.21
	Dense residue	(mg/100 gr)	0,250	0,117	0,121	0.117	0.119
	Petroleum products		0,021	0,06	0,08	0.011	0.06
	Chlorides		0,06	0,09	0,010	0.016	0.016
	Sulphates		0,450	0,281	0,309	0.328	0.286
	Calcium		1,12	11,0	9,7	9.0	8.6
	Magnesium		5,05	0,5	0,8	0.5	0.2
	Carbonates		0,0	0,0	0,0	0.0	0.0
	Bicarbonate		18,0	0,26	0,21	0.32	0.29
km 190	pH units		7,22	7,01	7,25	7.12	8.0
	Dense residue	(mg/100 gr)	0,250	0,132	0,124	0.121	0.109
	Petroleum products		0,024	0,08	0,011	0.09	0.015
	Chlorides		0,06	0,010	0,06	0.012	0.010
	Sulphates		0,440	0,262	0,276	0.286	0.321
	Calcium		15,5	9,6	9,9	10.3	9.4
	Magnesium		0,0	0,5	0,7	0.3	0.3
	Carbonates		0,0	0,0	0,0	0.0	0.0
	Bicarbonate		18	0,26	0,24	0.29	0.41
Км 200	pH units		7,22	7,09	7,31	7.19	7.18
	Dense residue	(mg/100 gr)	0,250	0,128	0,131	0.116	0.118
	Petroleum products		0,024	0,0	0,0	0.0	0.014
	Chlorides		0,06	0,06	0,09	0.016	0.015
	Sulphates		0,440	0,310	0,321	0.336	0.276
	Calcium		15,5	9,2	9,5	9.8	9.5
	Magnesium		0,0	0,7	0,9	0.4	0,6

	Carbonates		0,0	0,0	0,0	0.0	0,0
	Bicarbonate		18,0	0,22	0,20	0,15	0,39
Км 210	pH units		7,78	No construction works			7,22
	Dense residue	(мг/100 гр)	0,250				0,119
	Petroleum products		0,024				0,017
	Chlorides		0,06				0,016
	Sulphates		0,439				0,265
	Calcium		0,49				9,0
	Magnesium		0,0				0,4
	Carbonates		0,04				0,0
	Bicarbonate		28				0,29
Км 220	pH units		7,86	7,10	7,49	7.63	7.18
	Dense residue	(mg/100 gr)	0,260	0,130	0,119	0.128	0.113
	Petroleum products		0,021	0,09	0,05	0.07	0.021
	Chlorides		0,06	0,05	0,07	0.010	0.013
	Sulphates		0,438	0,260	0,227	0.239	0.272
	Calcium		0,50	8,7	9,0	11.0	9.9
	Magnesium		0,0	0,6	0,9	0.5	0.6
	Carbonates		0,03	0,0	0,0	0.0	0.0
	Bicarbonate		26,0	0,20	0,17	0.29	0.31
Production Base "Zhaksymay" Point 1	pH units		7,80	7,20	7,26	7.17	7.23
	Dense residue	(mg/100 gr)	0,144	0,254	0,267	0.221	0.207
	Petroleum products		0,01	0,028	0,034	0.024	0.029
	Chlorides		0,04	0,11	0,09	0.011	0.014
	Sulphates		0,282	0,410	0,380	0.371	0.354
	Calcium		0,9	1,58	1,40	1.16	1.09
	Magnesium		0,9	0,0	0,0	0.0	0.0
	Carbonates		0,0	0,08	0,04	0.011	0.016
	Bicarbonate		0,08	19,0	16,0	0.51	0.42
Production Base "Zhaksymay" Point 2	pH units		7,67	7,78	8,0	7.35	7.32
	Dense residue	(mg/100 gr)	0,150	0,261	0,276	0.236	0.223
	Petroleum products		0,01	0,033	0,043	0.029	0.032
	Chlorides		0,06	0,13	0,15	0.13	0.18
	Sulphates		0,288	0,421	0,400	0.396	0.378
	Calcium		1,8	1,63	1,70	1.33	1.18
	Magnesium		0,8	0,0	0,0	0.0	0.0
	Carbonates		0,0	0,05	0,09	0.015	0.021
	Bicarbonate		0,08	21,6	19,2	0.56	0.51

Annex 3

Laboratory test result for water pollution, Lot 1 section

Sampling points	Name of pollutants	TB standard	Primary results 24.04.18	19.07.19	16.08.19	19.09.19	08.10.19
Kenzhaly river	pH (pH units)	6,0-9,0	8,34	6,68	No construction works	7,25	7.16
	Solids (mg / dm3)	1000	41,50	961,0		993,0	952.0
	Water-insoluble substances (mg / dm3)	Not standardized	20	17,6		21,0	19.5
	Chlorides (mg / dm3)	Not mare than 350	2 835,0	213,0		287,0	275.0
	Ammonium Nitrogen (mg / dm3)	Not more than 2.0	9,05	1,4		0,157	0.162
	Oil products (mg / dm3)	Not more than 0.1	0,06	0,004		0,006	0.0010
	Total hardness, mg / equiv / l	7.0 (10)	7,5	7,0		7,0	6.5
	Calcium (mg / dm3)	Not standardized	560	91,3		0,0	0.0
	Magnesium (mg / dm3)	Not standardized	564	29,0		96,0	91.0
	Sulfates (mg / dm3)	Not more than 500	878	310,0		396,0	351.0
	Nitrates (mg / dm3)	Not more than 45	0,223	1,32		2,07	2.3
	Nitrite (mg / dm3)	Not more than 3.3	0,672	0,43		0,42	0.56
	Iron (mg / dm3)	Not more than 3.0	1,75	0,202		0,170	0.149
	Chromium	Not more than 0.05	00	0,0		0,0	0.0
	Total phosphorus	Not more than 0.0001	0,0	0,0		0,0	0.0
	APAV	0.5	0,07	0,004		0,04	0.07
Shieli river	pH (pH units)	6,0-9,0	7,86	7,14	7,0	7,23	7.32
	Solids (mg / dm3)	1000	41,38	908,0	973,0	976,0	980.0
	Water-insoluble substances (mg / dm3)	Not standardized	13,0	22,0	24,0	19,0	21.0
	Chlorides (mg / dm3)	Not more than 350	182,4	314,0	310,0	206,0	215.0
	Ammonium Nitrogen (mg / dm3)	Not more than 2.0	6,93	0,214	0,164	1,2	1.6
	Oil products (mg / dm3)	Not more than 0.1	0,04	0,007	0,009	0,007	0.0012

	Total hardness, mg / equiv / l	7.0 (10)	6,4	6,8	6,6	7,0	6.7
	Calcium (mg / dm3)	Not standardized	78,0	0,0	0,0	96,0	86.2
	Magnesium (mg / dm3)	Not standardized	30	111,6	109,0	26,3	23.5
	Sulfates (mg / dm3)	Not more than 500	272	443,0	420,0	332,0	341.0
	Nitrates (mg / dm3)	Not more than 45	0,254	2,09	2,18	1,23	1.15
	Nitrite (mg / dm3)	Not more than 3.3	0,072	0,40	0,52	0,51	0.63
	Iron (mg / dm3)	Not more than 3.0	1,12	0,280	0,189	0,193	0.178
	Chromium	Not more than 0.05	0,0	0,0	0,0	0,0	0.0
	Total phosphorus	Not more than 0.0001	0,0	0,0	0,0	0,0	0.0
	APAV	0.5	0,02	0,08	0,06	0,006	0.009

Annex 4

Results of measurements of ambient air, Lot 1

Sampling points	Name of pollutants	Actual concentration Initial measurement before beginning of the Project, 24.04.2018, mg/m^3	MPC standard, mg/m^3	Concentration of substances during measurement periods, mg/m^3				
				19.07.19 mg/m^3	16.08.19 mg/m^3	19.09.19 mg/m^3	08.10.19 mg/m^3	29.11.2019 mg/m^3
Km 160	Inorganic dust 70-20%	0,063	0,3	0,0214	0,0146	0.0168	0.0175	No construction works
	Nitrogen dioxide NO_2	0,062	0,2	0,0074	0,0083	0.0086	0.0065	
	Sulfur dioxide SO2	n/d	0,5	0,0058	0,0049	0.0042	0.0057	
	Carbon monoxide CO	1,2	5,0	1,8	1,4	2.3	1.8	
	CH2O formaldehyde	0,0013	0,051	0,0031	0,0040	0.0068	0.0073	
	Hydrocarbons C_{12}-C_{19}	0,093	1	1	0,0210	0.0238	0.0196	
	Benzene, C6H6	0,060	0,3	0,3	0,0229	0.0240	0.0227	
	Xylene C_8H_{10}	0,079	0,2	0,2	0,0193	0.0207	0.0211	
	Methylbenzene C_5H_6-CH_3	0,3	0,6	0,6	0,0072	0.0093	0.0065	
	Hydrogen sulfide, H_2S	n/a	0,008	0,008	n/a	n/a	0.0	
Km 170	Inorganic dust 70-20%	0,0363	0,3	0,0145	0,0180	0.0186	0.0205	**No construction works**
	Nitrogen dioxide NO_2	0,0062	0,2	0,0051	0,0064	0.0089	0.0071	
	Sulfur dioxide SO2	n/a	0,5	0,0059	0,0047	0.0073	0.0056	
	Carbon monoxide CO	1,2	5,0	2,3	1,7	1.7	2.0	
	CH2O formaldehyde	0,0013	0,051	0,0031	0,0038	0.0058	0.0067	
	Hydrocarbons C_{12}-C_{19}	0,093	1	0,0189	0,0206	0.0234	0.0226	
	Benzene, C6H6	0,060	0,3	0,0064	0,0073	0.0062	0.0075	
	Xylene C_8H_{10}	0,079	0,2	0,0078	0,0084	0.0057	0.0067	
	Methylbenzene C_5H_6-CH_3	0,3	0,6	0,0057	0,0067	0,0083	0.0094	

	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	0.0	
Km 180	Inorganic dust 70-20%	0,061	0,3	0,0170	0,0194	0.0189	0.0156	**No construction works**
	Nitrogen dioxide NO_2	0,063	0,2	0,0051	0,0064	0.0075	0.0086	
	Sulfur dioxide SO2	n/a	0,5	0,0047	0,0059	0.0052	0.0061	
	Carbon monoxide CO	1,3	5,0	2,3	2,6	2.4	2.2	
	CH2O formaldehyde	0,0012	0,051	0,0041	0,0036	0.0063	0.0073	
	Hydrocarbons C_{12}-C_{19}	0,095	1	0,0411	0,0378	0.0278	0.0259	
	Benzene, C6H6	0,063	0,3	0,0038	0,0044	0.0067	0.0054	
	Xylene C_8H_{10}	0,081	0,2	0,0030	0,0037	0.0056	0.0043	
	Methylbenzene C_5H_6-CH_3	0,2	0,6	0,0208	0,0180	0.0187	0.0193	
	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	0.0	
Km 190	Inorganic dust 70-20%	0,063	0,3	0,0236	0,0215	0.0216	0.0227	**No construction works**
	Nitrogen dioxide NO_2	0,060	0,2	0,0031	0,0037	0.0071	0.0082	
	Sulfur dioxide SO2	n/d	0,5	0,0066	0,0074	0.0096	0.0075	
	Carbon monoxide CO	1,4	5,0	1,4	1,9	2.6	1.0	
	CH2O formaldehyde	0,0013	0,051	0,0022	0,0030	0.0027	0.0034	
	Hydrocarbons C_{12}-C_{19}	0,097	1	0,0204	0,0213	0.0224	0.0196	
	Benzene, C6H6	0,65	0,3	0,0027	0,0032	0.0057	0.0067	
	Xylene C_8H_{10}	0,082	0,2	0,0053	0,0067	0.0082	0.0090	
	Methylbenzene C_5H_6-CH_3	0,3	0,6	0,0087	0,0096	0.0096	0.0091	
	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	0.0	
Km 200	Inorganic dust 70-20%	0,065	0,3	0,0273	0,0156	0.0191	0.0215	
	Nitrogen dioxide NO_2	0,062	0,2	0,0017	0,0024	0.0043	0.0069	
	Sulfur dioxide SO2	n/a	0,5	0,0074	0,0086	0.0084	0.0071	
	Carbon monoxide CO	1,5	5,0	1,6	1,2	2.0	1.6	
	CH2O formaldehyde	0,0014	0,051	0,0022	0,0014	0.0024	0.0040	
	Hydrocarbons C_{12}-C_{19}	0,099	1	0,0120	0,0117	0.0138	0.0181	
	Benzene, C6H6	0,067	0,3	0,0058	0,0064	0.0075	0.0061	**No construction**
	Xylene C_8H_{10}	0,083	0,2	0,0021	0,0033	0.0060	0.0084	

	Methylbenzene C_5H_6-CH_3	0,4	0,6	0,0063	0,0087	0.0074	0.0079	**works**
	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	0.0	
Km 210	Inorganic dust 70-20%	0,067	0,3	0,031	0,0243	0.0261	0.0228	**No construction works**
	Nitrogen dioxide NO_2	0,064	0,2	0,0038	0,0051	0.0076	0.0080	
	Sulfur dioxide SO2	n/a	0,5	0,0034	0,0048	0.0080	0.0059	
	Carbon monoxide CO	1,6	5,0	2,1	1,7	1.3	1.4	
	CH2O formaldehyde	0,0013	0,051	0,0023	0,0034	0.0054	0.0046	
	Hydrocarbons C_{12}-C_{19}	0,1	1	0,0210	0,0217	0.0237	0.0169	
	Benzene, C6H6	0,069	0,3	0,0061	0,0079	0.0059	0.0072	
	Xylene C_8H_{10}	0,085	0,2	0,0016	0,0028	0.0046	0.0090	
	Methylbenzene C_5H_6-CH_3	0,3	0,6	0,0060	0,0079	0.0098	0.0068	
	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	0.0	
Km 220	Inorganic dust 70-20%	0,068	0,3	0,0258	0,0158	0.0220	0.0216	**No construction works**
	Nitrogen dioxide NO_2	0,065	0,2	0,0033	0,0046	0.0057	0.0076	
	Sulfur dioxide SO2	n/d	0,5	0,0081	0,0071	0.0078	0.0052	
	Carbon monoxide CO	1,7	5,0	1,7	1,9	2.3	1.8	
	CH2O formaldehyde	0,0014	0,051	0,0023	0,0031	0.0047	0.0054	
	Hydrocarbons C_{12}-C_{19}	0,1	1	0,0063	0,0079	0.0086	0.0160	
	Benzene, C6H6	0,070	0,3	0,0079	0,0083	0.0090	0.0077	
	Xylene C_8H_{10}	0,087	0,2	0,0043	0,0060	0.0074	0.0083	
	Methylbenzene C_5H_6-CH_3	0,3	0,6	0,0061	0,0078	0.0086	0.0063	
	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	0.0	
PB Zhaksymai ACP	Inorganic dust and Suspended particles from June	0,0402	0,3	0,0354	0,0270	0.0182	0.0161	0.0156
	Nitrogen dioxide NO_2	0,0301	0,2	0,0289	0,0156	0.0156	0.0164	0.0069
	Sulfur dioxide SO2	n/d	0,5	0,0156	0,0142	0.0107	0.0103	0.0
	Carbon monoxide CO	1,7	5,0	1,3	1,7	1.6	1.3	0.0076
	CH2O formaldehyde	0,0013	0,051	0,0010	0,0016	0.0031	0.0040	0.0070
	Hydrocarbons C_{12}-C_{19}	0,1	1	0,018	0,022	0.038	0.030	0.41
	Benzene, C6H6	n/a	0,3	-	-	-	-	-

	Xylene C_8H_{10}	n/a	0,2	-	-	-	-	-
	Methylbenzene C_5H_6-CH_3	n/a	0,6	-	-	-	-	-
	Hydrogen sulfide, H_2S	n/a	0,008	n/a	n/a	n/a	n/a	n/a
PB Zhaksymai CBP	Inorganic dust and Suspended particles from May	Was not planned	0,3	0,0370	0,0304	0.0217	0.0176	0.0140
	Nitrogen dioxide NO_2		0,2	0,0296	0,0210	0.065	0.0176	0.0073
	Sulfur dioxide SO2		0,5	0,0215	0,0120	0.0112	0.0109	0.0
	Carbon monoxide CO		5,0	1,8	2,0	1.4	1.7	0.0109
	CH2O formaldehyde		0,051	0,007	0,0011	0.0035	0.0049	0.0049
	Hydrocarbons C_{12}-C_{19}		1	0,022	0,026	0.044	0.038	0.59
	Benzene, C6H6		0,3	-	-	-	-	-
	Xylene C_8H_{10}		0,2	-	-	-	-	-
	Methylbenzene C_5H_6-CH_3		0,6	-	-	-	-	-
	Hydrogen sulfide, H_2S		0,008	n/a	n/a	n/a	n/a	n/a
Residential area								
Shubarkuduk windward	Inorganic dust: 70-20%	0,0398	0,3	0,0189	0,0143	0.0161	0.0159	**No construction works**
	Nitrogen dioxide	0,0268	0,2	0,0032	0,0025	0.0034	0.0041	
	Sulphur dioxide	n/d	0,5	0,0081	0,0058	0.0060	0.0050	
	Carbon monoxide	1,6	5,0	1,6	1,4	1.2	1.6	
	Formaldehyde	0,0012	0,051	0,0081	0,0062	0.0042	0.0051	
	Hydrocarbons C12-C19	0,99	1	0,0070	0,0073	0.0060	0.0063	
	Hydrogen sulphide	n/a	0,008	n/a	n/a	n/a	n/a	
Shubarkuduk leeward	Inorganic dust: 70-20%	0,04	0,3	0,0204	0,0194	0.0203	0.0168	**No construction works**
	Nitrogen dioxide	0,0270	0,2	0,0039	0,0037	0.0043	0.0056	
	Sulphur dioxide	n/d	0,5	0,0090	0,0071	0.0067	0.0064	
	Carbon monoxide	1,7	5,0	2,2	1,7	1.9	2.0	
	Formaldehyde	0,0012	0,051	0,0086	0,0068	0.0051	0.0060	
	Hydrocarbons C12-C19	0,1	1	0,0072	0,0087	0.0066	0.0070	
	Hydrogen sulphide	n/a	0,008	n/a	n/a	n/a	n/a	
Kopa windward	Inorganic dust: 70-20%	0,0398	0,3	0,0210	0,0180	0.0227	0.0169	**No**

	Nitrogen dioxide	0,0312	0,2	0,0042	0,0053	0.0059	0.0061	**construction works**
	Sulphur dioxide	n/d	0,5	0,0031	0,0024	0.0036	0.0041	
	Carbon monoxide	1,5	5,0	1,2	1,6	2.0	1.6	
	Formaldehyde	0,0013	0,051	0,0014	0,0019	0.0027	0.0031	
	Hydrocarbons C12-C19	0,099	1	0,0140	0,0160	0.0187	0.0160	
	Hydrogen sulphide	n/d	0,008	n/d	n/d	n/d	n/d	
Kopa leeward	Inorganic dust: 70-20%	0,0402	0,3	0,0221	0,0245	0.0239	0.0179	**No construction works**
	Nitrogen dioxide	0,0315	0,2	0,0052	0,0061	0.0065	0.0067	
	Sulphur dioxide	n/d	0,5	0,0038	0,0032	0.0043	0.0049	
	Carbon monoxide	1,5	5,0	1,7	2,3	2.6	2.0	
	Formaldehyde	0,0014	0,051	0,0021	0,0025	0.0034	0.0040	
	Hydrocarbons C12-C19	0,1	1	0,0146	0,0173	0.0210	0.0204	
	Hydrogen sulphide	n/d	0,008	n/a	n/a	n/a	n/a	
PB Zhaksymai	Inorganic dust: 70-20%	Not planned	0,3	0,042	0,045	Not planned		**No construction works**
	Nitrogen dioxide		0,2	0,0154	0,0156			
	Sulphur dioxide		0,5	Not found	Not found			
	Carbon monoxide		5,0	1,30	1,32			
	Formaldehyde		0,051	0,001	0,0010			
	Hydrocarbons C12-C19		1	0,22	0,20			
	Hydrogen sulphide		0,008	Not found	Not found			
Shieli bridge Km 182+306	Inorganic dust: 70-20%	Not planned	0,3	0,040	0,036	No works		0.0148
	Nitrogen dioxide		0,2	0,0132	0,0124			0.0058
	Sulphur dioxide		0,5	Not found	Not found			0.0
	Carbon monoxide		5,0	1,34	1,30			0.0085
	Formaldehyde		0,051	0,0001	0,0011			0.0023
	Hydrocarbons C12-C19		1	0,25	0,21			0.49
	Hydrogen sulphide		0,008	Not found	Not found			n/d
Kenzhaly bridge Km 205+575	Inorganic dust: 70-20%	Not planned	0,3	No construction works		No works		0.0159
	Nitrogen dioxide		0,2					0.0061
	Sulphur dioxide		0,5					0.0

	Carbon monoxide		5,0			0.0096
	Formaldehyde		0,051			0.0036
	Hydrocarbons C12-C19		1			0.51
	Hydrogen sulfide		0,008			n/d

Annex 6

Summary data from environmental monitoring checklists **Lot 1**
Environmental monitoring checklist

Checklist for Lot 1 site inspection		
Date of site visit: 22.08.2019, 03.10.2019, 29.10.2019, 12.11.2019 04.12.2019	**Engineer's representative:** Imbarova Sara Novosadova Natalya **Contractor's representative:** **Hassan Kurais** **Nurgul Budanova is a local environmental specialist** **From the PMC on 03.10.2019 and 29.10.2019 Zeynullina Aliya**	Engineer's ref.No. Contractor's ref.No.
Weather Conditions: 08/22/2019: + 28 0C sunny, east wind 5.4 m/s. 03.10.2019 + 17 0C sunny, southeast wind 3.2 m/s 29.10.2019: + 16 0C sunny, Southwest wind 5.8 m/s. 12.11.2019 + 5 0C overcast, south wind 4.8 m/s. 04.12.2019 - 4 0C south wind 3.5 m/s		
Work currently in progress:		
The problems related to environment	**Possible reasons**	**Proposed measures to reduce the risk**
Increased dustiness on the roads and on the production base in the period August-October	The dust suppression schedule is not kept, lack of water resources.	Control over the schedule of dust suppression

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 on the ACP site
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

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	✓				Monthly meetings in the Akimat
8	Open containers for storage of materials are covered with canopies	✓				Containers are installed with covers
9	Open burning is prohibited		✓	✓		There is no constant monitoring by the environmental specialist
10	Fire Figurehting equipment ▪ Sand bucket and shovel ▪ Foam extinguisher ▪ Protective coating in canteen	✓				audit and replacement of fire extinguishers was made
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	✓				All residents in the construction camp. Local workers are provided with a hot lunch and drinking water.
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. Instructions have been issued for alignment according to the waste work plans (as part of the project EMP)
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 specialized suction equipment ≤MTTSTH≥ Lyman		✓		✓	Export by a specialized company for disposal has not been organized since October 2019. It was planned to reuse waste for dust suppression. Activities are included in the upcoming construction season.
3	Bitumen is stored in a specialized 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		✓		✓	Unorganized waste disposal. Issued instructions for construction of a concrete pit or a special tank for pumping and reusing waste for dust suppression

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
8	All workers of asphalt, concrete plant and crusher are provided with protective masks	✓				All provided with masks and overalls.
9	All workers of asphalt, concrete plant and crusher use protective masks		✓	✓		Employees were instructed to improve production culture and work safety
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-Fighting 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	✓				
3	Gas station equipped with fire-Firefighting 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	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
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		✓	✓		Included in construction season 2020
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	✓				warning signs in frequently used areas for cattle are instaled
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
Borrow pits						

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
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	✓				
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. Reclamation of 80% of the planned work volume was carried out at borrow pit No. 1
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

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
16	Access road to quarries, quarries, borrow pits and traffic conditions are serviced according to the approved standards	✓				Dust suppression ensured, as well as 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 10.06.209 to 31.09.2019 for the section Km 127+46 to Km 137+60
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 6

Results of measurements of noise on Lot 2 section

Sampling points	**Before starting work 24.04.18** dBA	**19.07.2019** dBA	**16.08.2019** dBA	**18.09.2019** dBA	**08.10.2019** dBA
Km 236	51.4	51,2	52,0	53,2	54,0
Km 246	52.4	50,3	51,0	52,4	50,6
Km 255	52.4	50,2	51,6	53,0	52,0
Km 265	52.4	49,2	50,2	51,5	53,2
Km 275	52.4	50,6	52,0	53,0	51,8
Karaulkeldy Production Base	52.4	49,0 48,6 51,2 52,0	52,1 53,0 50,0 51,4	53,2 54,0 49,2 52,0	54,0 51,9 50,3 51,7
Residential area of Karaulkeldy vill.	52.4	53,0	52,4	53,4	52,0
Residential area of Zharly vill.	Measurment was not planed	49,6	50,7	52,0	52,0
Borrow pit 2					
Borrow pit 3		51,0	53,0	54,0	56,0
Borrow pit 4		53,2	54,0	55,2	54,0
Borrow pit 5		52,0	52,5	53,1	52,6
Borrow pit 6		53,6	53,4	52,7	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	**19.07.2019** dB	**16.08.2019** dB	**18.09.2019** dB	**08.10.2019** dB
Km 236	37.2	37,2	36,5	38,0	37,2
Km 246	36.2	37,0	37,5	37,0	36,8
Km 255	37.2	36,0	36,8	37,8	37,0
Km 265	36.2	35,6	36,0	36,7	37,2
Km 275	37.6	36,0	37,0	36,5	36,8
Karaulkeldy Production Base	35.6	36,0 34,8 37,0 35,9	37,0 35,3 36,0 36,8	36,3 37,0 36,8 35,0	37,0 36,3 35,6 36,7
Residential area of Karaulkeldy vill.	37.6	37,0	36,2	36,0	36,7
Residential area of Zharly vill.	Measurement was not planned	35,3 36,1		38,0	36,5
Quarry 2		-			
Quarry 3		36,2	35,6	37,6	37,0
Quarry 4		38,0	37,0	36,4	35,6
Quarry 5		35,9	36,3	37,8	37,0
Quarry 6		37,2	37,4	37,0	37,6

Allowed equivalent vibration acceleration level - 95 dB

Annex 7

Soil test result for Lot 2 section

Sampling points	Indicator (mg/100 g)	Unit	Baseline data	19.07.2019	16.08.2019	18.09.2019	08.10.2019
1	2		3	4	5	6	7
Aktobe – Atyrau road section, 236 km.	pH units		7,91	7,23	7,12	7,25	7,16
	Dense residue	mg/100g	0,150	0,137	0,123	0,117	0,112
	Petroleum products		0,01	0,08	0,010	0,014	0,018
	Chlorides		0,04	0,05	0,07	0,09	0,011
	Sulphates		0,814	0,586	0,574	0,562	0,578
	Calcium		0,6	0,11	0,08	0,06	0,09
	Magnesium		0,2	0,3	0,2	0,3	0,5
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		0,6	0,21	0,17	0,23	0,26
Aktobe – Atyrau road section, 245 км.	pH units		8.06	7,74	7,45	7,34	7,29
	Dense residue	mg/100g	0.153	0,140	0,132	0,137	0,130
	Petroleum products		0.021	0,014	0,011	0,014	0,016
	Chlorides		0.04	0,04	0,06	0,08	0,06
	Sulphates		1.22	1,08	1,4	1,8	1,6
	Calcium		0.5	0,13	0,16	0,20	0,27
	Magnesium		0.1	0,1	0,3	0,4	0,6
	Carbonates		0.0	0,0	0,0	0,0	0,0
	Bicarbonate		0.56	0,28	0,30	0,21	0,28
Aktobe – Atyrau road section, 255 км.	pH units		8,08	7,29	7,15	7,0	7,14
	Dense residue	mg/100g	0,15	0,151	0,147	0,134	0,127
	Petroleum products		0,15	0,016	0,022	0,028	0,024
	Chlorides		0,04	0,07	0,09	0,06	0,08
	Sulphates		0,782	0,780	0,658	0,640	0,632
	Calcium		0,3	0,9	0,6	0,9	0,10
	Magnesium		0,10	0,3	0,4	0,3	0,6
	Carbonates		0	0,0	0,0	0,0	0,0
	Bicarbonate		0,80	0,26	0,24	0,27	0,21
Aktobe – Atyrau road section, 265км	pH units		7,90	7,31	7,35	7,20	7,13
	Dense residue	mg/100g	0,159	0,149	0,129	0,123	0,119
	Petroleum products		0,012	0,05	0,07	0,09	0,06
	Chlorides		0,04	0,06	0,08	0,05	0,09
	Sulphates		0,491	0,710	0,680	0,663	0647
	Calcium		0,4	0,9	0,4	0,7	0,10
	Magnesium		0,1	0,06	0,08	0,04	0,07
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		0,72	4,16	3,0	0,31	0,21
Aktobe – Atyrau road section, 275 км.	pH units		7,79	6,63	7,2	7,18	7,22
	Dense residue	mg/100g	0,160	0,164	0,152	0,163	0,170
	Petroleum products		0,010	0,08	0,06	0,09	0,011
	Chlorides		0,04	0,018	0,014	0,016	0,013
	Sulphates		0,460	0,483	0,457	0,446	0,452
	Calcium		0,6	0,6	0,8	0,6	0,8
	Magnesium		0,10	0,3	0,2	0,3	0,5
	Carbonates		0	0,0	0,0	0,0	0,0

	Bicarbonate		0,6	0,36	0,26	0,29	0,32
Borrow pit № 3	pH units		7.80	7,25	7,15	7,26	7,21
	Dense residue	mg/100g	0.166	0,164	0,152	0,130	0,120
	Petroleum products		0.07	0,08	0,06	0,09	0,012
	Chlorides		0.06	0,04	0,07	0,08	0,06
	Sulphates		0.481	0,460	0,471	0,462	0,473
	Calcium		0.42	0,7	0,9	0,10	0,16
	Magnesium		0.18	0,20	0,15	0,5	0,3
	Carbonates		0.0	0,0	0,0	0,0	0,0
	Bicarbonate		0.93	0,70	0,58	0,54	0,47
Borrow pit № 4	pH units		8.02	7,41	7,36	7,28	7,16
	Dense residue	mg/100g	0.176	0,162	0,157	0,162	0,153
	Petroleum products		0.03	0,05	0,07	0,05	0,08
	Chlorides		0.07	0,08	0,09	0,07	0,010
	Sulphates		0.484	0,450	0,463	0,458	0,450
	Calcium		0.45	0,7	0,5	0,9	0,12
	Magnesium		0.17	0,16	0,18	0,7	0,5
	Carbonates		0.0	0,0	0,0	0,0	0,0
	Bicarbonate		1.35	0,73	0,62	0,57	0,50
Borrow pit № 5	pH units		8,0	7,67	8,0	8,04	8,0
	Dense residue	mg/100g	0,181	0,145	0,158	0,146	0,136
	Petroleum products		0,05	0,06	0,09	0,011	0,016
	Chlorides		0,07	0,04	0,07	0,09	0,011
	Sulphates		0,490	0,461	0,452	0,460	0,448
	Calcium		0,8	0,30	0,24	0,30	0,21
	Magnesium		0,20	0,12	0,20	0,12	0,10
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		1,42	0,68	0,73	0,63	0,53
Borrow pit № 6	pH units		7,96	7,71	7,60	7,44	7,52
	Dense residue	mg/100g	0,175	0,159	0,162	0,154	0,153
	Petroleum products		0,04	0,09	0,06	0,010	0,008
	Chlorides		0,06	0,013	0,017	0,012	0,014
	Sulphates		0,481	0,392	0,405	0,413	0,426
	Calcium		0,7	0,49	0,57	0,49	0,30
	Magnesium		0,19	0,18	0,22	0,6	0,4
	Carbonates		0	0,0	0,0	0,0	0,0
	Bicarbonate		1,33	1,09	1,5	1,2	5,9
PB Zhaksimay point number 1 (north)	pH units		8,05	7,22	7,09	7,24	7,16
	Dense residue	mg/ mg/100g	0,225	0,171	0,164	0,180	0,167
	Petroleum products		0,07	0,043	0,031	0,041	0,036
	Chlorides		0,10	0,18	0,21	0,27	0,21
	Sulphates		0,495	0,7	0,5	0,7	0,10
	Calcium		0,5	0,23	0,20	0,23	0,20
	Magnesium		0,17	0,010	0,008	0,06	0,008
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		1,75	0,51	0,46	0,39	0,33
PB Zhaksimay point number 2 (south)	pH units		7,92	7,80	7,62	7,50	7,42
	Dense residue	mg/100g	0,175	0,147	0,152	0,148	0,143
	Petroleum products		0,073	0,053	0,061	0,063	0,051
	Chlorides		0,09	0,051	0,065	0,049	0,040
	Sulphates		0,488	0,70	0,84	0,73	0,62
	Calcium		0,6	0,06	0,08	0,010	0,014

	Magnesium		0,18	0,15	0,10	0,4	0,6
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		1,90	1,17	1,09	1,0	1,29
PB Zhaksimay point number 3 (west)	pH units		8,07	6,57	6,84	7,0	7,20
	Dense residue	mg/100g	0,186	0,167	0,173	0,160	0,151
	Petroleum products		0,077	0,05	0,08	0,05	0,09
	Chlorides		0,11	0,21	0,30	0,24	0,21
	Sulphates		0,484	0,49	0,56	0,63	0,67
	Calcium		0,62	0,13	0,18	0,22	0,19
	Magnesium		0,28	0,21	0,30	0,3	0,5
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		1,93	1,37	1,42	1,32	0,35
PB Zhaksimay point number 4 (East)	pH units		8,02	8,0	8,4	8,0	8,6
	Dense residue	mg/100g	0,175	0,150	0,157	0,152	0,149
	Petroleum products		0,067	0,04	0,06	0,010	0,013
	Chlorides		0,074	0,084	0,097	0,084	0,076
	Sulphates		0,486	0,12	0,10	0,16	0,23
	Calcium		0,55	0,17	0,15	0,20	0,14
	Magnesium		0,27	0,3	0,2	0,4	0,6
	Carbonates		0,0	0,0	0,0	0,0	0,0
	Bicarbonate		1,75	1,20	1,14	1,21	0,22
NW settlement Karaulkeldy	pH units		8.05	7,84	7,61	7,47	7,36
	Dense residue	mg/100g	0.225	0,150	0,147	0,131	0,123
	Petroleum products		0.07	0,06	0,08	0,013	0,016
	Chlorides		0.10	0,016	0,020	0,026	0,034
	Sulphates		0.495	0,723	0,650	0,624	0,589
	Calcium		0.5	0,9	0,8	0,10	0,14
	Magnesium		0.17	0,1	0,2	0,5	0,6
	Carbonates		0.0	0,0	0,0	0,0	0,0
	Bicarbonate		1.75	0,18	0,21	0,28	0,22
NW settlement Zharly	pH units		7.92	7,80	7,58	7,64	7,50
	Dense residue	mg/100g	0.175	0,23	0,16	0,21	0,17
	Petroleum products		0.073	0,06	0,08	0,014	0,018
	Chlorides		0.09	0,011	0,06	0,09	0,06
	Sulphates		0.488	0,481	0,426	0,410	0,390
	Calcium		0.6	0,16	0,21	0,24	0,20
	Magnesium		0.18	0,12	0,17	0,6	0,4
	Carbonates		0.0	0,0	0,0	0,0	0,0
	Bicarbonate		1.90	0,57	0,48	0,40	0,43

Annex 8

Results of chemical analysis of water (natural) Lot 2

Karaulkeldy river

Indicator	Baseline data 24.04.2018	ND standard	19.07.19	16.08.19	19.09.19	10.10.19
pH (pH units)	8,20	6,0-9,0	7,69	7,69	7,63	7,49
Dry residue mg / dm3	896,0	1000	876,0	876,0	912,0	890,0
Water-insoluble substances mg / dm3	18,0	Not standardized	26,0	26,0	22,0	19,2
Chlorides mg / dm3	328,4	Not more 350	280,0	280,0	310,00	306,0
Ammonium nitrogen mg / dm3	0,528	Not more 0,2	0,189	0,189	0,150	0,136
Oil products mg / dm3	0,041	Not more 0,1	0,09	0,09	0,03	0,06
Total hardness, mg / equiv / l	7,01	7,0(10)	7,0	7,0	7,0	6,8
Calcium mg / dm3	194	Not standardized	140,0	140,0	123,0	116,0
Magnesium mg / dm3	93,6	Not standardized	53,0	53,0	46,2	42,0
Sulfates, mg / dm3	410,0	Not more 500	376,0	376,0	402,0	387,0
Nitrates, mg / dm3	3,57	Not more 45	2,16	2,16	2,06	2,0
Nitrite, mg / dm3	0,195	Not more 3,3	0,186	0,186	0,183	0,176
Iron, mg / dm3	0,125	Not more 3,0	0,210	0,210	0,182	0,187
Chromium	0,0	Not more 0,05	0,0	0,0	0	0
Total phosphorus	0,0	Not more 0,0001	0,0	0,0	0	0
APAV	0,008	0,5	0,0011	0,0011	0,0006	0,0008

Annex 9

Atmospheric air test result, Lot 2

Sampling points	Name of pollutants	Baseline data 24.04.18, mg/m³	MPC standard, mg/m³	19.07.19 mg/m³	16.08.19 mg/m³	18.09.19 mg/m³	09.10.19 mg/m³
Section km 236	Inorganic dust: 70-20%	0.058	0.3	0,0213	0,143	0,0156	0,0147
	Nitrogen dioxide	0.057	0.2	0,036	0,056	0,048	0,036
	Sulphur dioxide	n/d	0.5	0,0067	0,0084	0,0072	0,0087
	Carbon oxide	1.2	5.0	2,1	1,5	1,8	1,5
	formaldehyde	0.0011	0.051	0,0016	0,0023	0,0027	0,0032
	Hydrocarbons C_{12}-C_{19}	0.089	1	0,0163	0,0161	0,0153	0,0167
	Benzene	0.056	0.3	0,0310	0,0263	0,0282	0,0267
	Xylene	0.074	0.2	0,0211	0,0150	0,0154	0,0137
	Methylbenzene	0.3	0.6	0,0343	0,0211	0,0230	0,0238
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
Section km 246	Inorganic dust: 70-20%	0.062	0.3	0,0265	0,0213	0,0225	0,0156
	Nitrogen dioxide	0.055	0.2	0,0067	0,0074	0,0071	0,0086
	Sulphur dioxide	n/d	0.5	0,0258	0,0261	0,0254	0,0264
	Carbon oxide	1.1	5.0	1,6	2,0	1,3	1,6
	formaldehyde	0.0012	0.051	0,0033	0,0046	0,0050	0,0047
	Hydrocarbons C_{12}-C_{19}	0.064	1	0,124	0,109	0,101	0,109
	Benzene	0.053	0.3	0,0073	0,0083	0,0091	0,0081
	Xylene	0.070	0.2	0,0080	0,0064	0,0057	0,0067
	Methylbenzene	0.2	0.6	0,0263	0,0270	0,0254	0,0198
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
Section km 255	Inorganic dust: 70-20%	0.060	0.3	0,0210	0,0140	0,0180	0,0175
	Nitrogen dioxide	0.054	0.2	0,0159	0,0054	0,0178	0,0186
	Sulphur dioxide	n/d	0.5	0,0079	0,0123	0,0090	0,078
	Carbon oxide	1.3	5.0	1,4	2,0	1,4	1,8
	formaldehyde	0.0012	0.051	0,0031	0,0022	0,0043	0,0056
	Hydrocarbons C_{12}-C_{19}	0.063	1	0,0478	0,0318	0,0378	0,0286
	Benzene	0.55	0.3	0,0059	0,0160	0,0080	0,0072
	Xylene	0.061	0.2	0,0021	0,0057	0,0037	0,0041
	Methylbenzene	0.3	0.6	0,045	0,0197	0,042	0,032
	Hydrogen sulphide	n/d	0.008	н/о	н/о	н/о	н/о
Section km 265	Inorganic dust: 70-20%	0.052	0.3	0,0248	0,0183	0,0164	0,0152
	Nitrogen dioxide	0.055	0.2	0,0041	0,0053	0,0063	0,0076
	Sulphur dioxide	n/d	0.5	0,0063	0,0074	0,0080	0,0089
	Carbon oxide	1.0	5.0	1,7	1,3	1,8	1,5
	formaldehyde	0.0010	0.051	0,0022	0,0032	0,0041	0,0053
	Hydrocarbons C_{12}-C_{19}	0.062	1	0,0396	0,0280	0,0302	0,0256
	Benzene	0.052	0.3	0,0052	0,0060	0,0067	0,0076
	Xylene	0.073	0.2	0,0067	0,0070	0,0083	0,0096
	Methylbenzene	0.1	0.6	0,024	0,017	0,022	0,017
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
Section km 275	Inorganic dust: 70-20%	0.054	0.3	0,0181	0,0160	0,0176	0,0148

	Nitrogen dioxide	0.058	0.2	0,0039	0,0044	0,0052	0,0042
	Sulphur dioxide	n/d	0.5	0,0184	0,0206	0,0213	0,0178
	Carbon oxide	1.2	5.0	2,3	1,8	2,3	2,0
	formaldehyde	0.0010	0.051	0,0026	0,0017	0,0024	0,0032
	Hydrocarbons C_{12}-C_{19}	0.076	1	0,0410	0,0390	0,0406	0,0326
	Benzene	0.057	0.3	0,0219	0,0176	0,0201	0,0175
	Xylene	0.069	0.2	0,0078	0,0087	0,0070	0,0057
	Methylbenzene	0.2	0.6	0,0193	0,0203	0,0196	0,0176
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
SPZ border (North) Production base	Inorganic dust: 70-20%	0.094	0.3	0,0248	0,0210	0,0221	0,0176
	Nitrogen dioxide	0.064	0.2	0,0027	0,0031	0,0022	0,0016
	Sulphur dioxide	n/d	0.5	0,0029	0,0030	0,0017	0,0023
	Carbon oxide	0.76	5.0	1,9	1,5	2,0	2,3
	formaldehyde	0.02	0.051	0,0036	0,0024	0,0042	0,0052
	Hydrocarbons C_{12}-C_{19}	0.089	1	0,0410	0,0350	0,0250	0,0250
	Benzene	0.075	0.3	0,0041	0,0050	0,0040	0,0057
	Xylene	0.091	0.2	0,0071	0,0050	0,0046	0,0053
	Methylbenzene	0.2	0.6	0,0063	0,0048	0,0051	0,0062
	Hydrogen sulphide	n/d	0.008	н/о	н/о	н/о	н/о
Karaulkeldy Production Base SPZ border (South) Production base	Inorganic dust: 70-20%	0.096	0.3	0,0270	0,0254	0,0256	0,0240
	Nitrogen dioxide	0.066	0.2	0,0034	0,0047	0,037	0,0030
	Sulphur dioxide	n/d	0.5	0,0036	0,0041	0,0032	0,0036
	Carbon oxide	0.77	5.0	1,19	1,11	1,4	1,8
	formaldehyde	0.03	0.051	0,0028	0,0030	0,0028	0,0067
	Hydrocarbons C_{12}-C_{19}	0.090	1	0,0421	0,0401	0,0316	0,0264
	Benzene	0.077	0.3	0,0053	0,0063	0,0053	0,0064
	Xylene	0.092	0.2	0,0082	0,0062	0,0058	0,0061
	Methylbenzene	0.1	0.6	0,0073	0,0057	0,0063	00071
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
SPZ border (East) Production base	Inorganic dust: 70-20%	0.097	0.3	0,0309	0,0286	0,070	0,0248
	Nitrogen dioxide	0.068	0.2	0,0043	0,0053	0,0060	0,0042
	Sulphur dioxide	n/d	0.5	0,0041	0,0036	0,0040	0,0046
	Carbon oxide	0.74	5.0	0,26	0,32	0,60	0,57
	formaldehyde	0.01	0.051	0,0030	0,0034	0,0032	0,0041
	Hydrocarbons C_{12}-C_{19}	0.091	1	0,0326	0,0343	0,0331	0,0306
	Benzene	0.097	0.3	0,0060	0,0084	0,0080	0,0086
	Xylene	0.095	0.2	0,0093	0,070	0,0081	0,0076
	Methylbenzene	0.3	0.6	0,0087	0,0040	0,0037	0,0042
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
SPZ border (West) Production base	Inorganic dust: 70-20%	0.095	0.3	0,0316	0,0304	0,0238	0,0229
	Nitrogen dioxide	0.070	0.2	0,0020	0,0026	0,0051	0,0051
	Sulphur dioxide	n/d	0.5	0,0032	0,0047	0,0052	0,0060
	Carbon oxide	0.80	5.0	0,48	0,40	0,31	0,43
	formaldehyde	0.02	0.051	0,0033	0,0042	0,0054	0,0036
	Hydrocarbons C_{12}-C_{19}	0.092	1	0,0330	0,0361	0,0280	0,0318
	Benzene	0.078	0.3	0,0067	0,0073	0,0067	0,0077
	Xylene	0.093	0.2	0,0064	0,0074	0,0060	0,0080
	Methylbenzene	0.2	0.6	0,0090	0,0061	0,0029	0,0036

	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
SPZ border (East) Production base	Inorganic dust: 70-20%	0.097	0.3	0,0119	0,0101	0,0120	0,0115
	Nitrogen dioxide	0.068	0.2	0,0156	0,0180	0,0174	0,0183
	Sulphur dioxide	n/d	0.5	0,0078	0,0060	0,0054	0,0062
	Carbon oxide	0.74	5.0	1,3	1,6	1,3	1,6
	formaldehyde	0.01	0.051	0,0021	0,0032	0,0027	0,0036
	Hydrocarbons C_{12}-C_{19}	0.091	1	0,074	0,060	0,057	0,063
	Benzene	0.097	0.3	n/d	n/d	n/d	n/d
	Xylene	0.095	0.2	0,0213	0,0110	0,0131	0,0129
	Methylbenzene	0.3	0.6	0,0215	0,0203	0,0193	0,0190
	Hydrogen sulphide	n/d	0.008	0,0089	0,0063	0,0060	0,0066
SPZ border (West) Production base	Inorganic dust: 70-20%	0.095	0.3	2,0	1,4	1,8	2,0
	Nitrogen dioxide	0.070	0.2	0,0026	0,0038	0,0030	0,0041
	Sulphur dioxide	n/d	0.5	0,083	0,051	0,062	0,070
	Carbon oxide	0.80	5.0	n/d	n/d	n/d	n/d
	formaldehyde	0.02	0.051	0,0213	0,143	0,0156	0,0147
	Hydrocarbons C_{12}-C_{19}	0.092	1	0,036	0,056	0,048	0,036
	Benzene	0.078	0.3	0,0067	0,0084	0,0072	0,0087
	Xylene	0.093	0.2	2,1	1,5	1,8	1,5
	Methylbenzene	0.2	0.6	0,0016	0,0023	0,0027	0,0032
	Hydrogen sulphide	n/d	0.008	0,0163	0,0161	0,0153	0,0167
ACP area	Suspended particles	0,124	0,3	0,0310	0,0263	0,0282	0,0267
	Nitrogen dioxide	0,0247	0,2	0,0211	0,0150	0,0154	0,0137
	sulphur dioxide	0,0080	0,5	0,0343	0,0211	0,0230	0,0238
	Carbon monoxide	1,7	5,0	n/d	n/d	n/d	n/d
	formaldehyde	0,0013	0,05	0,0265	0,0213	0,0225	0,0156
	Hydrocarbons C12-C19	0,101	1,0	0,0067	0,0074	0,0071	0,0086
	Hydrogen sulfide	n/d	0,008	0,0258	0,0261	0,0254	0,0264
CBP area	Suspended particles	0,0948	0,3	1,6	2,0	1,3	1,6
	Nitrogen dioxide	0,0312	0,2	0,0033	0,0046	0,0050	0,0047
	sulphur dioxide	0,0083	0,5	0,124	0,109	0,101	0,109
	Carbon monoxide	1,8	5,0	0,0073	0,0083	0,0091	0,0081
	formaldehyde	0,0013	0,05	0,0080	0,0064	0,0057	0,0067
	Hydrocarbons C12-C19	0,103	1,0	0,0263	0,0270	0,0254	0,0198
	Hydrogen sulfide	n/d	0,008	n/d	n/d	n/d	n/d

- *According to the Management Plan, atmospheric air pollution at the ACP and CBP facilities provides metering at a frequency of 1 time per quarter. By recommendation of the ADB national consultant, the inorganic dust indicator was replaced with suspended particles*

Atmospheric air test result, Lot 2

Site	Indicator		Baseline data 24.04.2018 mg/m³		19.07.19 mg/m³		16.08.2019 mg/m³		18.09.2019 mg/m³		18.10.19 mg/m³	
		MPC, mg/m³	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	0,180	0,0220	0,0204	0,0210	0,0175	0,0203	0,0136	0,0148
	Nitrogen dioxide	0.2	0.0254	0.0256	0,0032	0,0037	0,0041	0,0053	0,0058	0,0063	0,0110	0,0126
	Sulphur dioxide	0.5	n/d	n/d	0,0050	0,0063	0,0036	0,0047	0,0042	0,0050	0,0027	0,0036
	Carbon oxide	5.0	1.4	1.5	1,6	2,0	1,9	2,3	1,2	1,7	1,4	1,9
	formaldehyde	0.05	0.0012	0.0014	0,0014	0,0021	0,0021	0,0026	0,0027	0,0031	0,0031	0,0040
	Hydrocarbons C_{12}-C_{19}	1	0.095	0.0097	0,33	0,41	0,40	0,52	0,29	0,33	0,09	0,16
	Hydrogen sulphide	0.008	n/d	n/d	n/d	0,41	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**
Zharly Residential zone	Inorganic dust: 70-20%	0.3	0034	0.0341	0,0260	0,0289	0,0213	0,0245	0,0158	0,0183	0,0152	0,0186
	Nitrogen dioxide	0.2	0.03	0.0302	0,0136	0,0207	0,0120	0,0153	0,0107	0,0130	0,0063	0,0072
	Sulphur dioxide	0.5	0	0	0,0028	0,0031	0,0017	0,0024	0,0027	0,0036	0,0050	0,0062
	Carbon oxide	5.0	1.6	1.7	1,8	2,3	2,3	2,9	1,8	2,2	1,6	1,9
	formaldehyde	0.05	0.0015	0.0014	0,0019	0,0024	0,0022	0,0030	0,0028	0,0034	0,0018	0,0026
	Hydrocarbons C_{12}-C_{19}	1	0.1	0.2	0,43	0,51	0,30	0,41	0,11	0,23	0,20	0,29
	Hydrogen sulphide	0.008	0	0	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

Atmospheric air test results of Lot 2 borrow pits

Sampling points	Name of pollutants	Baseline data (prior construction) 24.04.2018	MPC standard, mg/m³	19.07.19 mg/m³	16.08.19 mg/m³	18.09.19 mg/m³	18.10.19 mg/m³
Borrow pit No.2	Inorganic dust: 70-20%	0.088	0.3	No measurements			
	Nitrogen dioxide	0.074	0.2				
	Sulphur dioxide	n/d	0.5				
	Carbon oxide	1.5	5.0				
	formaldehyde	0.0013	0.051				
	Hydrocarbons C_{12}-C_{19}	0.092	1				
	Benzene	0.065	0.3				
	Xylene	0.092	0.2				
	Methylbenzene	0.3	0.6				
	Hydrogen sulphide	n/d	0.008				
Borrow pit No.3	Inorganic dust: 70-20%	0.042	0.3	0,0386	0,0310	0,0286	0,0262
	Nitrogen dioxide	0.035	0.2	0,0047	0,0052	0,0063	0,0075
	Sulphur dioxide	n/d	0.5	0,0080	0,0076	0,0083	0,0090
	Carbon oxide	2.2	5.0	1,7	1,9	2,2	1,8
	formaldehyde	0.0017	0.051	0,0023	0,0029	0,0035	0,0042
	Hydrocarbons C_{12}-C_{19}	0.055	1	0,0304	0,0287	0,0307	0,0269
	Benzene	0.038	0.3	0,0087	0,0091	0,0074	0,0084
	Xylene	0.2	0.2	0,0060	0,0074	0,0063	0,0076
	Methylbenzene	n/d	0.6	0,0205	0,0180	0,0203	0,0195
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
Borrow pit No. 4	Inorganic dust: 70-20%	0.041	0.3	0,010	0,0196	0,0174	0,0158
	Nitrogen dioxide	0.033	0.2	0,0053	0,0047	0,0053	0,0061
	Sulphur dioxide	n/d	0.5	0,0092	0,0086	0,0068	0,0076
	Carbon oxide	2.3	5.0	2,1	1,8	1,5	1,8
	formaldehyde	0.0013	0.051	0,0029	0,0035	0,0042	0,0057
	Hydrocarbons C_{12}-C_{19}	0.053	1	0,0308	0,0270	0,0286	0,0262
	Benzene	0.049	0.3	0,0057	0,0063	0,0072	0,0060
	Xylene	0.035	0.2	0,0063	0,0078	0,0083	0,0058
	Methylbenzene	0.1	0.6	0,0420	0,0367	0,0347	0,0319
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d
Borrow pit No. 5	Inorganic dust: 70-20%	0.090	0.3	0,0200	0,0150	0,0180	0,0161
	Nitrogen dioxide	0.081	0.2	0,0060	0,0071	0,0057	0,0067
	Sulphur dioxide	n/d	0.5	0,0074	0,0086	0,0063	0,0048
	Carbon oxide	1.6	5.0	2,3	2,0	2,3	1,9
	formaldehyde	0.0013	0.051	0,0033	0,0040	0,0036	0,0047
	Hydrocarbons C_{12}-C_{19}	0.094	1	0,0072	0,0083	0,0068	0,0073
	Benzene	0.072	0.3	0,0047	0,0057	0,0061	0,0053
	Xylene	0.095	0.2	0,0059	0,0062	0,0073	0,0081
	Methylbenzene	0.3	0.6	0,014	0,020	0,014	0,012
	Hydrogen sulphide	n/d	0.008	н/о	н/о	н/о	н/о
Quarry 6	Inorganic dust: 70-20%	0.090	0.3	0,0230	0,0212	0,0158	0,0160
	Nitrogen dioxide	0.081	0.2	0,0033	0,0045	0,0060	0,0052
	Sulphur dioxide	n/d	0.5	0,0056	0,0062	0,0054	0,0062
	Carbon oxide	1.6	5.0	2,7	2,3	1,7	1,4
	formaldehyde	0.0013	0.051	0,0018	0,0023	0,0035	0,0035

	Hydrocarbons C_{12}-C_{19}	0.094	1	0,080	0,071	0,081	0,072
	Benzene	0.072	0.3	0,0064	0,0068	0,0076	0,0086
	Xylene	0.095	0.2	0,0036	0,0024	0,0030	0,0023
	Methylbenzene	0.3	0.6	0,0011	0,019	0,024	0,019
	Hydrogen sulphide	n/d	0.008	n/d	n/d	n/d	n/d

Annex 10

Summary data from environmental monitoring checklists **Lot 2**

Environmental monitoring checklist

Checklist for Lot 2 site inspection		
Date of site visit: 23.08.2019, 03.10.2019, 30.10.2019, 12.11.2019 04.12.2019, 19.12.2019	**Engineer's representative:** Imbarova Sara Novossadova Natalia **Contractor's representative:** Anuar Embergenov PMC - Zeynullina Aliya 30.10.2019	Engineer's ref.No. Contractor's ref.No.
Weather Conditions: 23.08.2019 - +26 0 C, north-west wind of 6.2 m / s. 032.10.019 - +12 0 C, north wind 7.3 m / s. 30.10.2019 - + 6 0 C, west wind 5, s m / s. 12.11.2019 - +3 0 C, south wind 5 m / s. 04.12.2019: -2 0 C, south wind 8.2 m / s. 19.12.2019: -8 0 C, southeast wind 7.2 m / s.		
Work executed during site minitoring		
The problems related to environment	**Possible reasons**	**Proposed measures to reduce the risk**
Increased dustiness on the roads in warm periods	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	No control from the environmental specialist	Prepare Solid Waste removal schedule appoint responsible for compliance with the schedule of export of solid waste, adjust waste management plan

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.

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
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		✓		✓	
8	Open containers for storage of materials are covered with canopies	✓				Containers are installed with covers
9	Open burning is prohibited	✓				Information work among the staff is carried out
10	Fire Figurehting equipment ▪ Sand bucket and shovel ▪ Foam extinguisher ▪ Protective coating in canteen	✓				Sufficient numbers of fire shields 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	✓				Work is carried out in accordance with road safety management plans
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	✓				In the medical point installed video surveillance for the daily

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
	provided, monthly medical examinations are also carried out					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						
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 periodicaly
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	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
11	In asphalt, concrete plants and crushers there are fire-Figurehting equipment	✓				Work was carried out to ensure safety measures and emergency response
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	✓				Protective measures were provided during work on the bridge over Karauylkeldy River
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	✓				Provided in accordance with technical regulations of gas stations
4	The gas station has warning signs	✓				
5	The gas station is equipped with a special basket for excess waste	✓				Provided in accordance with technical regulations of gas stations
Contractor's workshop and car wash						
1	Liquid hazardous materials are stored in the designated place in workshop	✓				Concrete platform It is recommended to equip sides on the platform to prevent contamination of the adjacent territory and as a preventive measure against emergency discharge of liquid hazardous materials
2	Solid hazardous materials are stored in the designated place in the workshop	✓				Containers are installed
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	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
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					No car wash
The Project Road						
1	All the roads targeted for construction work watered with the water truck	✓				
2	On the project road in appropriate places there are flags for the passage of cattle, sheep and other animals	✓				warning signs in frequently used areas for cattle are installed
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	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
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	✓				
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	✓				

No.	Measures for the environment protection	done		In progress		Comments
		Yes	No	Yes	No	
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 necessary temporary or permanent work					No requirement
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 10.1.

Notification to eliminate nonconformities on Lot 2 Ref. CSC letter No. 1756 dated 05.10.2019

Identified nonconformities to eliminate

Discription of the issue	Corrective action	Level of nonconformity	Execution date	priority	Photo of nonconformity
littered areas of the production base, solid waste in the trenches of the fence of the base camp, fuel spills at the site of a local gas station oil-contaminated soil in the area of equipment repair	to make a clining with involvement of subcontractor personnel conduct environmental education among the personnel of the Contractor and subcontractors equip platforms under the tank for fuel and lubricants to prevent spills eliminate local pollution of soil	Major	10.10.209	High	

					
Irrational use of water resources: a hose in the well which has constant discharge of water outside the base camp	Install valves at the well to prevent water spills or provide measures for use of water for dust suppression or other needs.	Major	07.10.2019	high	

					
Fire fighting means are not observed at local gas station	Check completeness and expiration dates of fire extinguishing equipment on the territory of the production base Brief with local gas station operator Conduct trainings for emergency cases at the production base and local gas station	Major	07.10.2019	high	

Annex 11

Results of measurements of noise on Lot 3 section

Sampling points	**Baseline (prior construction) 24.04.18** dBA	**19.07.19** dBA	**16.08.19** dBA	**18.09.19** dBA	**07.10.19** dBA
p/b Nogaity Point 1 Point 2	-	-	53,2 52,0	52,7 53,2	53,5 54,0
p/b Nogaity ACP area	53,4	49,7	51,0	51,8	51,8
p/b Nogaity Dead end section	-	52,0	53,5	52,2	53,0
p/b Nogaity CBP area	53,4	53,2	54,0	52,0	53,0
Section km 275	53,6	52,8	53,5	52,7	49,6
Section km 285	52,6	53,4	52,5	53,4	51,6
Section km 300	53,2	53,6	50,5	52,3	50,6
Section km 310	53,4	53,0	54,0	53,5	50,9
Section km 320	-	52,8	51,6	52,7	51,4

Maximum allowable sound level - 80 dBA

Results of measurements of vibration on Lot 3 section

Sampling points	**Baseline (prior constructiот)** dB	**19.07.19** dB	**16.08.19** dB	**18.09.19** dB	**07.10.19** dB
p/b Nogaity	38,0	35,3	37,8	38,3	37,4
p/b Nogaity Dead end section	-	37,0	35,8	37,0	36,0
ACP section	38,4	-	-	-	
CBP section	38,4	-	-	-	
Section km 275	38,4	-	34,6	37,8	38,0
Section km 285	38,3	36,2	35,8	37,0	36,5
Section km 300	38,7	34,0	35,0	38,1	37,6
Section km 310	38,9	32,5	33,0	37,6	37,6
Section km 320	39,4	35,3	37,0	38,8	37,6

Allowed equivalent vibration acceleration level - 95 dB

Annex 12

Laboratory test results of for soil contamination, Lot 3

Sampling points	Name of detected indicators (mg/100 g)	Before the beginni Construction Works 24.04.2018	19.07.19 (mg/100 g)	16.08.19 (mg/100 g)	20.10.19 (mg/100 g)	09.10.19 (mg/100 g)
Production base "Nogaity", point number 1	pH units	7,33	7,41	7,56	7.69	7,52
	Dense residue	0,194	0,261	0,270	0.247	0,211
	Petroleum products	0,028	0,041	0,049	0.026	0,034
	Chlorides	0,253	0,19	0,23	0.30	0,20
	Sulphates	0,471	0,439	0,409	0.420	0,396
	Calcium	0,82	1,64	1,24	1.31	1,28
	Magnesium	0,75	0,0	0,0	0.0	0,0
	Carbonates	0,090	0,010	0,008	0.006	0,009
	Bicarbonate	68,0	21,0	24,0	21.0	0,32
May and June Km 275	pH units	7,80	7,08	7,25	7,40	7,29
	Dense residue	0,257	0,168	0,179	0,210	0,204
	Petroleum products	0,020	0,06	0,09	0,015	0,019
	Chlorides	0,07	0,09	0,05	0,010	0,016
	Sulphates	0,448	0,470	0,368	0,406	0,392
	Calcium	0,50	0,14	0,12	0,18	0,22
	Magnesium	0,0	0,10	0,09	0,07	0,05
	Carbonates	0,0	0,0	0,0	0,0	0,0
	Bicarbonate	27,0	0,48	0,37	0,31	0,38
km 285	pH units	7.30	7,08	7,16	7,09	7,18
	Dense residue	0.215	0,208	0,179	0,161	0,149
	Petroleum products	0.027	0,012	0,010	0,008	0,011
	Chlorides	0.251	0,216	0,240	0,232	0,247
	Sulphates	0.453	0,432	0,453	0,446	0,430
	Calcium	0.86	0,72	0,60	0,51	0,42
	Magnesium	0.70	0,51	0,47	0,32	0,24
	Carbonates	0.072	0,060	0,054	0,0	0,0

	Bicarbonate	56.0	0,37	0,46	0,38	0,31
Km 300 primary measurement April 2018	pH units	7,32	6,45	7,0	7,23	7,12
	Dense residue	0,279	0,210	0,221	0,196	0,180
	Petroleum products	0,017	0,031	0,048	0,054	0,043
	Chlorides	0,09	0,262	0,280	0,293	0,286
	Sulphates	0,470	0,452	0,447	0,409	0,412
	Calcium	0,78	0,65	0,54	0,51	0,40
	Magnesium	1,6	0,73	0,83	0,71	0,60
	Carbonates	0,2	0,080	0,073	0,060	0,078
	Bicarbonate	28,0	0,47	0,39	0,28	0,33
km 310	pH units	6.40	6,49	6,80	7,18	7,24
	Dense residue	0.223	0,208	0,189	0,162	0,150
	Petroleum products	0.021	0,017	0,023	0,017	0,026
	Chlorides	0.238	0,226	0,231	0,257	0,243
	Sulphates	0.420	0,421	0,360	0,296	0,280
	Calcium	0.72	0,78	0,59	0,64	0,49
	Magnesium	0.69	0,77	0,83	0,73	0,80
	Carbonates	0.082	0,092	0,079	0,065	0,073
	Bicarbonate	50.0	43,0	46,0	0,21	0,29
Km 320 initial measurements in April 2018	pH units	7,20	7,03	7,50	8,0	7,20
	Dense residue	0,250	0,218	0,231	0,243	0,136
	Petroleum products	0,017	0,031	0,043	0,035	0,022
	Chlorides	0,08	0,263	0,186	0,160	0,251
	Sulphates	0,462	0,384	0,410	0,437	0,274
	Calcium	0,71	0,74	0,87	0,79	0,53
	Magnesium	1,1	0,52	0,63	0,50	0,65
	Carbonates	0,08	0,076	0,087	0,074	0,057
	Bicarbonate	32,0	50,0	43,0	0,59	0,35

Annex 13

Results of measurements of atmospheric air, Lot 3

Sampling points	Name of pollutants	Actual concentration Initial measurement before beginning of the Project 24.04.18	MPC standard, mg/m³	Concentration, mg/m³			
				19.07.19, mg/m³	16.08.19, mg/m³	19.09.19, mg/m³	07.10.19, mg/m³
ACP section	Suspended particles	Not determined	0,3	0,0240	0,0211	0,0180	0,0161
	Nitrogen dioxide NO2	н/о	0,2	0,0146	0,0150	0,0132	0,0140
	Sulfur dioxide SO2	1,6	0,5	0,0315	0,0258	0,0267	0,0257
	Carbon monoxide CO	0,0012	5,0	1,7	1,4	1,6	1,3
	Formaldehyde CH2O	0,2	0,051	0,0042	0,0028	0,0032	0,0038
	Hydrocarbons C12-C19	n/d	1	0,123	0,102	0,101	0,106
	Hydrogen sulfide, H2S	0,0401	0,008	0,0	n/d	n/d	0,0
CBP section	Suspended particles	No measurements	0,3	0,0216	0,0226	0,0239	0,0216
	Nitrogen dioxide NO2		0,2	0,0281	0,0134	0,0141	0,0156
	Sulfur dioxide		0,5	0,0160	0,0283	0,0279	0,0270
	Carbon monoxide		5,0	0,0326	1,0	2,0	1,8
	Formaldehyde CH2O		0,051	2,0	0,0035	0,0046	0,0041
	Hydrocarbons C12-C19		1	0,0048	0,110	0,116	0,110
	Hydrogen sulfide, H2S		0,008	0,131	n/d	n/d	0,0
	Inorganic dust 70-20%	0,071	0,3	0,0189	0,0146	0.0187	0,0168

km 275	Nitrogen dioxide NO2	0,069	0,2	0,0068	0,0058	0.0063	0,0076
	Sulfur dioxide	н/о	0,5	0,0071	0,0062	0.0074	0,0081
	Carbon monoxide	1,7	5,0	2,3	1,8	2.3	1,9
	Formaldehyde CH2O	0,0013	0,051	0,0010	0,0014	0.0018	0,0023
	Hydrocarbons C12-C19	0,13	1	0,0265	0,0249	0.0253	0,0248
	Benzene, C6H6	0,074	0,3	0,0053	0,0063	0.0079	0,0087
	Xylene C8H10	0,090	0,2	0,0064	0,0074	0.0060	0,0071
	Methylbenzene C5H6-CH3	0,2	0,6	0,0041	0,0050	0.0047	0,0054
	Hydrogen sulfide, H2S	n/d	0,008	0,0	n/d	n/d	0,0
km 285	Inorganic dust 70-20%	0,069	0,3	0,0162	0,0140	0.0160	0,0157
	Nitrogen dioxide NO2	0,067	0,2	0,0029	0,0032	0.0037	0,0043
	Sulfur dioxide	н/о	0,5	0,0	н/о	н/о	0,0
	Carbon monoxide	1,6	5,0	2,0	2,5	2,0	1,4
	Formaldehyde CH2O	0,0012	0,051	0,0014	0,0019	0,0024	0,0032
	Hydrocarbons C12-C19	0,12	1	0,0030	0,0027	0,0036	0,0045
	Benzene, C6H6	0,072	0,3	0,0034	0,0042	0,0057	0,0067
	Xylene C8H10	0,088	0,2	0,0054	0,0062	0,0065	0,0058
	Methylbenzene C5H6-CH3	0,3	0,6	0,0220	0,0214	0,0223	0,0219
	Hydrogen sulfide, H2S	n/d	0,008	0,0	n/d	n/d	0,0
km 300	Inorganic dust 70-20%	0,067	0,3	0,0253	0,0216	0,0223	0,0176
	Nitrogen dioxide NO2	0,068	0,2	0,048	0,057	0,064	0,0072
	Sulfur dioxide	н/о	0,5	0,0043	0,0035	0,0050	0,0083
	Carbon monoxide	1,6	5,0	1,8	2,3	1,8	1,7
	Formaldehyde CH2O	0,0013	0,051	0,0018	0,0026	0,0033	0,0035

	Hydrocarbons C12-C19	0,12	1	0,043	0,037	0,046	0,0206
	Benzene, C6H6	0,073	0,3	0,053	0,062	0,079	0,0069
	Xylene C8H10	0,089	0,2	0,053	0,071	0,083	0,0080
	Methylbenzene C5H6-CH3	0,2	0,6	0,067	0,076	0,090	0,0083
	Hydrogen sulfide, H2S	n/d	0,008	0,0	n/d	n/d	0,0
km 310	Inorganic dust 70-20%	0,068	0,3	0,0256	0,0180	0,0193	0,0176
	Nitrogen dioxide NO2	0,069	0,2	0,0067	0,0057	0,0065	0,0093
	Sulfur dioxide	n/d	0,5	0,0079	0,0086	0,0072	0,0082
	Carbon monoxide	1,6	5,0	1,5	1,8	1,4	1,9
	Formaldehyde CH2O	0,0012	0,051	0,0023	0,0019	0,0022	0,0075
	Hydrocarbons C12-C19	0,13	1	0,0209	0,0193	0,0210	0,0169
	Benzene, C6H6	0,074	0,3	0,0057	0,0067	0,0074	0,0043
	Xylene C8H10	0,088	0,2	0,0065	0,0078	0,0086	0,0057
	Methylbenzene C5H6-CH3	0,2	0,6	0,0083	0,0090	0,0076	0,0032
	Hydrogen sulfide, H2S	n/d	0,008	0,0	n/d	n/d	0,0
km 320	Inorganic dust 70-20%	PB	0,3	0,0178	0,0183	0,0162	0,0182
	Nitrogen dioxide NO2	0,071	0,2	0,0081	0,0079	0,0086	0,0086
	Sulfur dioxide	н/о	0,5	0,0053	0,0063	0,0074	0,0089
	Carbon monoxide	1,7	5,0	2,4	2,1	1,5	1,4
	Formaldehyde CH2O	0,0013	0,051	0,0043	0,0057	0,0062	0,0067
	Hydrocarbons C12-C19	0,13	1	0,0211	0,0178	0,0187	0,0162
	Benzene, C6H6	0,075	0,3	0,0039	0,0046	0,0050	0,0040
	Ксилол C_8H_{10}	0,089	0,2	0,0079	0,0084	0,0064	0,0049
	Метилбензол C_5H_6-CH_3	0,3	0,6	0,0042	0,0059	0,0040	0,0037
	Hydrogen sulfide, H2S	n/d	0,008	0,0	n/d	n/d	0,0

Annex 14

Summary data from environmental monitoring checklists **Lot 3**

Environmental monitoring checklist

Checklist for Lot 3 site inspection		
Date of site visit: 24.08.2019;04.10.2019; 30.10.2019; 15.11.2019 06.12.2019; 21.12.2019	**Engineer's representative:** Imbarova Sara Temirbek Zhenisgul **Contractor's representative:** Nurgul, SMS environmental specialist PMC- Alia Zeynullina (30.10.2019)	Engineer's ref.No. Contractor's ref.No.
Weather Conditions: 24.08.2019: +28 0 C wind NW 6.3 m/s cloudy, 04.09.2019: +13 0 C wind Southeast 6.1 m/s, 30.10.2019: +7 0C Southwest wind 6.1 m/s, 15.11.2019: + 20C Ю 7.2m/s 06.12.2019: -3 0C Wind South 7.4 m/s, 21.12.2019: -5 0 C Wind South-East 8.5 m/s		
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		Revision of Waste removal schedule Monitoring of schedule of solid waste removal for disposal

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					Area concreted
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	✓				A briefing was held among the personnel of the subcontractor about restriction of incineration of solid waste
10	Fire Figurehting equipment ▪ 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 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	✓				Signs are installed
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 periodicaly
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	✓		✓		Complied with Schedule
4	The gas station has warning signs	✓				
5	The gas station is equipped with a special basket for excess waste	✓				Containers are provided
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	✓				Warning signs in frequently used areas for cattle are installed
3	Sections of culverts and bridges, equipped with safety tapes and twisting signs	✓				Provided with necessary 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 ensured, flagman at the entrance/exit of the road
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

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	✓				

Annex 15

Details of incidents on Lot 1, Lot 2 and Lot 3 sections for the second half of 2019

№	Time	Place of accident	Description of accident	Result
1	02.07.2019 16:45 (local time)	Lot 3. Temporary bypass road PK 260+50 (km 301)	Land Cruiser and HOWO dump truck collided on a temporary bypass road. Previously, for some unknown reason, the driver of Land Cruiser cars drove into the oncoming lane along which the HOWO dump truck was moving. As a result of the accident, E.S. Kalaganov chief specialist of the quality control and acceptance committee of the Aktobe Regional Branch of "KazAvtoZhol", the passenger of the Land Cruiser vehicle died. The death of this passenger was ascertained by a medical assistant of the subcontractor, who arrived immediately to the accident place. Information about this accident was carried out in accordance with accepted procedures.	1 person died. The verdict of the Bayganin district court of Aktobe region No. 1536-19-00-1/40 dated 10.01.2020, B. Orazayev (Land Cruiser driver) found guilty.
2	13.09.2019 16:15 (local time)	Lot 1. Temporary bypass road PK 551+00 (km 215)	Nissan Patrol car with state number 905 MOA 04 moving with high speed crashed into KAMAZ with state number 171 MXA 04, which was completing the maneuver. There were no injuries, refused from hospitalization.	There are no injuries. We are waiting for a response to a written appeal on the result of an accident from the Baiganin district police department.
3	24.09.2019 г. 09:15 (local time)	Lot 2. Designed road PK 279+00 (km 264)	The driver who drove Lada Priora vehicle with state number 128 EOA 04, heading in the direction of Karauylkeldy village ignored the prohibition signs, he drove onto the project road, and as a result, overturned on PK 279+00. Prohibition signs are installed at the beginning, middle and end of the road. Two people were inside the car.	As a result of the accident, a passenger of vehicle died, and the driver was hospitalized to the regional hospital in a stable and serious condition. The causes of the accident resulting in the death of a passenger are being investigated by the investigating authorities.
4	08.11.2019 г. 14:00 (local time)	Lot 1. km 176, inside village road	The accident on the main road at the exit from Shubarkuduk involving two vehicles: dump truck Shacman rented by SMS,	From the decision of the Temir district court: according to part 1 of Article 610 of the Code of the

			subcontractor, with state number 207 XAZ 04 and Audi 80 with state number B 641 ONM. There are no victims.	Republic of Kazakhstan on an administrative offense, Zhunit Deneevich Sardalova (driver of Audi B4 vehicle) was found guilty of an accident and imposed an administrative fine of 20 MCI (2525) - 50.500 (fifty thousand five hundred) tenge.
5	20.12.2019 г. 19:30 (local time)	Lot 1. PK 239+00 (km 184)	The driver of Chevrolet Orlando without state number Yeskov Mikhail Igorevich born on 04.05.1989, following the Atyrau-Aktobe route, at the exit of the bypass road, ignored warning and prohibiting road signs, drove into the subgrade.	The driver was issued with the Protocol on Administrative Offenses No. 1569647, Temir RPD

Annex 16. Site photos

Lot 1. Km 210, while measuring level of air pollution, 16.08.2019

Lot 1, water sampling from Kenzhaly River on 08.10.2019

At km 190, noise and vibration measurement 19.09.2019

Measurement of noise and vibration level on the territory of ACP Km 242+00 Karauylkeldy base camp Lot 2 19.07.2019

Instrumental measurement of air pollution on the territory of the PB “Nogaity” Lot 3 19.07.2019

Instrumental measurement of the noise and vibration level at the Nogayty Lot 3 08.10.2019