

Environmental Monitoring Report

Project Number: 52286-001
Semestral Report: July–December 2021
June 2022

Kazakhstan: Central Asia Regional Economic Cooperation Corridors 1 and 6 Connector Road (Aktobe–Kandyagash) Reconstruction Project

Prepared by the PMC JSC "NC "KazAvtoZhol" for the JSC "NC "KazAvtoZhol" and the Asian Development Bank.

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Environmental Monitoring Report

Project No.: 3829-KAZ
Reporting Period: July - December 2021

REPUBLIC OF KAZAKHSTAN: CAREC CORRIDORS 1 AND 6 CONNECTOR “AKTOBE-KANDYAGASH” ROAD RECONSTRUCTION PROJECT

Funded by ASIAN DEVELOPMENT BANK

Prepared by PMC JSC “NC “KazAvtoZhol” with support of DONGSUNG ENGINEERING CJ., LTD / ZS ENGINEERING Construction Supervision Consultant (Seoul, Korea) for the JSC “NC “KazAvtoZhol” and the Asian Development Bank

Approved by: PMC JSC “NC “KazAvtoZhol” – Chubutkin:
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ABBREVIATIONS

ADB – Asian Development Bank

ALV - Admissible Limit Value

CoR – Committee of Roads

CSC - Construction Supervision Consultant

COVID-19 - Coronaviral infection 2019-nCoV

CAREC - Central Asian Regional Economic Cooperation

CMP - Construction Management Personnel

ECP- Environmental Control Programme

EMoP– Environmental monitoring plan

EMP – Environmental Management Plan

KAZh - “NC “KazAvtoZhol” JSC

MPL – Maximum Permissible Level

MIID – Ministry of Industry and Infrastructure Development

PMC - Project Manager Consultant

PEM – Production Ecology Monitoring (carried out by an accredited laboratory)

RK– Republic of Kazakhstan

RSE - Republic State Enterprise

RMD - Road Management Department

SHS – Sanitary-Hygienic Standard

SSEMP – Site-Specific Environmental Management Plan

RSE - Republic State Enterprise

SPZ - Sanitary Protection Zone

I .INTRODUCTION

1.1 Preamble

1. This report is a semi-annual environmental monitoring review for the reconstruction project of Aktobe-Kandyagash road, connecting CAREC Corridors 1 and 6 (Road section km, Lots 1-2). The report is the second semi-annual for 2021.

1.2 Basic information

2. This Project is part of the 460 km Aktobe-Kandyagash-Makat road project that connects the oil and mineral-rich regions of Aktobe and Atyrau, serving a population of 1.7 million people. Due to wear and tear, road surfaces, bridges and culverts (which have been designed for lower axle loads) struggle to cope with the rapidly growing and heavy traffic loads from oil wells and refineries in the region. Traffic between Aktobe and Atyrau is increasingly being redirected to the northern route Aktobe - Oral - Atyrau, since the travel time remains almost unchanged, despite the additional 500-kilometer detour. Poor road connectivity has also become a key social problem as it has contributed to rising income and wealth inequality between rural and urban areas in western Kazakhstan.
3. The Aktobe-Makat line is a connecting road that links CAREC corridors 1b and 6a, two major trade routes, with the Russian Federation and the European Union, Kazakhstan's main trading partners. This integration of the two international corridors will significantly reduce transport costs, increase travel speeds along these corridors, and contribute to trade facilitation in Kazakhstan. In 2016, ADB approved financing for 299 km of the Kandyagash - Makat section. In 2018, the Government requested ADB to finance an additional 89 km section connecting Aktobe and Kandyagash, with a construction works completion dates by the end of 2023.
4. The Government of Kazakhstan has asked ADB to provide financing for the development of Western Kazakhstan through road reconstruction and extension on the existing road linking Aktobe and Kandyagash from 2-lane to 4-lane to achieve the following goals:
 - Reduction of rapidly growing and intensive traffic loads;
 - Reducing travel time;
 - Provide wider access to markets and employment opportunities;
 - Increase in higher economic opportunities, etc.

II. DESCRIPTION OF THE PROJECT AND CURRENT ACTIVITIES

2.1 Description of the project

5. The Aktobe-Kandyagash-Makat road is a two-lane road of republican significance and was built in 1970-1980. The length of the reconstructed section "Aktobe-Kandyagash" is 89 km, mainly the road has III / IV category, and passes through the territory of the Aktobe region. A complete reconstruction of the road surface with strengthening of its structure will reduce travel time on the road, fuel consumption of vehicles and the cost of operating vehicles on the way, and will also contribute to an increase in transport links and the economic development of the region. The road will be reconstructed according to the standards for the II category in accordance with the national standard of the Republic of Kazakhstan.
6. The project provides for the Reconstruction of an 89-kilometer section of the A-27 republican road between Aktobe and Kandyagash (Figure 1 Map of the location of the project road). The project consists of two sections, separately for different Contracts. The project began on the southern side of the outskirts of the Aktobe region. The road goes south until it reaches Kandyagash about 100 km south of Aktobe. The project will be limited to the right of way, with the exception of the two proposed detour roads in Alga (km 35–39) and Kandyagash (km 88–104).

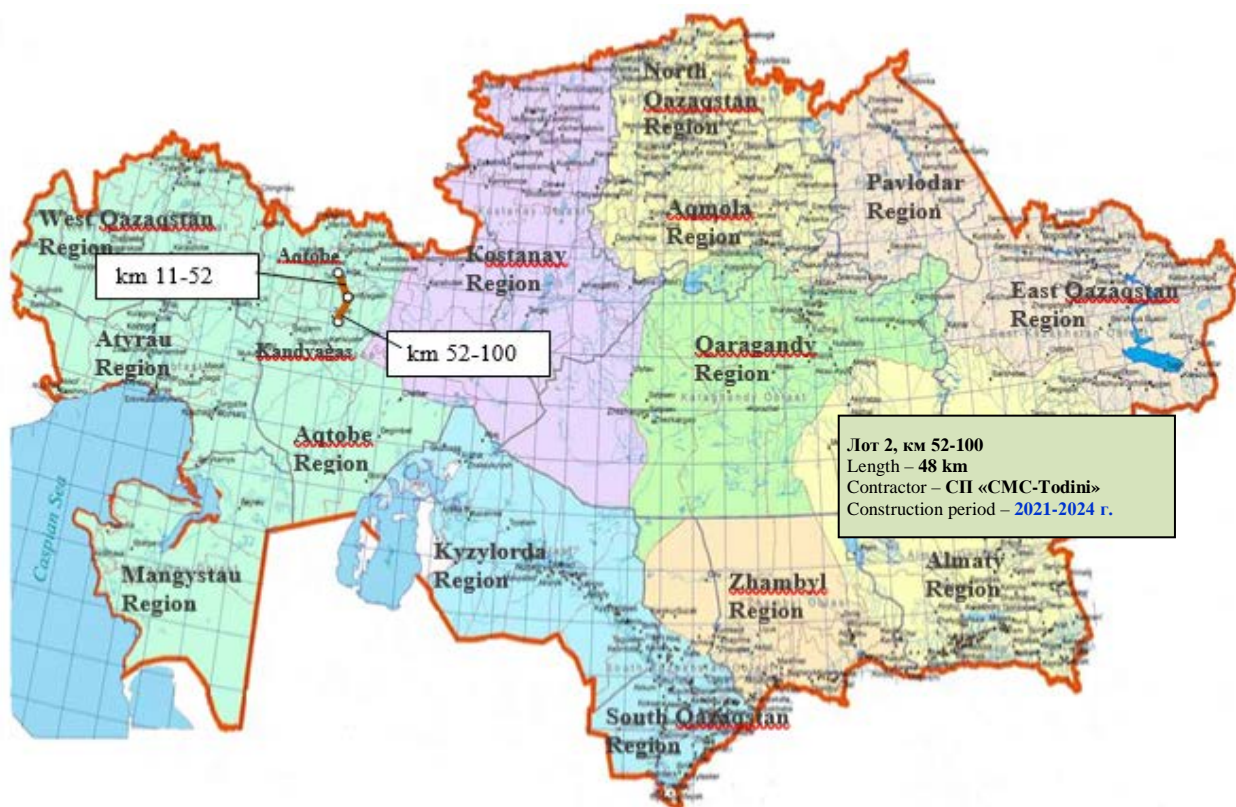


Figure 1. Location of the designed road (red lines)

7. The project is financed with funds from the Asian Development Bank (ADB).

8. The proposed project includes the reconstruction of a section of km 11-100 of the Aktobe-Kandyagash road. The reconstructed section, 89 km long, was divided into 2 lots, each of which implies a separate contract for construction work. The road section is divided into 2 lots:
 - Lot 1 - Km 11-52. General Contractor JV "SineMidasStroy LLP-Todini Costruzioni Generali S. p. A."
 - Lot 2 - Km 52-100. General contractor JV Akzhol Kurylys LLP - AzVirt LLC - Assana Dorstroy LLP
9. The project began on the southern side of the outskirts of the Aktobe region. The road goes south until it reaches Kandyagash about 100 km south of Aktobe. The project will be limited to the right of way, with the exception of two proposed detour roads in Alga (km 35-39) and Kandyagash (km 88-104).
10. The construction agreement under the contract for the performance of work Lot 1 and Lot 2 was concluded on November 24, 2020 between NC KazAvtoZhol JSC and General Contractors
11. In accordance with clause 8.1 of the GCC "Commencement of Works", the notice of the work commencement date was issued by the engineer by letter ref.No.0034-AKKA-2021 dated February 26, 2021 for both Contracts.
12. The contractual deadline for the completion of the project is:
 - Lot 1 - 930 days. Contract Completion Date - September 17, 2023
 - Lot 2 - 990 days. Contract Completion Date - November 16, 2023
 - The defect liability period after the date of the completion of construction is 730 days.

2.2 Main characteristics of the project

13. The characteristics of the project road are presented in Table 1 below.

Table 1: Project characteristics

Road Components	Lot-1	Lot-2
Contractor Company Name	Sine Midas Stroy / TODINI	AK ZHOL / AZVIRT /ASSANA
Location	km 11-52	km 52-100
Length	44,3 km	33,5 / 15,88 km
Project Road Category	Ib	Ib and II
Pavement Method	SMA-20	SMA-20
Traffic Lanes (up/down)	2/2	2/2 and 1/1
Lane Width <ul style="list-style-type: none"> • Outer • Inner • Shoulders 	3.75 Meters 3.75 Meters 3.75 Meters	3.75 Meters 3.75 Meters 3.75 Meters

Structures:		
Overpass	3	1
RMD	1	1
Bridges	9	5
Other Structures:		
• Pipe Culverts	24	22
• Box Culverts	11	9
• Rest areas	5	3
• Bus shelters	10	8
Design Standards:		
• Design Speed	120 m/h)	
• Width of Right of Way	70 METERS	

2.3 Project contracts and management

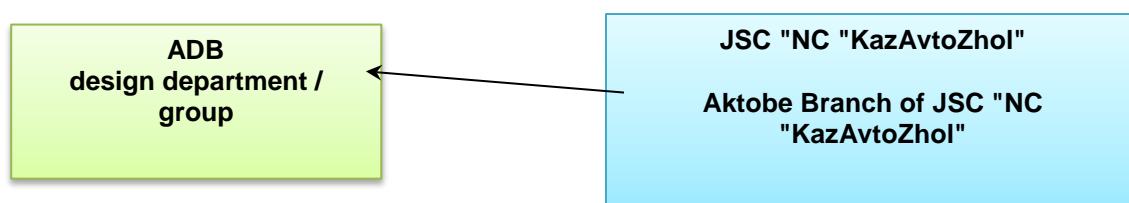
14. JSC NC KazAvtoZhol (KAZh) provides consulting services for project management in accordance with the terms of reference acceptable to ADB and applicable under the laws of the Republic of Kazakhstan. KAZh remains fully staffed throughout the implementation of the Project. The responsible officer for environmental protection and protective measures conducts audits, site inspections, interacts with the protective measures specialist of the CSC in order to effectively manage the project in terms of implementing environmental protection plans.
15. The regional representative from the Employer in the field is the Aktobe Branch of JSC NC KazAvtoZhol.
16. The contract for lot 1 (km 11-52) was concluded between JSC "NC "KazAvtoZhol" and JV "SineMidasStroy LLP-Todini Costruzioni Generali S. p. A.", and for lot 2 (52-100) - with JV Akzhol Kurylys LLP - AzVirt LLC - LLP "Assana Dorstroy".
17. Construction Supervision Consultant (CSC or Engineer) - DONGSUNG ENGINEERING CJ., LTD / ZS ENGINEERING. The contract with CSC was signed by KAJ on October 30, 2020.
18. The list of the main organizations included in the project and related to protective measures for environmental safeguards is presented below in Table 2.

Table 2: List of organizations and contacts of specialists related to protective measures for Environmental Safeguard of the Project

Organization name	Representative	Contact
ADB Project department / group	Armine Yedigaryan, Country Environmental Focal person	ayaedigaryan@adb.org

ADB Resident mission in RK	Malika Babadzhanova, ADB RETA Environmental consultant	mbabadjanova1.consultant@adb.org
Aktobe Branch of JSC "NC "KazAvtoZhol"	Makhambetov Marat Branch Director	Aktobe, Maresyev st, 89 office number 301 +7 701 566 31 44 aktobekrti@mail.ru
PMC JSC "NC "KazAvtoZhol"	Chubutkina Olessya Environmental and Social safeguards consultant	Almaty, +7 747 450 63 09, olessya.chubutkina@gmail.com
CSC DONGSUNG ENGINEERING C., LTD / ZS ENGINEERING LLP	Tastanova G.E. National Environmental Safeguard Specialist	+ 7 777 502 30 58 dsaktobe21@mail.ru
JV "SineMidasSroy LLP-Todini Costruzioni Generali S. p. A.) for lot 1	Usina Gulnur Environmental specialist	+ 7 701 485 95 80 g.usina@sinemidas.com
AK ZHOL / AZVIRT / ASSANA for lot 2	Adil Erenkov Environmental specialist	+7 705 474 6976 adil.erkenov@mail.ru

19. The figure below shows an organogram of interaction between structures for the Project.
20. Summary of civil works contracts and works' progress is summarized in Table 3 below. All awarded contracts included EMPs cleared by ADB and any conditions of applicable national IEE clearance.



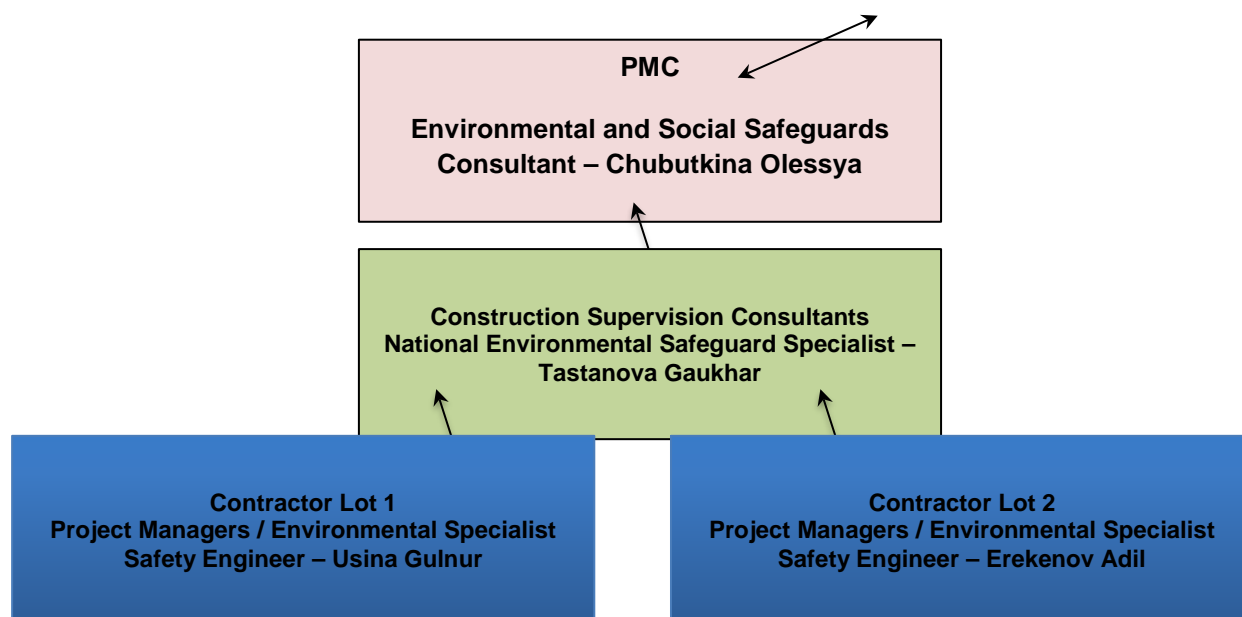


Figure. 2. Environmental management scheme for the project

Table 3: Summary of Civil Works Contracts and Works' Progress

Package	Scope	Contractor	Signed contract (dates)	Approval Date			Environmental personee		Civil Work		(%) Progress as of	
				SEMP	COVID-19 HSMP	ERP	Environmental officer	Health and Safety officer	Start	End	31 June 2021	30 Dec 2021
Lot 1 AKRP/CW /LCB-01/Lot-01	Reconstruction of the section km 11-52 (44.3 km)	JV "SineMidasStroy LLP-Todini Costruzioni Generali S. p. A.) for lot 1	24.11.2020	March 2021	03.05.2021	03.05.2021	Ussina Gulnur	A. Nugmanov Health, safety and road safety engineer	Q1.2021	Q4 2021	0%	12,07%
Lot 2 AKRP/CW /LCB-01/Lot-02	Reconstruction of the section km 52-100 (49.4 km)	JV Akzhol Kurylys LLP - AzVirt LLC - Assana Dorstroy LLP	24.11.2020	13.12.2021*	01.04.2021	01.04.2021	Adil Erekenov	S. Gorbulko Site Cheif Engineer)	Q12021	Q42021	0%	14%

Note. The month / year in brackets is the planned schedule.

COVID-19 HSMP = COVID-19 Health and Safety Management Plan, ERP = Emergency response plan, SEMP = site-specific environmental management plan

*2nd revision of the SEMP

2.4. Project Activities During the Current Reporting Period

2.4.1. Lot 1

21. Current status

1. Completed works on removal of top-soil in the following areas:
PK12 - PK 230 = 17,200 m, right side;
PK230 - 443 = 39,900 m, right and left sides.
Total: 57,100 m on the right and left sides
2. Completed work on the preparation of the base of the roadbed at the places of the widening of the road and the existing road pavement:
PK12 - PK 230 = 17,200 m, right side;
PK230 - 443 = 39,900 m, right and left sides.
Total: 57,100 m on the right and left sides.
3. Completed work on filling the embankment on the sections:
PK12 - PK110 = 9,100 m, 274,406.7 m³, right side;
PK110 - PK330 = 16,180 m, 473,588.4 m³, right and left sides;
PK330 - PK443 = 18,900 m, 2,557,506.35 m³, right and left sides.
Total: 43,380 m on the right and left sides, 3,305,501.45 m³.
4. Excavation work performed (development of a ditch):
PK 30 - PK 110 = 1,840 m, right side 40,244 m³
Total: 1,840 m on the right side, 40,244 m³.
5. Embankment formation:
PK 50+00 - PK 110+00 = 4,100 m, right side
PK 282+00 - PK 311+00 = 5,800 m, left and right sides
PK 324+00 - PK 375+20 = 10,240 m, left and right sides
PK 386+00 - PK 390+00 = 800 m, left and right sides
PK 393+00 - PK 439+40 = 4,520 m, right side
Total: 27,060 m on the right and left sides.
6. Milling pavement and base: PK 0+00 - PK 12+00, 2,312.4 m³.
7. Additional base layer of C4: PK 97+40 - PK 105+20= 780 m, right side.
8. Bottom base layer of C4: PK 97+40 - PK 105+20= 780 m, right side.
9. Upper base later of hot porous coarse-grained asphalt concrete mix M2:
PK 99+40 - PK 105+20= 560 m, right side.
10. Work has begun on the construction of culverts.

22. Table 4 presents data on status of construction work for the reporting period on Lot 1

23. Permission for temporary use of land for production base was obtained. Permission to use the railway dead-end has been received, work is underway to equip the dead-end for the acceptance of inert material.

24. Work is underway to formalize borrow pits, geological exploration and topographic survey of borrow pits have been carried out. A report on the protection of reserves is being generated at ZapKaznedra.

25. During the reporting period, for the 2nd half of the year, from 365 (in July) to 274 people (in December) have been working on the project. Mobilization of personnel by position is presented in table 5.

25. Equipment and premises are being mobilized on the territory of production base. Equipment and machinery mobilization is presented in Table 6.

Table 4: Status of construction work for the reporting period

No	Work activities	Units	Total	Performed since the beginning	Plan for 2021	Performed in 2021	Completed during the reporting period
1	Earth work	ths m ³	4, 572	3, 305.5	1, 345	3, 305.5	3,248,99
2	Construction of an additional layer of cement-reinforced soil with a stabilizing additive	km	44,305	0.78	28	0.78	0.78
3	Construction of the base bottom layer of crushed stone-sand mixture	km	44,305	0.78	28	0.78	0.78
4	Construction of the base upper layer of hot porous coarse-graded a/c mixture	km	44,305	0.58	28	0.58	0.58
5	construction of the pavement lower layer of hot porous coarse-graded a/c mixture	km	44,305	0	28	0	0
6	Construction of the pavement top layer of polymer-crushed stone-mastic asphalt concrete SMA-20	km	44,305	0	0	0	0
7	Culverts d-1.5m	pcs	7	3	2	3	3
8	Culverts d-2x1.5m	pcs	5	2	2	2	2
9	Culverts d-3x1.5m	pcs	3	2	1	2	2
10	Culverts 2.0x2.0m	pcs	2	2	0	2	2
11	Culverts 2.5x2.0m	pcs	2	0	2	0	0
12	Culverts 4.0x2.5m	pcs	7	1	2	1	1
12	Culverts on junctions d-0.5m	pcs	9	0	0	0	0
13	Bridges and overpasses	pcs	10	0	4	0	0
14	Small bridge for the passage of agricultural machinery	pcs	2	0	0	0	0

Table 5: Mobilization of personnel

№	Position	Quantity on plan for 2021	Fact		
			Sine Midas Stroy LLP		
			foreigners	citizens of Kazakhstan from other regions	local
1	Project Manager	1	1	-	-
2	Section fore master	3	-	3	1
3	CMP	2	3	3	3
5	Foreman	4	1	4	1
6	Master	4	-	6	1
7	Artificial Structures Engineer	1	-	1	-
8	Chief of Asph.plant	1	-	-	-
9	Chief of Soil-mix.plant	-	-	-	-
10	Head of Laboratory	1	-	-	1
11	Laboratory assistants	6	-	-	4
12	Head of Survey Department	1	1	-	-
13	Surveying engineer	2	-	2	1
14	Surveyor	5	-	-	4
15	Surveyor assistant	8	-	-	1
16	Geomatics engineer	1		1	-
17	Road safety officer	1	-	-	1
18	OHS officer	1	-	-	1
19	Environmental	1	-	1	-
20	Mechanic	1	1	-	-
21	Operator	62	-	-	69
22	Dump track operator	75	-	20	32
23	Passenger car driver	8	-	1	19
24	Paramedic	1	-	-	-
25	Others	20	-	4	56
	SUBTOTAL		7	46	195

	TOTAL	210	248
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Table 6: Mobilization of equipment

№	Item	Quantity on plan for 2021	Fact		
			Sine Midas Stroy LLP		
			Contractor's	Subcontractor	Rented
1	Asphalt plant (240t/hour)	1	1	-	-
2	Soil-mixing plant	-	-	-	-
3	Asphalt paver	3	1	-	-
4	Distributor	1	-	-	-
5	Excavator	6	2	14	-
6	Crane	2	-	1	2
7	Drill ability pile machine	1	-	-	-
8	Pile-driving machine	1	-	-	1
9	Loader	6	2	6	-
10	Doser	3	1	12	-
11	Water sprinkler	8	-	9	-
12	Grader	3	1	9	-
13	Dump car	75	-	49	3
14	Handling unit	1	-	-	-
15	Mixer	-	-	-	-
16	Low-boy trailer	4	-	2	-
17	Compactor	10	1	13	-
18	Milling machine	1	-	-	-
19	Recycler	1	1	-	-
20	Fuel tanker	1	-	3	-
21	Passenger cars	8	3	14	3
22	Other machinery	15	6	3	3
23	Railway dead-end	1	-	-	-
	TOTAL	152	166		

Table 7: Materials delivery

No	Item	Units	Total needs	Needs for 2021	Performed since beginning
1	Crushed stone 0-5	ths.m3	84,94	10,248	0.4
2	Crushed stone 5-10	ths.m3	19,73	-	-
3	Crushed stone 10-20	ths.m3	85,51	-	-
4	Crushed stone 20-40	ths.m3	57,4	10,752	1.495
5	Crushed stone 0-40	ths.m3	549,24	65,7	4,57
6	Crushed stone 0-80	ths.m3	583,18	168,05	5.744
7	Crushed stone 0-80				9.905
8	Precast concrete (bridges and culverts)	ths.m3	10	5,7	3.794
9	Bitumen	ths. tn.	25,711	5	1,68
10	SGM	ths.m3	105,688	40	0.068
11	Cement	ths. tn.	26,2	6,9	-

2.4.2. Lot 2

26. Roadbed basement preparation is completed PK 00+00 – PK331+60, PK333+00 – PK355+00
27. Soil backfilling was carried out from PK0+00 to PK 341+00. Total: 34,100 m.
28. Roadbed finishing on the right side has been completed PK 0+00 – PK116+00, PK 138+40 – PK150+00, PK153+40 – 209+60. Total: 18,380 m.
29. Work is being carried out on temporary land allotment for bypass roads.
29. Dismantling works were carried out on the bridge over the Tabantal River, preparatory work (axis breakdown of pile field, driving 80 vertical piles of coastal support out of 80,32 piles out of 32 interim support. Concreting of interim support No. 2 of the right and left sides, cap of abutment pier were completed, reinforced concrete block of the basement of the left side was installed, concreting of the railway part of the basement of the left and right sides was installed, support body block was installed, reinforcement and concreting of abutment pier No. 1, reinforcement and concreting of body of abutment pier No. 2, crossbar installation. Preparations for concreting the cabinet wall and openings of abutment pier is in progress.
30. Piles of supports No. 1 and No. 5 were driven, the grillage of support No. 1 was concreted. Preparations for concreting the grillage of supports No. 5 is underway.
31. An agreement was concluded for the lease of railway dead ends for unloading aggregate materials and 2 sets of dump cars were rented:

Dead end -1. Alga city 42km

Dead end -2. Tamdy vill. 52km

Dead end -3. Kandyagash city 100 km.

32. An existing road is being repaired. Works were carried out to remove the recultivated soil layer from the slopes and reserves of the right side (widening) from km 52 to km 74.5.
33. Dismantling work on the bridge across the Tabantal River, preparatory work (layout of the axis of the pile field) was carried out.
34. The preparation of the foundation of the subgrade from km 52 to km 72.6 has been completed.
35. The construction of a bypass road at km 55, a bridge over the Tabantal River was completed; the construction of the bypass road at km 60 was completed, the construction of the bypass road at km 58 was completed, the construction of the bypass road at km 62 was completed.
36. At km 62, work on the dismantling of existing. pipes, digging a pit for the pipe body and heads, a device for preparing crushed stone for heads, installation of heads and slope walls, a device for preparing crushed stone for a pipe body. Formwork is being installed under the body of the pipe for monolithic concrete foundation.
37. Production permit was obtained from the State Agency "Management of Industrial and Innovative Development of the Aktobe Region.
38. The following machinery is involved in the carrying-away of materials: dump trucks - 6 units; loader - 2 units, involved in unloading wagons - excavators - 2 units; bulldozer - 1 unit. For the maintenance of the existing road involved: Motor grader - 1 pc., Loader - 1 pc., Dump truck - 2 pcs., MTZ-80 tractor - 1 pc., Niva - 1 pc., Gazelle - 1 pc.

Table 8: Key project indicators

No	Work activities	Units	Total	Plan for 2021	Performed up to the end of December 2021
1	Earth works	thous. M3/	3,144,788	1,056,676	1,524,933
2	Construction of the base from the selected mixture of granular crushed stone materials	km	51,757	18.0 (right)	18.16
3	Putting a base course made of stone sand mixture	km	51,757	18.0 (right)	18.16
4	Putting a road base made of hot vesicular coarse-graded asphalt	km	51,757	18.0 (right)	18.12
5	Putting a base course made of hot vesicular asphalt	km	51,757	18.0 (right)	14.94
6	Putting road base made of polymer – stone mastic asphalt SMA-20	km	51,757		0
7	Culverts	pcs.	31	17	17
8	Bridges	pcs.	5	2	0
9	Overpass	pcs.	1	0	0

Table 9: Mobilization of equipment and machinery

No	Item	Required number as per Contract	2021 Planned	Actual number as of current date
1	Asphalt plant (160 tn/h)	2	2	2
2	Mixer plant	-	-	-
3	Paver	2	2	2
4	Bitumen spraying machine	1	1	-
5	Excavator	8	8	9
6	Truck crane	2	2	4
7	Drilling installation	-	-	1
8	Loader	8	8	6
9	Bulldozer	4	4	6
10	Water-jetting vehicle	18	18	11
11	Moto grader	8	8	7
12	Dump truck	90	90	63
13	Manipulator	1	1	-

14	Trawl	4	4	1
15	Asphalt compactor	24	24	17
16	Pulverizing mixer	1	1	-
17	Recycler	1	1	1
18	Tank truck	1	1	3
19	Passenger cars	10	10	10
20	Other machines	19	19	11
21	Dead-end track	2	2	2
	TOTAL	206	206	154

Table 10: Personnel Mobilization

№	Position	Quantity as per plan	Actual quantity						
			General contractor			Workers hire		Subcontractor	
			including foreigners	including citizens of Kazakhstan from other regions	including local	including citizens of Kazakhstan from other regions	including local	including foreigners	including citizens of Kazakhstan from other regions

1	Project Manager	1			1					
2	Site manager	2			2					1
3	Technical staff, administrative personnel	20			21					4
4	Laboratory	9			6					
5	Geodesy department	15			7					1
6	Operators and machine operators	173			95					8
7	Dump truck drivers	90			43					
8	Road workers	22			26					9
9	Other workers	21			47					2
10	ROE workers									
	TOTAL	353			248					25
	SUBTOTAL		273							

Table 11: Material Delivering

No	Materials	Unit	Total by Project	Total on site
1.1	Aggregate 0-5 mm	ton	182,734	104,786
1.2	Aggregate 5-10 mm	ton	55,642	0
1.3	Aggregate 10-20 mm	ton	114,353	0
1.4	Aggregate 5-20 mm	ton	111,016	96,272
1.5	Aggregate 20-40 mm	ton	154,774	119,017
1.6	Aggregate 40-70 mm	ton	54,121	61,305
1.7	Stone sand mixture C4	ton	256,522	35,840
	Total	ton	929,165	417,220
2.1	Bitumen	ton	8,700	3,500
3.1	Cement	ton	23,951	0.559

III. ENVIRONMENTAL SAFEGUARD ACTIVITIES

3.1. General Description of Environmental Safeguard Activities (environmental protection measures)

Lot 1

39. The site-specific Environmental Management Plan was submitted by the Contractor for consideration to the Engineer on January 26, 2021 and revised on March 11, 2021. Approved.
40. The Contractor has entered into a contract for the provision of environmental consulting services with Eco Project Company LLP. The Contractor's permanent environmental specialist is absent at site. The outsourcing company provides constant monitoring of ongoing construction work for compliance with environmental policy, as well as all measures provided for in the EMP. Industrial environmental monitoring, procedures for sampling soil, water, measurements of air pollution are carried out in accordance with the SSEMP by involving specialists from accredited research laboratories and with notification of the ES. Reports on these works are presented to ES. Baseline environmental monitoring was carried out in March.
41. Monthly /weekly on-site environmental audits are not performed by the consulting company environmental specialist. The Contractor also carries out procurement of inert materials. Environmental permits have been obtained for road construction and extraction of clay. On production base, a private expert opinion was obtained from «Experts KZ» LLP No. EKZ-0058/21 dated 19.11.2021 on working project "Temporary production base "Bestamak" for implementation of reconstruction project of road of republican significance A-27 "Aktobe-Atyrau- border of the Russian Federation (to Astrakhan), km 11-52, address: Aktobe region, Alga district, Bestamak village, production base, s.65"/ For the reporting period, no conclusion of environmental expertise on the production base.

Lot 2

42. There is a permanent environmental specialist at the site – Erekenov Adil.
43. The site-specific EMP, together with the primary environmental monitoring, was submitted on 21.04.2021 by letter ref. No. 2021/53.
44. The Environmental Management Plan was submitted by the Contractor for consideration to the Engineer on January 26, 2021 and revised on March 11, 2021. The Engineer sent the letter ref.No. 0057-AKKA-2021 with comments for revision.
45. According to clause 4.18 (Protection of the Environment) Part B – Special Conditions of the Contract and Section 106 A (Protection of the Environment) of the Technical Specifications, Industrial Environmental monitoring is carried out by specialized laboratory of LLP "LLP "AKTYUBNIGRI". Certificate of accreditation KZB28BE69C05808645 dated 07.12.2020
46. Monitoring is carried out every month, monitoring reports are provided in a timely manner.
47. The work of the specialists of the ecological laboratory is focused on the constant monitoring and recording of the impact of certain works on the state of the environment. Monitoring and constant supervision of work ensures that deviations from the EMP of IEE are not allowed or that any unforeseen negative consequences are corrected or quickly detected and eliminated. All activities and actions specified in the EMP of IEE are included in the monitoring plans.

48. According to the contractual obligations, the environmental specialist of Contractor adheres to all the requirements of the environmental aspects of the contract document, in particular, the requirements of the General Conditions of the Contract, such as chapters 4.7 Layout, 4.8 Security, 4.13. Right of way and facilities, 4.18. Protection of Environment, 6.7 Health and safety protection. Compliance with these clauses of the contract is carried out by environmental specialists through their own monitoring on a weekly, monthly basis. Protocol is attached.
49. The Contractor's environmental specialist conducts own consultations on environmental protection measures at construction sites among the personnel. During the reporting period, an ecologist conducted training for employees of organizations on health protection, labor safety and environmental protective measures. The topic of the training includes issues of prevention of fuel and lubricants spills, procedures for disposal of soils from the sites of spills. The topics on separate storage of solid waste and industrial waste are also highlighted.
50. In general, the environmental specialist of Asana Dorstroy LLP has demonstrated its commitment to comply with measures to ensure the environmental and social safety of the project and the external environment: during a joint inspection with the CSC, employees and managers were consulted by environmental specialist on environmental issues. At the same time, a notice was issued by National Environmental Safeguard Specialist (Gaukhar Tastanova) to the environmental specialist of the Lot 2 contractor to keep records of audits, identified violations, etc., not limited to the Environmental monitoring (EM) report as well as meeting the deadlines for submitting monthly, semi-annual and EM reports.

3.2 Engineering Service

51. Tastanova Gaukhar, mobilized as national environmental specialist (ES) by CSC conducted field inspections of Lots 1 and Lot 2 construction sites. The reports of environmentalists of contractors, reports on the IEM were reviewed by ES of CS.
52. The activities carried out by the national environmental specialist of CSC during the monitoring period are presented in Table 12. The CSC did not hire international environmental specialist.

Table 12: Environmental Safeguards Activities Carried out During Reporting Period (July - December 2021)

Environmental Safeguard Activities
National Environmental Safeguard Specialist (Gaukhar Tastanova), Construction Supervision Consultant
<ul style="list-style-type: none"> - Overview of SSEMP. - Preparation of a draft semi-annual environmental monitoring report.

3.3. On-site audit (site visit)

53. The work was carried out remotely by the construction supervision consultant (national specialist on environmental safeguards) during the reporting period. The reports of ecologists of contracting organizations, reports on industrial environmental monitoring have been reviewed.
54. In August 2021, on-site mission of individual consultant on environmental and social safeguards was conducted. Observations and remarks are given in section 3.4.
53. During the reporting period, a number of visits were carried out to monitor the implementation of the EMP measures, to analyze potential risks in the field of environmental

safety of the project. According to the results of the audit, the engineer's comments and recommendations were issued.

Table 13: Issued comments and recommendations by the Engineer

No	Contractor	Subject	No of letter and date
1	Lot 1	Site Specific EMP	0324-AKKA-2021 d-d 13.08.2021
2	Lot 1	Approval of "EcoProjcet Company" LLP for IEM	0325-AKKA-2021 from 13.08.2021
3	Lot 1	EM Report. Engineer's comments	0326-AKKA-2021 d-d 13.08.2021
4	Lot 2	EM Report. Engineer's comments	0327-AKKA-2021 d-d 13.08.2021
5	Lot 1	Engineer's notice	0328-AKKA-2021 d-d 13.08.2021

3.4 Problem Tracking (Based on Non-Compliance Notifications)

54. During the visits to the sites together with representatives of contractors, non-conformities were revealed in most cases on waste management issues:

- storage and disposal of hazardous and non-hazardous waste, violation of the solid waste control system. The importance of strengthening control over ensuring environmental safety in terms of compliance with the schedule for removal for subsequent disposal of solid waste and industrial waste at the sites and on the territory of the base was noted.
- at all sections, the attention of project managers was drawn to the need on continuous dust suppression in areas where intensive construction work is underway.

55. During the reporting period, there were no complaints or grievances about non-compliance with environmental safeguards.

3.5 Trends (general directions)

56. No stable trends for deterioration/improvement of the situation regarding environmental safeguards have been identified, because all measures according to EMP are in process and conducting accordingly.

3.6 Unforeseen environmental impacts or risks

56. During the reporting period, COVID-19 is viewed as an unanticipated impact and risk to the community and workers. There were no major delays during the monitoring period due to the COVID-19 situation. No cases of COVID-19 among workers were reported during the monitoring period.

57. The Contractor on Lot 2 developed Occupational Health and Safety Plan as part of its SSEMP which includes, inter alia, corresponding measures on prevention of the spread of COVID-19. The Contractor's SSEMP also includes Emergency Management Plan.

58. Contractors' personnel wear mask, gloves, helmets and working wear. The Contractor's personnel wear masks, gloves, hard hats and work clothes.

- 59. Contractors on lot 1 and 2 have developed COVID-19 management plans.
- 60. Contractor on lot 2 held a seminar on COVID-19 and prevention of AIDS (HIV).

IV. ENVIRONMENTAL MONITORING RESULTS

4.1 General information about the monitoring carried out during the current period

- 61. Work on industrial monitoring of environmental protection, at construction sites for Lot 1, Lot 2, were carried out by the testing laboratory of "HydroEcoResource - L" LLP on the basis of an agreement for the provision of services for environmental monitoring. The laboratory has accreditation certificate KZ T.05.1400 dated August 14, 2018, for a period until August 14, 2023, confirming the existence of the conditions necessary for performing measurements in the area of activity assigned to the laboratory: analytical control of indicators of pollutants in the working area, atmospheric air and sources of air emission, natural waters, as well as analysis of soil and physical factors of influence.
- 62. The laboratory's activities are regulated by guidelines and regulations in the field of environmental protection, sanitary and hygienic standards, requirements, lists of maximum permissible concentrations, approximate safe exposure levels, maximum permissible discharges and emissions of harmful substances operating in the territory of the Republic of Kazakhstan. Industrial monitoring works were performed in accordance with the Environmental Code of the Republic of Kazakhstan dated January 2, 2021 No. 400-VI.
- 63. During the reporting period, measurements and laboratory studies were carried out at construction sites of both lots (at the same points where measurements were made before the start of construction) in the context of monthly indicators. Copies of monthly reports are attached (Annex 2).
- 64. Reconstruction of the road (civil works) according to the requirements of the new Environmental Code belongs to category II. The production base belongs to the III category according to the Environmental Code of the Republic of Kazakhstan.
- 65. Contractors keep internal records, form and submit periodic reports on the results of industrial environmental control in accordance with the requirements established by the authorized agencies in the field of environmental protection on the basis of the Environmental Code of the Republic of Kazakhstan.
- 66. Impacts are recorded in environmental records and tracked against the activities described in the SSEMP. In accordance with the SSEMP and along with the Environmental Monitoring Plan, the Contractors measured and monitored the quality of air, soil, noise, vibration and socio-cultural resources. Monitoring results based on laboratory measurement protocols are presented in the Contractors' monthly report (Annex 1).

Lot-1 (km11-52)

- 67. The Environmental Management Plan was submitted by the Contractor for the Engineer's approval on January 26, 2021 and revised on March 11, 2021. The Engineer sent the letter No. 0057-AKKA-2021 with comments for revision. The Contractor has re-submitted the EMP.
- 68. During the reporting period an accredited laboratory monitored atmospheric air, water resources, soil and noise at the sampling points along the project road section. No exceeding of the maximum permissible concentration of pollutants has been detected.

Lot-2 (km52-100)

69. The General EMP, together with the initial environmental monitoring, was submitted on 21.04.2021 by letter ref. No. 2021/53.
70. The Environmental Management Plan was revised by the Contractor in December, 2021 due including additional measures concerning temporary bypass roads and approved by Engineer on December 13, 2021 (letter No. 0510-AKKA-21).
71. According to Clause 4.18 (Protection of Environment) Part B - Special Conditions of the Contract and Section 106 A (Protection of Environment) of the Technical Specifications, Industrial Environmental Monitoring is carried out by a specialized laboratory - HydroEcoResurs-L LLP. However, according to the Engineer's objection (No. 0476-AKKA-2021 dated 10.11.2021), the Contractor on Lot 2 refused the services of HydroEcoResurs-L LLP. Instead, a specialized laboratory of "AKTYUBNIGRI" LLP was approved (No. 0494-AKKA-2021 dated 11/25/2021).
72. Monitoring is carried out every month, monitoring reports are provided in a timely manner.
73. During the reporting period along the reconstructed section of the road, an accredited laboratory monitored atmospheric air, water resources, soil and noise. The excess of the maximum permissible concentration of pollutants has not been found.

4.2 Air Quality

Lot-1

74. When carrying out earthworks, such as removing the top-soil with a bulldozer; storage of top-soil; excavation of soil with an excavator; dumping soil from a dump truck; leveling the soil with a bulldozer releases inorganic dust into the atmosphere. To reduce the impact on the atmospheric air, the Contractor takes the following measures:
 - suppression of dust by water sprinkling
 - open burning of fuel, garbage, binders is prohibited.
 - all technical means must be in working order.
75. On the site, 9 watering vehicles were involved.
76. Instrumental measurements of air quality are carried out monthly. Air sampling is carried out every 10 km: at km11; 21; 31; 41; 52.
77. Simultaneously with sampling, meteorological characteristics were measured:
 - outside air temperature;
 - speed of the discharged air-gas mixture;
 - Atmosphere pressure;
 - humidity of the outside air.

78. Instrumental measurements of emissions were carried out by direct measurements of the concentrations of pollutants (suspended solids, carbon monoxide, nitrogen dioxide, sulfur dioxide): by the express method, by a universal gas analyzer GANK-4, by sampling for specially treated pipes of the pressure Pitot modification.
79. The air sampling points are presented on the map (Annex 3).
80. The ACP is located at 33 km, borrow pits – at km 14, 18, 21, 25, 28 (Bestamak), 34, 37, 39, 42, 44, 46, 48, 52, 53 (taking into account the detour of Alga).
81. Summarized results of analysis of air quality measurements are presented in Table 14.

Table 14: Summarized analysis results of air quality measurements

Sampling point	Name of pollutants	Norm according to ND, mg/m ³	basic data	actual data											
				January	February	March (baseline)	April	May	June	July	August	September	October	November	December
Point 1 (11 km)	nitrogen dioxide	0,2	0,0453	-	-	-	0,0453	0,0448	0,0451	0,0471	0,0461	0,0461	0,0456	0,0427	0,0420
	carbonic oxide	5,0	<1,5	-	-	-	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5
	sulphur dioxide	0,5	<0,025	-	-	-	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025
	inorganic dust 70% >SiO ₂ >20%	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	hydrogen sulphide	0,008	<0,004	-	-	-	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004
	petroleum hydrocarbon (C ₁₂ –C ₁₉)	1,0	<0,5	-	-	-	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5
	methylbenzene	0,6	<0,3	-	-	-	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3
	benzol	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	xylene	0,2	<0,1	-	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
	formaldehyde	0,05	<0,0015	-	-	-	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015
Point 2 (21 km)	nitrogen dioxide	0,2	0,0453	-	-	-	0,0463	0,0451	0,0456	0,0475	0,0466	0,0488	0,0491	0,0475	0,0472
	carbonic oxide	5,0	<1,5	-	-	-	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5
	sulphur dioxide	0,5	<0,025	-	-	-	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025

	inorganic dust 70% >SiO ₂ >20%	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	hydrogen sulphide	0,008	<0,004	-	-	-	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004
	petroleum hydrocarbon (C ₁₂ –C ₁₉)	1,0	<0,5	-	-	-	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5
	methylbenzene	0,6	<0,3	-	-	-	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3
	benzol	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	xylene	0,2	<0,1	-	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
	formaldehyde	0,05	<0,0015	-	-	-	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015
Point 3 (31km)	nitrogen dioxide	0,2	0,0453	-	-	-	0,0469	0,0459	0,0461	0,0482	0,0463	0,0496	0,0475	0,0460	0,0460
	carbonic oxide	5,0	<1,5	-	-	-	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5
	sulphur dioxide	0,5	<0,025	-	-	-	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025
	inorganic dust 70% >SiO ₂ >20%	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	hydrogen sulphide	0,008	<0,004	-	-	-	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004
	petroleum hydrocarbon (C ₁₂ –C ₁₉)	1,0	<0,5	-	-	-	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5
	methylbenzene	0,6	<0,3	-	-	-	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3
	benzol	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	xylene	0,2	<0,1	-	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1

	formaldehyde	0,05	<0,0015	-	-	-	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015
Point 4 (41 km)	nitrogen dioxide	0,2	0,0453	-	-	-	0,0461	0,0457	0,0455	0,0479	0,0469	0,0477	0,0478	0,0442	0,0440
	carbonic oxide	5,0	<1,5	-	-	-	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5
	sulphur dioxide	0,5	<0,025	-	-	-	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025
	inorganic dust 70% >SiO ₂ >20%	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	hydrogen sulphide	0,008	<0,004	-	-	-	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004
	petroleum hydrocarbon (C ₁₂ –C ₁₉)	1,0	<0,5	-	-	-	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5
	methylbenzene	0,6	<0,3	-	-	-	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3
	benzol	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	xylene	0,2	<0,1	-	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
	formaldehyde	0,05	<0,0015	-	-	-	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015
Point 5 (52 km)	nitrogen dioxide	0,2	0,0453	-	-	-	0,0459	0,0463	0,0462	0,0478	0,0472	0,0486	0,0484	0,0461	0,0453
	carbonic oxide	5,0	<1,5	-	-	-	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5	<1,5
	sulphur dioxide	0,5	<0,025	-	-	-	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025	<0,025
	inorganic dust 70% >SiO ₂ >20%	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	hydrogen sulphide	0,008	<0,004	-	-	-	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004	<0,004

	petroleum hydrocarbon (C ₁₂ –C ₁₉)	1,0	<0,5	-	-	-	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5	<0,5
	methylbenzene	0,6	<0,3	-	-	-	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3	<0,3
	benzol	0,3	<0,05	-	-	-	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05
	xylene	0,2	<0,1	-	-	-	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1	<0,1
	formaldehyde	0,05	<0,0015	-	-	-	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015	<0,0015

Lot-2 (km52-100)

82. When carrying out earthworks, such as top-soil removal with a bulldozer; storage of top-soil; excavation of soil with an excavator; dumping soil from a dump truck; leveling the soil with a bulldozer releases inorganic dust into the atmosphere. To reduce the impact on the atmospheric air, the Contractor takes the following measures:
- suppression of dust
 - open burning of fuel, garbage, binders is prohibited.
 - all technical means must be in working order.
83. On the site, 11 watering machines were used.
84. Instrumental measurements of atmospheric air quality were carried out at **20** sampling points:
- Aktobe-Astrakhan highway, km 52-100 - **2 points** (beginning and end of the road)
 - Temporary production base - **2 points** (upwind and leeward side).
 - Asphalt concrete plant BENNINGHOVEN MBA 2000 - **4 points** (to the North, South, West, East).
 - Asphalt concrete plant TSAP-2000PT - **4 points** (to the North, South, West, East).
 - Residential area (Tamdy settlement, Akkemer settlement, Elek settlement, Kandyagash town) - **2 points** each (upwind and leeward sides).
 - Borrow pits №№ 1-5 4 points (on the sides of the world).
 - Storage place for aggregate materials No.1-5 – 4 points (on the sides of the world)
85. Parameters for monitoring include following: nitrogen dioxide; inorganic dust 70-20%; sulfur dioxide; carbon oxide; hydrocarbons C12 - C19; Carbon (soot).
86. According to the data of environmental monitoring, none of monitored substances was found to exceed the maximum permissible concentration.
87. Instrumental measurements of emissions were carried out by direct measurements of the concentrations of pollutants (suspended solids, carbon monoxide, nitrogen dioxide, sulfur dioxide): by the express method, by universal gas analyzer GANK-4, by sampling for specially treated pipes of the pressure Pitot modification.
88. The ACP is located at km 51, concrete batching plant (CBP)– 51, borrow pits – at km 54, 62, 68, 72, 77, 85, 87, 93, 97
89. The air sampling points are presented on the map (Annex 4).

Table 15: Summarized analysis results of air quality measurements

Sampling point	Name of pollutants	MPC	basic data	actual data, 2021											
				Janua ry	Februar y	March (baselin e)	April	May	June	July	August	Septem ber	Octobe r	November	Decem ber
Construction sites (road, km 52-100)															
52 km (start point)	Inorganic dust: 70-20%	0.3	0,0127	-	-	0,0127	0,0124	0,017 9	0,0162	0,0149	0,0168	0,0157	0,0151	0,0152	0,0132
100 km (end point)	Inorganic dust: 70-20%	0.3	0,0139	-	-	0,0139	0,0133	0,018 8	0,0175	0,0164	0,0144	0,0132	0,0149	0,0145	0,0141
Temporary production base															
Windward	Nitrogen dioxide	0.2	0,0067	-	-	0,0067	0,0061	0,008 8	0,0079	0,0085	0,0074	0,0068	0,0062	0,0059	-
	Nitrogen oxide	0,4	0,0039	-	-	0,0039	0,0040	0,006 3	0,0070	0,0065	0,0061	0,0060	0,0066	0,0061	-
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-
	Carbon monoxide	5.0	0,071	-	-	0,071	0,083	0,108	0,112	0,118	0,094	0,091	0,097	0,085	-
	Hydrocarbons C12-C19	1.0	0,166	-	-	0,166	0,154	0,143	0,137	0,130	0,104	0,100	0,124	0,125	-
	Inorganic dust: 70-20%	0.3	0,0117	-	-	0,0117	0,0120	0,017 2	0,0175	0,0168	0,0160	0,0157	0,0162	0,0159	-
	Carbon (soot)	0.15	0,0119	-	-	0,0119	0,0111	0,011 0	0,0115	0,0111	0,0104	0,0101	0,0112	0,0110	-
Downwind	Nitrogen dioxide	0.2	0,0079	-	-	0,0079	0,0075	0,008 5	0,0081	0,0088	0,0080	0,0078	0,0074	0,0068	-
	Nitrogen oxide	0,4	0,0060	-	-	0,0060	0,0058	0,007 2	0,0075	0,0071	0,0077	0,0068	0,0067	0,0065	-
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	-

	Carbon monoxide	5.0	0,080	-	-	0,080	0,088	0,117	0,120	0,116	0,142	0,140	0,135	0,130	-
	Hydrocarbons C12-C19	1.0	0,179	-	-	0,179	0,170	0,150	0,145	0,137	0,205	0,200	0,192	0,187	-
	Inorganic dust: 70-20%	0.3	0,0129	-	-	0,0129	0,0129	0,019 5	0,0189	0,0180	0,0174	0,0171	0,0174	0,0169	-
	Carbon (soot)	0.15	0,0126	-	-	0,0126	0,0120	0,011 3	0,0127	0,0120	0,0131	0,0129	0,0131	0,0129	-
Asphalt-concrete Plant BENNINGHOVEN MBA 2000															
North	Nitrogen dioxide	0.2	0,0060	-	-	0,0060	0,0055	0,005 5	0,0048	0,0044	0,0040	0,0038	0,0031	0,0032	<0,02
	Nitrogen oxide	0,4	0,0040	-	-	0,0040	0,0034	0,003 9	0,0041	0,005	0,0074	0,0065	0,0062	0,0059	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,072	-	-	0,072	0,068	0,069	0,065	0,057	0,060	0,058	0,056	0,049	<1,5
	Hydrocarbons C12-C19	1.0	0,165	-	-	0,165	0,153	0,163	0,165	0,161	0,157	0,158	0,155	0,151	<0,75
	Inorganic dust: 70-20%	0.3	0,0115	-	-	0,0115	0,0116	0,014 8	0,0150	0,0155	0,0150	0,0151	0,0153	0,0148	<0,02
	Carbon (soot)	0.15	0,0131	-	-	0,0131	0,0129	0,012 5	0,0129	0,0136	0,0130	0,0128	0,0134	0,0137	<0,025
South	Nitrogen dioxide	0.2	0,0065	-	-	0,0065	0,0061	0,005 7	0,0055	0,0051	0,0057	0,0060	0,0054	0,0048	<0,02
	Nitrogen oxide	0,4	0,0042	-	-	0,0042	0,0040	0,004 5	0,0048	0,0052	0,0058	0,0055	0,0055	0,0051	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,069	-	-	0,069	0,069	0,067	0,069	0,062	0,062	0,059	0,057	0,050	<1,5
	Hydrocarbons C12-C19	1.0	0,169	-	-	0,169	0,161	0,165	0,168	0,165	0,160	0,162	0,160	0,162	<0,75

	Inorganic dust: 70-20%	0.3	0,0119	-	-	0,0119	0,0116	0,015 6	0,0153	0,0152	0,0150	0,0155	0,0161	0,0159	<0,02
	Carbon (soot)	0.15	0,0127	-	-	0,0127	0,0125	0,013 2	0,0138	0,0137	0,0147	0,0150	0,0147	0,0145	<0,025
West	Nitrogen dioxide	0.2	0,0061	-	-	0,0061	0,0062	0,006 4	0,0067	0,0068	0,0060	0,0058	0,0055	0,0050	<0,02
	Nitrogen oxide	0,4	0,0037	-	-	0,0037	0,0039	0,003 8	0,0042	0,0049	0,0054	0,0050	0,0054	0,0051	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,074	-	-	0,074	0,072	0,070	0,072	0,066	0,054	0,056	0,058	0,055	<1,5
	Hydrocarbons C12-C19	1.0	0,167	-	-	0,167	0,168	0,172	0,175	0,173	0,154	0,157	0,156	0,158	<0,75
	Inorganic dust: 70-20%	0.3	0,0117	-	-	0,0117	0,0120	0,016 1	0,0165	0,0160	0,0164	0,0165	0,0163	0,0158	<0,02
	Carbon (soot)	0.15	0,0139	-	-	0,0139	0,0138	0,013 6	0,0141	0,0146	0,014	0,017	0,0164	0,0161	<0,025
East	Nitrogen dioxide	0.2	0,0066	-	-	0,0066	0,0064	0,006 7	0,0069	0,0055	0,0048	0,0055	0,0056	0,0051	<0,02
	Nitrogen oxide	0,4	0,0040	-	-	0,0040	0,0041	0,004 3	0,0047	0,0048	0,0052	0,0048	0,0050	0,0048	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,072	-	-	0,072	0,070	0,073	0,075	0,071	0,070	0,075	0,072	0,065	<1,5
	Hydrocarbons C12-C19	1.0	0,173	-	-	0,173	0,175	0,179	0,181	0,179	0,145	0,147	0,150	0,148	<0,75
	Inorganic dust: 70-20%	0.3	0,0120	-	-	0,0120	0,0122	0,016 5	0,0168	0,0163	0,0149	0,0152	0,0157	0,0151	<0,02
	Carbon (soot)	0.15	0,0134	-	-	0,0134	0,0137	0,014 0	0,0145	0,0145	0,012	0,015	0,0159	0,0160	<0,025
Asphalt Concrete plant TSAP-2000PT															

North	Nitrogen dioxide	0.2	0,0076	-	-	0,0076	0,0078	0,0077	0,0068	0,0064	0,0050	0,0055	0,0058	0,0055	<0,02
	Nitrogen oxide	0,4	0,0052	-	-	0,0052	0,0053	0,0065	0,0067	n/a	0,0058	0,0061	0,0062	0,0059	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	0,081	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,091	-	-	0,091	0,089	0,086	0,077	0,125	0,075	0,069	0,072	0,069	<1,5
	Hydrocarbons C12-C19	1.0	0,123	-	-	0,123	0,119	0,115	0,109	0,0156	0,125	0,121	0,117	0,115	<0,75
	Inorganic dust: 70-20%	0.3	0,0111	-	-	0,0111	0,0108	0,0150	0,0148	0,0103	0,0150	0,0148	0,0144	0,0145	<0,02
	Carbon (soot)	0.15	0,0108	-	-	0,0108	0,0108	0,0103	0,0111	0,0071	0,012	0,010	0,013	0,015	<0,025
South	Nitrogen dioxide	0.2	0,0080	-	-	0,0080	0,0081	0,0080	0,0075	0,0062	0,0065	0,0061	0,0063	0,0058	<0,02
	Nitrogen oxide	0,4	0,0049	-	-	0,0049	0,0050	0,0059	0,0060	n/a	0,0063	0,0065	0,0063	0,0061	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	0,083	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,089	-	-	0,089	0,087	0,088	0,081	0,128	0,080	0,078	0,075	0,072	<1,5
	Hydrocarbons C12-C19	1.0	0,124	-	-	0,124	0,120	0,121	0,112	0,0155	0,108	0,105	0,110	0,111	<0,75
	Inorganic dust: 70-20%	0.3	0,0116	-	-	0,0116	0,0116	0,0155	0,0151	0,0106	0,0141	0,0138	0,0141	0,0139	<0,02
	Carbon (soot)	0.15	0,0112	-	-	0,0112	0,0111	0,0109	0,0107	0,0074	0,010	0,012	0,013	0,014	<0,025
West	Nitrogen dioxide	0.2	0,0081	-	-	0,0081	0,0079	0,0082	0,0075	0,0064	0,0070	0,0069	0,0064	0,0060	<0,02
	Nitrogen oxide	0,4	0,0055	-	-	0,0055	0,0054	0,0064	0,0059	n/a	0,0054	0,0057	0,0064	0,0062	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	0,078	n/a	n/a	n/a	n/a	<0.025

	Carbon monoxide	5.0	0,084	-	-	0,084	0,081	0,084	0,080	0,134	0,078	0,072	0,074	0,070	<1,5
	Hydrocarbons C12-C19	1.0	0,119	-	-	0,119	0,115	0,118	0,120	0,0159	0,115	0,110	0,119	0,121	<0,75
	Inorganic dust: 70-20%	0.3	0,0109	-	-	0,0109	0,0109	0,014 ₈	0,0152	0,0110	0,0143	0,0135	0,0139	0,0141	<0,02
	Carbon (soot)	0.15	0,0120	-	-	0,0120	0,0117	0,011 ₅	0,0118	0,0072	0,017	0,015	0,014	0,015	<0,025
East	Nitrogen dioxide	0.2	0,0073	-	-	0,0073	0,0075	0,007 ₇	0,0069	0,0065	0,0054	0,0061	0,0059	0,0057	<0,02
	Nitrogen oxide	0,4	0,0061	-	-	0,0061	0,0060	0,006 ₇	0,0062	n/a	0,0060	0,0065	0,0068	0,0065	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	0,086	n/a	n/a	n/a	n/a	<0,025
	Carbon monoxide	5.0	0,088	-	-	0,088	0,083	0,083	0,085	0,131	0,069	0,071	0,076	0,069	<1,5
	Hydrocarbons C12-C19	1.0	0,127	-	-	0,127	0,129	0,124	0,121	0,0162	0,140	0,135	0,132	0,129	<0,75
	Inorganic dust: 70-20%	0.3	0,0114	-	-	0,0114	0,0114	0,015 ₂	0,0156	0,0117	0,0160	0,0158	0,0150	0,0149	<0,02
	Carbon (soot)	0.15	0,0116	-	-	0,0116	0,0113	0,011 ₆	0,0120		0,011	0,016	0,012	0,012	<0,025
Residential area of Tamdy village															
Windward	Nitrogen dioxide	0.2	0,0045	-	-	0,0045	0,0040	0,003 ₈	0,0041	0,0056	0,0045	0,0049	0,0041	0,0042	<0,02
	Nitrogen oxide	0,4	0,0036	-	-	0,0036	0,0037	0,004 ₅	0,0037	0,0044	0,0040	0,0045	0,0052	0,0050	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,052	-	-	0,052	0,063	0,067	0,071	0,065	0,064	0,058	0,061	0,059	1,534
	Hydrocarbons C12-C19	1.0	0,119	-	-	0,119	0,121	0,128	0,112	0,122	0,130	0,128	0,134	0,135	<0.5

	Inorganic dust: 70-20%	0.3	0,0114	-	-	0,0114	0,0112	0,017 ₈	0,0164	0,0182	0,0182	0,0175	0,0177	0,0175	0,0145
	Carbon (soot)	0.15	0,0125	-	-	0,0125	0,0125	0,012 ₄	0,0115	0,0125	0,0118	0,0120	0,0122	0,0120	0,0116
Downwind	Nitrogen dioxide	0.2	0,0051	-	-	0,0051	0,0048	0,004 ₃	0,0045	0,0053	0,0050	0,0048	0,0043	0,0043	<0,02
	Nitrogen oxide	0,4	0,0055	-	-	0,0055	0,0055	0,005 ₉	0,0048	0,0052	0,0050	0,0056	0,0059	0,0055	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,064	-	-	0,064	0,068	0,066	0,074	0,068	0,072	0,068	0,067	0,061	1,566
	Hydrocarbons C12-C19	1.0	0,130	-	-	0,130	0,131	0,138	0,121	0,126	0,145	0,142	0,140	0,139	<0.5
	Inorganic dust: 70-20%	0.3	0,0120	-	-	0,0120	0,0117	0,019 ₀	0,0181	0,0196	0,0190	0,0187	0,0182	0,0180	0,0138
	Carbon (soot)	0.15	0,0135	-	-	0,0135	0,0130	0,013 ₉	0,0128	0,0132	0,0120	0,0115	0,0119	0,0118	0,0108
Residential area of Akkemer village															
Windward	Nitrogen dioxide	0.2	0,0052	-	-	0,0052	0,0055	0,007 ₁	0,0069	0,0074	0,0052	0,0055	0,0058	0,0055	<0,02
	Nitrogen oxide	0,4	0,0041	-	-	0,0041	0,0040	0,004 ₉	0,0052	0,0051	0,0054	0,0052	0,0051	0,0049	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,068	-	-	0,068	0,064	0,076	0,070	0,079	0,072	0,068	0,073	0,069	1,567
	Hydrocarbons C12-C19	1.0	0,133	-	-	0,133	0,131	0,149	0,151	0,165	0,143	0,142	0,153	0,151	<0.5
	Inorganic dust: 70-20%	0.3	0,0112	-	-	0,0112	0,0117	0,016 ₃	0,0171	0,0180	0,014	0,017	0,016	0,015	0,0142
	Carbon (soot)	0.15	0,0122	-	-	0,0122	0,0123	0,012 ₂	0,0120	0,0119	0,0111	0,0118	0,014	0,015	0,0114

Downwind	Nitrogen dioxide	0.2	0,0065	-	-	0,0065	0,0061	0,0077	0,0075	0,0077	0,0065	0,0068	0,0066	0,0061	<0,02
	Nitrogen oxide	0,4	0,0063	-	-	0,0063	0,0064	0,0061	0,0067	0,0064	0,0060	0,0055	0,0056	0,0054	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,077	-	-	0,077	0,070	0,085	0,073	0,085	0,090	0,087	0,085	0,075	1,551
	Hydrocarbons C12-C19	1.0	0,149	-	-	0,149	0,146	0,155	0,158	0,174	0,157	0,161	0,164	0,162	<0.5
	Inorganic dust: 70-20%	0.3	0,0119	-	-	0,0119	0,0118	0,0189	0,0192	0,0195	0,018	0,015	0,018	0,017	0,0139
	Carbon (soot)	0.15	0,0131	-	-	0,0131	0,0131	0,0130	0,0128	0,0120	0,0114	0,0116	0,013	0,012	0,0109
Residential area of Elek village															
Windward	Nitrogen dioxide	0.2	0,0049	-	-	0,0049	0,0049	0,0050	0,0042	0,0053	0,0060	0,0058	0,0051	0,0052	<0,02
	Nitrogen oxide	0,4	0,0029	-	-	0,0029	0,0034	0,0036	0,0037	0,0048	0,0034	0,0045	0,0039	0,0038	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,055	-	-	0,055	0,059	0,067	0,074	0,080	0,082	0,079	0,089	0,090	1,532
	Hydrocarbons C12-C19	1.0	0,117	-	-	0,117	0,109	0,134	0,141	0,156	0,142	0,140	0,162	0,160	<0.5
	Inorganic dust: 70-20%	0.3	0,0112	-	-	0,0112	0,0115	0,0180	0,0169	0,0191	0,0184	0,0178	0,0186	0,0185	0,0145
	Carbon (soot)	0.15	0,0124	-	-	0,0124	0,0124	0,0133	0,0103	0,0116	0,0115	0,0113	0,0125	0,0121	0,0118
Downwind	Nitrogen dioxide	0.2	0,0062	-	-	0,0062	0,0065	0,0060	0,0051	0,0055	0,0074	0,0062	0,0057	0,0058	<0,02
	Nitrogen oxide	0,4	0,0048	-	-	0,0048	0,0050	0,0043	0,0045	0,0046	0,0040	0,0048	0,0043	0,0042	<0,03

	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,066	-	-	0,066	0,069	0,075	0,085	0,088	0,091	0,087	0,094	0,095	1,511
	Hydrocarbons C12-C19	1.0	0,129	-	-	0,129	0,116	0,150	0,153	0,161	0,159	0,151	0,158	0,161	<0.5
	Inorganic dust: 70-20%	0.3	0,0126	-	-	0,0126	0,0127	0,019 7	0,0185	0,0197	0,0190	0,0185	0,0195	0,0192	0,0136
	Carbon (soot)	0.15	0,0135	-	-	0,0135	0,0132	0,014 8	0,0128	0,0133	0,0121	0,0119	0,0132	0,0130	0,011
Residential area of Kandyagash city															
Windward	Nitrogen dioxide	0.2	0,0055	-	-	0,0055	0,0051	0,005 8	0,0064	0,0073	0,0056	0,0058	0,0053	0,0055	<0,02
	Nitrogen oxide	0,4	0,0033	-	-	0,0033	0,0025	0,004 2	0,0048	0,0055	0,0057	0,0060	0,0066	0,0057	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,054	-	-	0,054	0,058	0,056	0,051	0,056	0,059	0,057	0,052	0,049	1,586
	Hydrocarbons C12-C19	1.0	0,113	-	-	0,113	0,112	0,115	0,105	0,117	0,201	0,195	0,198	0,195	<0.5
	Inorganic dust: 70-20%	0.3	0,0110	-	-	0,0110	0,0110	0,016 9	0,0171	0,0180	0,0187	0,0178	0,0183	0,0180	0,0155
	Carbon (soot)	0.15	0,0128	-	-	0,0128	0,0126	0,013 6	0,0128	0,0136	0,0145	0,0138	0,0145	0,0141	0,0121
Downwind	Nitrogen dioxide	0.2	0,0072	-	-	0,0072	0,0062	0,007 7	0,0081	0,0082	0,0064	0,0058	0,0055	0,0056	<0,02
	Nitrogen oxide	0,4	0,0052	-	-	0,0052	0,0040	0,007 1	0,0069	0,0072	0,0070	0,0075	0,0079	0,0061	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	<0.025
	Carbon monoxide	5.0	0,067	-	-	0,067	0,069	0,067	0,065	0,062	0,071	0,065	0,061	0,058	1,549
	Hydrocarbons C12-C19	1.0	0,125	-	-	0,125	0,123	0,122	0,118	0,116	0,214	0,210	0,216	0,215	<0.5

	Inorganic dust: 70-20%	0.3	0,0122	-	-	0,0122	0,0121	0,019 0	0,0185	0,0187	0,0194	0,0189	0,0185	0,0181	0,0138
	Carbon (soot)	0.15	0,0134	-	-	0,0134	0,0135	0,015 0	0,0144	0,0151	0,0154	0,0151	0,0160	0,0158	0,0117
Borrow pits No.1-9															
North	Nitrogen dioxide	0.2	0,0053	-	-	0,0053	-	-	0,0048	0,0053	0,0050 4	0,00488	0,0054	0,00508571 4	<0,02
	Nitrogen oxide	0,4	0,0046	-	-	0,0046	-	-	0,0042	0,0044	0,0041 4	0,0043	0,005	0,005	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	<0,025
	Carbon monoxide	5.0	0,093	-	-	0,093	-	-	0,078	0,082	0,0779 2	0,07506	0,074	0,07898	<1,5
	Hydrocarbons C12-C19	1.0	0,117	-	-	0,117	-	-	0,117	0,1190 2	0,1130 6	0,12198	0,12	0,1269	<0,75
	Inorganic dust: 70-20%	0.3	0,0120	-	-	0,012	-	-	0,0115	0,0119	0,0112	0,0133	0,0133	0,0122	<0,02
	Carbon (soot)	0.15	0,0239	-	-	0,0239	-	-	0,0223	0,0226	0,0213 8	0,02276	0,0246	0,026	<0,025
South	Nitrogen dioxide	0.2	0,0062	-	-	0,0062	-	-	0,0059	0,0055 2	0,0052 2	0,00552	0,00572	0,0056	<0,02
	Nitrogen oxide	0,4	0,0049	-	-	0,0049	-	-	0,0045	0,0047	0,0043 6	0,00466	0,0049	0,005	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	<0,025
	Carbon monoxide	5.0	0,089	-	-	0,089	-	-	0,0075	0,0810 2	0,0769 8	0,07472	0,07532	0,079	<1,5
	Hydrocarbons C12-C19	1.0	0,120	-	-	0,120	-	-	0,120	0,122	0,1159 2	0,11762	0,12262	0,1255	<0,75
	Inorganic dust: 70-20%	0.3	0,0126	-	-	0,0126	-	-	0,0119	0,0122	0,0116 8	0,01144	0,01316	0,0136	<0,02

	Carbon (soot)	0.15	0,0228	-	-	0,0228	-	-	0,0219	0,0223	0,0211 6	0,02402	0,02448	0,0273	<0,025
West	Nitrogen dioxide	0.2	0,0058	-	-	0,0058	-	-	0,0055	0,0059	0,0057	0,00596	0,00586	0,0058	<0,02
	Nitrogen oxide	0,4	0,0051	-	-	0,0051	-	-	0,0048	0,0050 2	0,0048 2	0,00538	0,0056	0,00558	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	<0,025
	Carbon monoxide	5.0	0,088	-	-	0,088	-	-	0,074	0,0770 2	0,0731 4	0,0755	0,0746	0,07815	<1,5
	Hydrocarbons C12-C19	1.0	0,115	-	-	0,115	-	-	0,115	0,118	0,1120 8	0,11606	0,11992	0,1236	<0,75
	Inorganic dust: 70-20%	0.3	0,0123	-	-	0,0123	-	-	0,0121	0,0124	0,0118 2	0,01288	0,01368	0,0138	<0,02
	Carbon (soot)	0.15	0,0246	-	-	0,0246	-	-	0,0236	0,0234	0,0221 8	0,02708	0,02694	0,0301	<0,025
East	Nitrogen dioxide	0.2	0,0059	-	-	0,0059	-	-	0,0051	0,0054	0,0051 2	0,00528	0,00604	0,00601	<0,02
	Nitrogen oxide	0,4	0,0055	-	-	0,0055	-	-	0,0052	0,0053	0,0050 4	0,00534	0,00554	0,00548	<0,03
	Sulfur dioxide	0.5	n/a	-	-	n/a	-	-	n/a	n/a	n/a	n/a	n/a	n/a	<0,025
	Carbon monoxide	5.0	0,090	-	-	0,090	-	-	0,081	0,0830 2	0,0789	0,0768	0,07742	0,08062	<1,5
	Hydrocarbons C12-C19	1.0	0,118	-	-	0,118	-	-	0,118	0,1210 2	0,1149 8	0,11728	0,1206	0,124	<0,75
	Inorganic dust: 70-20%	0.3	0,0128	-	-	0,0128	-	-	0,0125	0,0128	0,0121 4	0,01316	0,01354	0,013	<0,02
	Carbon (soot)	0.15	0,0234	-	-	0,0234	-	-	0,0022 8	0,022	0,0209 2	0,02424	0,02582	0,028	<0,025
Place of aggregate materials storage															

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North	Inorganic dust: 70-20%	0.3	0,0112	-	-	0,0112	-	-	0,0121	0,0130 4	0,0129	0,01288	0,01326	0,01314	0,0135
South	Inorganic dust: 70-20%	0.3	0,0108	-	-	0,0108	-	-	0,0118	0,0126 4	0,0123 6	0,0125	0,01312	0,01302	0,0128
West	Inorganic dust: 70-20%	0.3	0,0118	-	-	0,0118	-	-	0,0113	0,0130 6	0,0128 8	0,01282	0,01354	0,01336	0,0126
East	Inorganic dust: 70-20%	0.3	0,0115	-	-	0,0115	-	-	0,0116	0,0133 8	0,0131	0,01306	0,01372	0,01356	0,0132

4.3 Water Quality

Lot-1

90. There is no groundwater close to the construction site. There are no hydrological posts near the object to monitor ground and surface waters. For production needs, water is used for irrigation, as well as for preparation of concrete and mortars. There will be no direct discharge of wastewater from the construction of the facility into surface river waters, as well as into underground waters, which lie deep within the territory and do not pinch out anywhere. In this connection, there is no negative impact on the aquatic environment. Water for drinking and household needs is delivered by water carriers. Monitoring of groundwater is not carried out (no wells). Monitoring of surface waters is carried out by sampling from the Ile River. Monitoring results are presented in table 16. The location of the control points is indicated on the map (Annex 3).

Table 16: Summarized results of analysis of water quality measurements

Control points	Pollutants	MPC	Basic data	Actual data, 2021					
				July	August	Sept	Oct	Nov	Dec
Ilek river									
Point 1	Nitrates	no more than 45	<0,1	<0,1	0,11	0,18	0,11	0,10	0,09
	Nitrites	no more than 3.3	0,02	0,02	0,09	0,09	0,09	0,10	0,07
	Chlorides	no more than 350	46,70	46,70	2,09	132,8	163,2	2,15	1,78
	Sulfates	no more than 500	81,50	81,50	0,27	110,05	99,02	0,33	0,2

91. Water resources for technological needs are used carried out from the Ile River. Permission for special water use was received in September 2021. Water accounting is carried out by calculation.

92. To prevent water pollution during the construction period, the Contractor took following actions: concluded an agreement with:

- a specialized organization for the removal of wastewater;
- Organize the collection and removal of water and other liquid waste arising at the Construction Site to specially designated treatment facilities agreed with local authorities so as not to cause pollution of surface and ground waters.

Lot-2 (km52-100)

93. Water resources are monitored on the Tabantal, Talasbay and Batpakty rivers flowing in this area. Controlled substances: suspended particles, chlorides, sulfates, nitrates, nitrites, ammonia, oil products, BOD5, COD.

94. There is no closely spaced groundwater on the construction site. There are no hydrological posts near the object to monitor ground and surface waters. For production needs, water is used for

irrigation, as well as for the preparation of concrete and mortars. There will be no direct discharge of wastewater from the construction of the facility into surface river waters, as well as into underground waters, which lie deep within the territory and do not wedge out anywhere. In this connection, there is no negative impact on the aquatic environment.

95. Water intake for technological needs is carried out from the Batpakty and Ilek Rivers. Permit for water use from rivers of Batpakty and Ilek is obtained.
96. There is no wastewater discharge during the construction of the facility to the Tabantal, Talasbay and Batpakty rivers. As shown by the results of laboratory studies, the concentration of substances does not exceed the established MPC. In this connection, there is no negative impact on the aquatic environment. Sampling control points on the rivers Batpakty (point km 64), Talasbay (point km 67), Tabantal (point km 79). Points 1-2 are located on both sides of the bridge. Monitoring was not implemented in the Aug-Dec 2021 period due the rivers Tabantal, Tabasbay dried up; Batpakty river (point 2) covered by reeds (dense); there is no way to take a water sample. Also see comments to the table 17.

Table 17: Summarized analysis results of water quality measurements¹

Samplin g point	Name of pollutants	MPC	basi c data	Actual data, 2021											
				Januar y	Februar y	March (baseline)	April	May	June	July	Aug ust	Sept	Oct	Nov	Dec
Tabantal River															
Point 1	Substances insoluble in water	not standardized	0,69	-	-	0,69	0,76	0,10 2	0,11 1	0,12 0	-	-	-	-	-
	Chlorides	no more than 350	128, 5	-	-	128,5	119, 8	128, 2	129, 5	134, 0	-	-	-	-	-
	Sulfates	no more than 500	219, 5	-	-	219,5	288, 0	306, 0	345, 0	340, 1	-	-	-	-	-
	Nitrates	no more than 45	19,3	-	-	19,3	15,3	13,9	12,5	14,0	-	-	-	-	-
	Nitrites	no more than 3.3	1,04	-	-	1,04	1,0	1,01	1,16	1,20	-	-	-	-	-
	Ammonium nitrogen	no more than 2.0	0,98	-	-	0,98	0,88	0,76	0,65	0,54	-	-	-	-	-
	Petrochemical s	no more than 0.1	0,04	-	-	0,04	0,02 3	0,02 1	0,03 6	0,03 2	-	-	-	-	-
	Five-day bod	3-6	4,04	-	-	4,04	4,02	4,0	3,5	3,8	-	-	-	-	-
	COD	15-30	15,9	-	-	15,9	16,2	17,4	15,8	16,7	-	-	-	-	-
Point 2	Substances insoluble in water	not standardized	0,69	-	-	0,69	0,78	0,99	0,10 1	0,12 4	-	-	-	-	-
	Chlorides	no more than 350	128, 5	-	-	128,5	124, 0	131, 8	145, 8	142, 6	-	-	-	-	-

¹ Data for August-December 2021: the rivers Tabantal, Tabasbay dried up; Batpakty river (point 2) covered by reeds (dense). There is no way to take a water sample.

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	Sulfates	no more than 500	219,5	-	-	219,5	288,1	298,4	321,4	330,6	-	-	-	-	-
	Nitrates	no more than 45	19,3	-	-	19,3	17,0	16,0	14,9	14,6	-	-	-	-	-
	Nitrites	no more than 3.3	1,04	-	-	1,04	0,97	0,98	0,78	0,98	-	-	-	-	-
	Ammonium nitrogen	no more than 2.0	0,98	-	-	0,98	0,91	0,88	0,74	0,62	-	-	-	-	-
	Petrochemicals	no more than 0.1	0,04	-	-	0,04	0,036	0,033	0,041	0,040	-	-	-	-	-
	Five-day bod	3-6	4,04	-	-	4,04	4,03	4,1	4,3	4,6	-	-	-	-	-
	COD	15-30	15,9	-	-	15,9	16,7	17,7	16,6	17,5	-	-	-	-	-
Talasbai River															
Point 1	Substances insoluble in water	not standardized	0,69	-	-	0,69	0,77	0,86	0,93	0,90	-	-	-	-	-
	Chlorides	no more than 350	128,5	-	-	128,5	170,1	168,7	155,8	160,0	-	-	-	-	-
	Sulfates	no more than 500	219,5	-	-	219,5	325,5	312,3	256,3	250,6	-	-	-	-	-
	Nitrates	no more than 45	19,3	-	-	19,3	14,6	13,8	13,2	14,6	-	-	-	-	-
	Nitrites	no more than 3.3	1,04	-	-	1,04	0,90	0,87	0,96	0,88	-	-	-	-	-
	Ammonium nitrogen	no more than 2.0	0,98	-	-	0,98	0,72	0,78	0,79	0,70	-	-	-	-	-
	Petrochemicals	no more than 0.1	0,04	-	-	0,04	0,041	0,047	0,036	0,038	-	-	-	-	-
	Five-day bod	3-6	4,04	-	-	4,04	4,11	4,23	4,18	4,21	-	-	-	-	-
	COD	15-30	15,9	-	-	15,9	16,6	16,0	15,3	17,2	-	-	-	-	-

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Point 2	Substances insoluble in water	not standardized	0,69	-	-	0,69	0,80	0,93	0,98	0,94	-	-	-	-	-
	Chlorides	no more than 350	128,5	-	-	128,5	176,4	172,4	169,2	167,6	-	-	-	-	-
	Sulfates	no more than 500	219,5	-	-	219,5	329,2	320,0	296,0	285,6	-	-	-	-	-
	Nitrates	no more than 45	19,3	-	-	19,3	15,1	14,9	14,7	15,1	-	-	-	-	-
	Nitrites	no more than 3.3	1,04	-	-	1,04	0,86	0,82	0,90	0,84	-	-	-	-	-
	Ammonium nitrogen	no more than 2.0	0,98	-	-	0,98	0,81	0,88	0,85	0,81	-	-	-	-	-
	Petrochemicals	no more than 0.1	0,04	-	-	0,04	0,039	0,045	0,041	0,040	-	-	-	-	-
	Five-day bod	3-6	4,04	-	-	4,04	4,19	4,31	4,25	4,32	-	-	-	-	-
	COD	15-30	15,9	-	-	15,9	17,0	17,1	16,5	18,5	-	-	-	-	-
Batpakty River															
Point 1	Substances insoluble in water	not standardized	0,69	-	-	0,69	0,68	0,81	0,78	0,80	0,125	0,178	0,185	0,182	-
	Chlorides	no more than 350	128,5	-	-	128,5	163,8	160,4	156,2	160,2	128,0	144,9	136,4	136,1	-
	Sulfates	no more than 500	219,5	-	-	219,5	353,8	304,6	315,9	388,0	295,1	288,1	276,2	268,2	-
	Nitrates	no more than 45	19,3	-	-	19,3	15,0	12,4	15,7	16,3	12,0	9,3	11,0	11,2	-
	Nitrites	no more than 3.3	1,04	-	-	1,04	0,89	0,86	0,74	0,69	1,11	1,4	1,1	1,5	-
	Ammonium nitrogen	no more than 2.0	0,98	-	-	0,98	0,88	0,68	0,65	0,69	0,42	0,65	0,72	0,69	-

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	Petrochemicals	no more than 0.1	0,04	-	-	0,04	0,030	0,034	0,041	0,038	0,028	0,015	0,005	0,002	-
	Five-day bod	3-6	4,04	-	-	4,04	4,0	4,11	4,15	4,05	3,2	3,41	3,73	3,65	-
	COD	15-30	15,9	-	-	15,9	15,9	15,3	14,8	15,6	14,5	15,8	16,8	16,5	-
Point 2	Substances insoluble in water	not standardized	0,69	-	-	0,69	0,71	0,90	0,85	0,84	-	-	-	-	-
	Chlorides	no more than 350	128,5	-	-	128,5	170,1	170,0	169,0	166,4	-	-	-	-	-
	Sulfates	no more than 500	219,5	-	-	219,5	329,2	316,4	321,4	380,6	-	-	-	-	-
	Nitrates	no more than 45	19,3	-	-	19,3	16,2	12,0	15,9	116,8	-	-	-	-	-
	Nitrites	no more than 3.3	1,04	-	-	1,04	0,77	0,82	0,81	0,80	-	-	-	-	-
	Ammonium nitrogen	no more than 2.0	0,98	-	-	0,98	0,91	0,72	0,75	0,72	-	-	-	-	-
	Petrochemicals	no more than 0.1	0,04	-	-	0,04	0,038	0,038	0,049	0,042	-	-	-	-	-
	Five-day bod	3-6	4,04	-	-	4,04	4,01	4,24	4,31	4,16	-	-	-	-	-
	COD	15-30	15,9	-	-	15,9	16,3	16,1	15,9	16,4	-	-	-	-	-

4.4 Noise and Vibration

Lot-1

97. The main source of noise (vibration) is road construction equipment. Instrumental monitoring is carried out by a certified laboratory as part of monthly environmental monitoring. According to the results of measurements of noise and vibration, no excess of the established standards was recorded.

Table 18: Summarized results of analysis of noise level measurements

Sampling point	National MPC	ADB/IFC thresholds (daytime/ night time) ²	Basic data	actual data, 2021					
				July	August	Sept	Oct	Nov	Dec
Road section km 11-52									
Road section km 11	80	55/45	48	51	52	51	52	51	50
Road section km 21	80	55/45	50	48	53	49	47	50	49
Road section km 31	80	55/45	49	50	47	46	48	49	47
Road section km 41	80	55/45	50	51	49	47	49	51	50
Road section km 52	80	55/45	52	49	47	46	45	48	49

Table 19: Summarized results of the analysis of vibration measurements

Sampling point	National MP C	ADB/IFC thresholds	Basic data	actual data, 2021					
				July	August	Sept	Oct	Nov	Dec
Road section km 11-52									
Road section km 11	107	NA	44	37	39	37	36	38	39
Road section km 21	107	NA	43	36	38	36	38	40	41

² IFC/World Bank Noise Level Guidelines (for residential; institutional; educational)
<https://www.ifc.org/wps/wcm/connect/4a4db1c5-ee97-43ba-99dd-8b120b22ea32/1-7%2BNoise.pdf?MOD=AJPERES&CVID=nPtgwZY>

Road section km 31	107	NA	41	40	41	43	39	41	40
Road section km 41	107		43	39	36	41	42	44	40
Road section km 52	107		41	44	32	38	44	46	42

Lot-2

98. The main source of noise (vibration) is road construction equipment. Instrumental monitoring is carried out by a certified laboratory as part of monthly environmental monitoring. According to the results of measurements of noise and vibration, no excess of the established standards was recorded

Table 20: Summarized analysis results of vibration measurements

Sampling point	MPC	basic data	actual data, 2021											
			January	February	Marc h	April (baseline)	May	June	July	August	Sept	Oct	Nov	Dec
Section of the Aktobe-Atyrau road (km 52-100)														
Road section km 52	95	48,29	-	-	-	48,29	48,14	47,57	49,6	50,3	51,0	52,0	51,0	53,0
Road section km 100	95	49,57	-	-	-	49,57	49,7	49,14	49,9	52,4	52,0	51,0	50,0	52,0
Asphalt-concrete plant BENNINGHOVEN MBA 2000														
Point 1	95	49,14	-	-	-	49,14	49,6	49,57	50,3	51,2	51,2	52,0	51,0	52,0
Point 2	95	49,86	-	-	-	49,86	49,7	43,00	50,1	52,4	52,4	51,0	49,0	50,0
Asphalt-concrete plant TSAP-2000PT														
Point 1	95	50,14	-	-	-	50,14	50,3	50,00	50,4	50,8	51,0	51,0	52,0	53,0
Point 2	95	49,57	-	-	-	49,57	50,0	50,14	50,1	51,5	52,0	52,0	53,0	51,0
Temporary production base														
Point 1	95	50,57	-	-	-	50,57	50,57	50,14	49,9	51,0	52,0	51,0	50,0	55,0
Point 2	95	50,0	-	-	-	50,0	50,0	50,00	50,0	50,3	51,0	50,0	52,0	53,0
Residential area														
Tamdy vill.	95	49,86	-	-	-	49,86	50,6	49,6	49,7	50,4	52,0	53,0	52,0	55,0
Akkemer vill.	95	50,0	-	-	-	50,0	49,7	49,2	50,0	50,2	50,0	51,0	50,0	52,0
Elek vill.	95	50,29	-	-	-	50,29	50,4	49,9	50,4	50,1	51,0	52,0	51,0	52,0

Kandyagash city	95	50,71	-	-	-	50,71	50,4	49,8	50,6	50,4	51,0	50,0	51,0	54,0
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Table 21: Summarized analysis results of noise measurements

Sampling point	MPC	basic data	actual data, 2021											
			January	February	March	April (baseline)	May	June	July	August	Sept	Oct	Nov	Dec
Section of the Aktobe-Atyrau road (km 52-100)														
km 52	80	57,38	-	-	57,38	58,28	58,3	59,92	60,0	60,4	61,7	61,2	61,0	62,0
km 100	80	61,91	-	-	61,91	62,73	62,8	59,93	60,01	60,2	60,9	61,2	60,2	60,0
Asphalt-concrete plant BENNINGHOVEN MBA 2000														
Point 1	80	60,47	-	-	60,47	60,76	60,83	59,4	59,6	57,6	60,5	61,7	61,9	60,0
Point 2	80	59,1	-	-	59,1	59,15	59,32	59,0	59,4	60,3	61,8	62,4	60,4	58,0
Asphalt-concrete plant TSAP-2000PT														
Point 1	80	51,83	-	-	51,83	52,20	52,1	52,1	52,7	51,2	52,2	53,0	51,0	59,0
Point 2	80	52,8	-	-	52,8	53,07	53,12	52,7	52,9	53,0	54,1	54,4	52,4	55,0
Temporary production base														
Point 1	80	63,35	-	-	63,35	63,43	63,5	62,1	62,4	62,4	61,3	62,0	60,0	75,0
Point 2	80	65,26	-	-	65,26	62,20	62,2	62,2	61,31	61,4	60,8	62,4	61,5	62,0
Residential zone														
Tamdy vill.	80	46,07	-	-	46,07	46,36	68,0	45,5	45,62	45,5	47,5	47,9	48,9	49,0
Akkemer vill.	80	49,72	-	-	49,72	49,91	49,94	48,2	48,6	47,0	47,5	50,2	51,2	51,0
Elek vill.	80	48,48	-	-	48,48	49,02	49,04	48,1	48,43	49,1	51,1	51,4	51,0	47,0

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Kandyagash city	80	48,3	-	-	48,3	49,06	49,1	48,5	48,64	47,2	47,5	50,7	50,5	54,0
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4.5 Monitoring of flora and fauna

99. The monitoring of flora and fauna is carried out visually. No trees cutting done and no illegal poaching cases recorded by ES of CSC and during the reporting period.
100. Contractor received a logging ticket from JSC "NC "Kazakhstan Temir Zholy" Aktobe distance of protective forest plantations" for cutting down trees. The location of forest belt: from km 58+440 to km 59+550 (near the Tamdy village, Alga district). The Contractor has carried out cutting in a timely manner. The logging ticket is given in Annex 5.

4.6 Use of material resources

Lot 1

Table 22: Resources consumption by Contractors of Lot 1

No	Title	Unit	Total consumption	Consumption for 2021	Performed since project commencement
1	Crushed stone 0-5	thous.m3	84,94	10,248	0.4
2	Crushed stone 5-10	thous.m3	19,73	-	-
3	Crushed stone 10-20	thous.m3	85,51	-	-
4	Crushed stone 20-40	thous.m3	57,4	10,752	1.495
5	Crushed stone 0-40	thous.m3	549,24	65,7	4,57
6	Crushed stone 0-80	thous.m3	583,18	168,05	5.744
7	Crushed stone 0-80 Tokmansay				9.905
8	Precast concrete goods	thous.m3	10	5,7	3.794
9	Bitumen	thous.m3	25,711	5	1,68
10	Sand gravel mixture	thous.m3	105,688	40	0.068
11	Cement	thous.m3	26,2	6,9	-

Lot 2

101. Resources consumption tracking has started in 01.03.2021.

Table 23: Resources consumption by Contractors of Lot 2

No	Materials	Unit	Total by Project	Total on site
1.1	Aggregate / 0-5 mm	ton	182,734	104,786
1.2	Aggregate 5-10 mm	ton	55,642	0
1.3	Aggregate 10-20 mm	ton	11,353	0

№	Materials	Unit	Total by Project	Total on site
1.4	Aggregate 5-20 mm	ton	111,016	96,272
1.5	Aggregate 20-40 mm	ton	15,774	119,017
1.6	Aggregate 40-70 mm	ton	54,121	61,305
1.7	Stone sand mixture C4	ton	256,522	35,840
	Total	ton	929,165	417,220
2.1	Bitumen	ton	8,700	3,500
3.1	Cement M400	ton	23,951	0.559

4.7 Waste management

Lot-1 (km11-52)

102. Industrial waste for the reporting period was not generated. During the reporting period, industrial waste was formed in the form of solid and liquid household waste. Storage of solid waste within the shift camp is carried out in containers. The contractor concluded contracts for removal and storage of solid waste with IE "Tazalyk" 2005 in July 2021. The quantity of solid waste during reporting period is 34 tons

103. To prevent contamination of soil resources during the construction period, the Engineer issued a Prescription to the Contractor:

- To organize places for temporary storage of waste
- To conclude an agreement and organize the collection, removal and calculation of waste.

Lot-2 (km52-100)

104. Industrial waste for the reporting period was not generated.

105. Storage of solid waste within the shift camp area is carried out in labeled containers. Removal of solid waste is carried out as it accumulates under agreement with a specialized organization. Quantity of solid waste during reporting period was 65 tons, liquid household waste - 880.2 m³.

106. On the territory of the camp base there is no organized place for the temporary storage of waste. The Contractor has concluded following agreements for the garbage removal/disposal:

Table 24: Agreements on waste disposal

Contract № 23/3 dated 01.04.2021	with GKP "Alga-Zhylyu" for pumping and removal of wastewater
Contract № 6/21 dated 09.12.2020	with EcoPromKZ LLP for disposal of production waste
Contract №14 dated 04.02.2021	with IP "Tazalyk 2015" for disposal of solid waste at the landfill

4.8 Borrow pits and its management

Lot-1 (km11-52)

107. In September 2021, the contractor received environmental permits for procurement and extraction of clay rocks and sands (soils) at the deposits "Borrow pit No.1-2" in the Aktobe city and "Borrow pit No. 3-11", "Quarry No. 2-3" in the Alga district of the Aktobe region"
108. According to the administrative division, the sections Ground Reserves No.1-13 are located in the immediate vicinity of the highway of republican significance A-27 "Aktobe-Atyrau-border of the Russian Federation", to Astrakhan (11-52 km), respectively, in the Alga and Mugalzhar districts of Aktobe regions of the Republic of Kazakhstan.
109. Geographical coordinates of the corner points of the allotment, registration stage, valid and absolute marks of the surface of the areas of geological exploration are presented in Table 24.

Table 25: Geographical coordinates of the corner points of the withdrawal, areas and absolute elevations of the surface of the plots

№	Geographical coordinates			Registration stage (for production and exploration)	Permission is valid until
	No. corner point	Northern latitude	Eastern longitude		
1	1	50° 10' 17,0854"	57° 17' 41,2279"	mining permit received on 23.07.2021	12.06.2023
	2	50° 10' 07,8854"	57° 17' 51,3273"		
	3	50° 10' 06,9255"	57° 17' 47,8374"		
	4	50° 10' 16,6554"	57° 17' 40,1579"		
2	1	50° 08' 27,4369"	57° 18' 36,0830"	mining permit received on 23.07.2021	
	2	50° 07' 52,9974"	57° 18' 52,7216"		
	3	50° 07' 52,0574"	57° 18' 47,8916"		
	4	50° 08' 26,4870"	57° 18' 31,2631"		
3	1	50° 06' 26,9986"	57° 19' 33,2879"	mining permit received on 23.07.2021	
	2	50° 06' 19,7187"	57° 19' 36,2575"		
	3	50° 06' 18,1188"	57° 19' 26,4977"		
	4	50° 06' 25,3987"	57° 19' 23,5780"		
4	1	50° 04' 32,3602"	57° 20' 20,9631"	mining permit received on 23.07.2021	
	2	50° 04' 13,4005"	57° 20' 28,4423"		
	3	50° 04' 12,1206"	57° 20' 24,0824"		
	4	50° 04' 29,7504"	57° 20' 11,8532"		
5	1	50° 03' 24,4120"	57° 20' 01,5312"	mining permit received on 23.07.2021	
	2	50° 03' 23,3915"	57° 20' 31,7607"		
	3	50° 03' 10,5018"	57° 20' 30,6403"		

	4	50° 03' 11,6021"	57° 20' 00,5111"	
6	1	50° 00' 06,9041"	57° 22' 12,0920"	mining permit received on 23.07.2021
	2	50° 00' 00,4243"	57° 22' 12,5718"	
	3	49° 59' 59,5147"	57° 21' 42,4625"	
	4	50° 00' 05,9345"	57° 21' 42,0227"	
7	1	49° 58' 53,2057"	57° 22' 02,4100"	mining permit received on 23.07.2021
	2	49° 58' 43,2358"	57° 22' 15,2694"	
	3	49° 58' 35,0061"	57° 21' 59,7895"	
	4	49° 58' 44,8961"	57° 21' 46,9001"	
8	1	49° 57' 42,5758"	57° 23' 45,4952"	mining permit received on 23.07.2021
	2	49° 57' 38,2957"	57° 24' 04,4746"	
	3	49° 57' 19,8162"	57° 23' 54,4743"	
	4	49° 57' 24,1863"	57° 23' 35,5049"	
9	1	49° 54' 57,6885"	57° 24' 35,5489"	mining permit received on 23.07.2021
	2	49° 54' 54,8682"	57° 25' 00,2082"	
	3	49° 54' 38,9086"	57° 24' 56,0978"	
	4	49° 54' 41,6889"	57° 24' 31,4185"	
10	1	49° 53' 08,2124"	57° 22' 20,4188"	mining permit received on 23.07.2021.
	2	49° 52' 57,0125"	57° 22' 29,6382"	
	3	49° 52' 50,4929"	57° 22' 12,2985"	
	4	49° 53' 01,6828"	57° 22' 02,1291"	
11	1	49° 51' 48,3955"	57° 20' 31,4090"	mining permit received on 23.07.2021
	2	49° 51' 35,3257"	57° 20' 33,6986"	
	3	49° 51' 33,8960"	57° 20' 13,7590"	
	4	49° 51' 46,9657"	57° 20' 11,4495"	
12	1	49° 53' 39,4609"	57° 23' 33,0580"	mining permit received on 23.07.2021
	2	49° 53' 29,5906"	57° 24' 12,2867"	
	3	49° 53' 17,8609"	57° 24' 04,7865"	
	4	49° 53' 22,9113"	57° 23' 24,7577"	
13	1	49° 51' 21,6566"	57° 19' 41,8294"	mining permit received on

2	49° 51' 11,9868"	57° 19' 46,4290"	23.07.2021
3	49° 51' 13,0668"	57° 19' 40,3492"	
4	49° 51' 09,2974"	57° 19' 04,5300"	
5	49° 51' 12,4973"	57° 19' 02,6001"	

Table 26. Summarized analysis results of soil parameters measurements

Sam ple point	controlled substance	test assessment reference	Actual data											
			Janu ary	Febru ary	Mar ch	April	May	Jun e	Jul y	Aug ust	Septe mber	Octob er	Nove mber	Dece mber
52 km	CU copper (acid-soluble form), mg/kg	regulatory document 16.1:2:2:2.3. 63-09	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5	<2,5
	Zn Zinc (acid-soluble form), mg/kg	regulatory document 16.1:2:2:2.3. 63-09	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0	<25,0

Lot-2 (km52-100)

110. The Contractor has received environmental permits for the extraction and development of inert minerals (COMR).
111. According to the administrative division, the soil Reserves No.1-9 are located in the immediate vicinity of the highway of republican significance A-27 "Aktobe-Atyrau-border of the Russian Federation", to Astrakhan (52-100 km), respectively, in the Alga and Mugalzhal districts of Aktobe regions of the Republic of Kazakhstan.
112. Coordinates of the corner points of the site and absolute level points of geology surveys are presented in Table 27.

Table 27: Coordinates of the corner points of the site and absolute level points of geology surveys

No.	Coordinates	
	Northern latitude	Eastern longitude
Ground Reserves No.1		
1	49°48'17,9900"	57°18'42,4024"
2	49°48'16,2577"	57°19'07,4156"
3	49°48'00,1724"	57°19'04,6590"
4	49°48'01,9136"	57°18'39,7082"
The plot area is 0.2503 sq. km. (25.03 ha)		
Ground Reserves No.2		

1	49°44'01,6052"	57°17'53,6796"
2	49°43'59,8071"	57°18'18,7159"
3	49°43'43,7368"	57°18'15,9514"
4	49°43'45,5354"	57°17'50,9151"
The plot area is 0.2513 sq. km. (25.13 ha)		
Ground Reserves No.3		
1	49°41'03,2606"	57°19'02,0914"
2	49°40'47,3637"	57°19'07,5512"
3	49°40'43,8566"	57°18'43,1547"
4	49°40'59,7542"	57°18'37,6967"
The plot area is 0.2515 sq. km. (25.15 ha)		
Ground Reserves No.4		
1	49°38'37,6314"	57°18'51,2485"
2	49°38'21,9451"	57°18'57,3039"
3	49°38'18,0025"	57°18'32,9570"
4	49°38'33,6895"	57°18'26,9009"
The plot area is 0.2510 sq. km. (25.10 ha)		
Ground Reserves No.5		
1	49°36'13,2811"	57°21'03,4683"
2	49°35'57,8390"	57°21'11,4091"
3	49°35'52,7255"	57°20'47,7409"
4	49°36'08,1689"	57°20'39,7990"
The plot area is 0.2514 sq. km. (25.14 ha)		
Ground Reserves No.6		
1	49°31'59,8522"	57°23'28,6725"
2	49°31'44,1431"	57°23'35,0756"
3	49°31'40,0153"	57°23'10,9840"
4	49°31'55,7207"	57°23'04,5878"
The plot area is 0.2509 sq. km. (25.09 ha)		
Ground Reserves No.7		
1	49°31'29,1672"	57°22'00,7789"
2	49°31'14,0800"	57°22'10,0896"
3	49°31'08,0666"	57°21'46,9688"
4	49°31'23,1535"	57°21'37,6581"

The plot area is 0.2510 sq. km. (25.10 ha)		
Ground Reserves No.8		
1	49°29'33,4639"	57°20'33,9230"
2	49°29'25,1262"	57°20'55,2481"
3	49°29'11,2546"	57°20'42,3964"
4	49°29'19,5940"	57°20'21,0697"
The plot area is 0.2500 sq. km. (25.00 ha)		
Ground Reserves No.9		
1	49°27'22,8883"	57°20'23,4342"
2	49°27'11,0865"	57°20'40,4358"
3	49°27'00,0154"	57°20'22,2530"
4	49°27'11,8173"	57°20'05,2496"
The plot area is 0.2501 sq. km. (25.01 ha)		

Table 28: Summarized analysis results of ground parameters measurements

Sample point	Controlled substance	MPC	Actual data											
			January	February	March	April	May	June	July	August	September	October	November	December
52 km	Lead	no limitation	-	-	-	-	-	-	-	-	-	-	-	-
	Petrochemicals	no limitation	-	-	-	-	-	-	-	-	-	-	-	0,133
62 km	Lead	no limitation	-	-	-	-	-	-	-	-	-	-	-	-
	Petrochemicals	no limitation	-	-	-	-	-	-	-	-	-	-	-	0,068
72 km	Lead	no limitation	-	-	-	-	-	-	-	-	-	-	-	-
	Petrochemicals	no limitation	-	-	-	-	-	-	-	-	-	-	-	0,106
82 km	Lead	no limitation	-	-	-	-	-	-	-	-	-	-	-	-
	Petrochemicals	no limitation	-	-	-	-	-	-	-	-	-	-	-	0,098
92 km	Lead	no limitation	-	-	-	-	-	-	-	-	-	-	-	-
	Petrochemicals	no limitation	-	-	-	-	-	-	-	-	-	-	-	0,042

*- was not inserted in the EMP in the previous months

4.9 Health and Safety

113. The Contractor has taken all safety precautions at all construction sites for the health and safety of workers and people in the vicinity in accordance with the Health and Safety Plan submitted by the Contractors and approved.

4.9.1 Community health and safety

Lot 1

114. A trailer for medical point is provided, but is not equipped with medical equipment and necessary accessories. There is no permanent medical staff at the site.

Lot 2

115. Pre-shift (pre-trip) medical examination is carried out daily at a medical point (to all employees without exception, including the foreman) located within the temporary shift camp. Medical staff has certificates of paramedic (medic). The medical point is equipped with necessary stuff (sanitizer, masks, couch, posters of visual agitation, screen, refrigerators for storing medicines, racks for drugs and medical equipment, consumables). Information events on public health protection are regularly held (Annex 5).

4.9.2 Workers health and safety

116. Measures to prevent COVID -19 pandemic are being observed, all employees are provided with PPE, antiseptics on a permanent basis, sanitizers are installed. Incidence of disease has not been revealed since the beginning of road construction. Information on COVID -19 is transmitted weekly to NC “Kazavtozhol” JSC.
117. No accidents, incidents and injuries were recorded for both Lots during the reporting period.
118. Lot 1. Does not have a first-aid post and all the necessary supplies.
119. Lot 2 has a first-aid post (equipped by beds, blood pressure measuring devices, first-aid kits, hired medical personnel).

COVID 19 Pandemic Prevention Measures Provide PPE, antiseptics on an ongoing basis to all workers. As preventive measures within the framework of the COVID-19 plan, the following are provided:

- tests of the staff before the start of the shift/flight (including examination by a certified medical professional, including thermometry, pulse, oxygenation)
 - informational and preventive work (posters with visual anti-covid agitation, informing about the signs of infection, preventive measures).
120. A seminar on COVID prevention was conducted on the 2nd half of 2021 with the involvement of public medical institutions and sanitary inspections.

4.10. Trainings

121. There were no environmental trainings. During the on-site audit, the Engineer consulted on environmental protection issues at the project. An initial safety training is conducted during the hiring period. Initial and first trainings are carried out directly at the work site with all temporary and rotational staff including practical training and training for visitors and employees of contracting organizations. Secondary training is carried out at least once every six months. Unscheduled briefing is carried out when the production technology is changed at the request of the State Mining Inspector and in the event of emergencies and accidents. Target briefing is carried out for one-time work.

4.11. GRM functioning

122. There are a complaints logbooks arranged for the registering of complaints for both lots. No new complaints were received during the reporting period.

Lot 1 Complaints Management Status:

Table 29

Date	Applicant	Location	Subject	Description	Mitigation measure	Doc-s
30.04.2021	"Aktobe Agro" farm, Nurgalieva L.M., 877728660 86	Aktobe - Alga road area (15-20 km, bridge of the Kumsay river)	Aktobe - Alga road area (15-20 km, bridge of the Kumsay river)	Applicant asks to organize a exit and exit to its farm on the section of the road "Aktobe - Alga" in the interval of 15-20 km, the area of the Kumsay bridge.	KazAvtoZhol is investigating the possibility of organizing this exit in Engineering Center - Astana LLP	Appeal from the PL dated 30.04.2021; Letter from KazAvtoZhol dated 05.06.2021. In a process.
01.06.2021	Group of residents	Bestamak	The wishes of residents in the village akimat were verbally said	A group of residents of the village of Bestamak applied to the akim of the village with a request that during the construction of the road the interests of residents for pedestrian traffic inside the village across the road were taken into account	Akimat and KazAvtoZhol are currently negotiating and resolving this issue	

Lot 2 Complaints Management Status

Table 30

Date	Applicant	Location	Subject	Description	Mitigation measure	Doc-s
18.03.2021	"Smagul" farm, Setkamalov N.N.	between the Elek village and the Kandyagash city	The appeal was sent by the Applicant to the Chamber of Entrepreneurs in 2019; Then the appeal was repeated to the GRM KazAvtoZhol in March 2021	Historical purchase of a land plot. When designing the road, the exit to this farm was not taken into account. The applicant asks to consider the possibility of organizing access roads.	Alternative options for applicants are proposed. The submarine site is bordered by a track of 1 and 2 categories. The best option is to make the contiguity into 2 categories. The applicant is at the decision-making stage.	Applicant statement dated 29.01.2019; Letter of the Chamber of Entrepreneurs No. 0429-0403 dated 29.02.2019; Letter from KazAvtoZhol No. 20-01\20-02-192-I dated 26.02.2019; Appeal of the applicant dated 16.03.2021; Letter from KazAvtoZhol dated 18.03.2021 ref.No. 19-1\19-3\272-I

GRM contact details:

Address: regional branch of JSC "NC "KazAvtoZhol", Aktobe, Astana district, st. Maresyeva, 89,
 Tel: 8-7132-546571, E-mail: aktobe.info@qaj.kz

Members of the Regional GRM:

1. The head of the GRM: Mambetov Kazbek Ermekovich, Deputy Director of the Aktobe RB JSC "NC "KazAvtoZhol"

Members of GRM:

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Key persons of the GRM at the central level:

Head of GRM	N. Bekmurzayev, - Chief manager of external loans department of JSC "NC "KazAvtoZhol"
Coordinator GRM	A. Tashkenbayev, - road engineer of JSC "NC "KazAvtoZhol"

V. SSEMP FUNCTIONING (SITE-SPECIFIC ENVIRONMENTAL MANAGEMENT PLAN)

5.1 SEMP review

123. SEMP of Lots 1,2 in the reporting period did not undergo changes. The measures declared in the SEMP were carried out by the contractors to the required extent and in the proper order and quality. During the reporting period, the ecologists of all Lots ensured the timely provision of reports on industrial environmental monitoring to an independent laboratory.
124. The SEMP contains information on duration and frequency of monitoring.
125. The SEMP also includes the following plans: Waste management plan, Traffic management plan, Health and safety plan, Emergency response plan, Air quality plan, Spill response plan, Vibration monitoring plan, Noise management plan, Construction vibration management plan, Site specific plans, Construction camp plan, Bridge construction plan (for each bridge construction site).
126. Contractors developed and submitted a Health and Safety Plan; Emergency Preparedness Plan for the elimination of possible accidents (fires, accidents, spills, accidents). At the same time, the Contractors have outlined Action Plans for occupational health and safety (COVID-19) and urgent measures to prevent the spread of coronavirus infection.

5.2 Environmental permits / documentation / licenses

Table 31: Permit documentations

Lot-1	Lot -2	Subject
KZ19VDD00158437 d-d 11.01.2021	KZ77VDD00157684 d-d 29.12.2020	road reconstruction
	KZ21VDD00159953 d-d 03.02.2021	reconstruction of bridges
KZ63VDD00223411 d-d 28.09.2021	KZ72VCZ01126914 d-d 30.06.2021	grounds reserves
	KZ96VCZ01164797 d-d 14.07.2021	ACP and CMP
KZ40VTE00077266 d-d 10.09.2021	KZ34VTE00040805 d-d 22.01.2021	special water use
KZ67VTE00077265 d-d 10.09.2021	KZ76VTE00064202 d-d 21.05.2021	
	KZ75VTE00068100 d-d 21.06.2021	
	Contract № 23/3 d-d 01.04.2021	pumping and removal of sewage
	Contract № 6/21 d-d 09.12.2020	with EcoPromKZ LLP for disposal of production waste

Special Agreement 07.2021	Service d-d	Contract №14 d-d 04.02.2021	with IP "Tazalyk 2015" for disposal of solid waste at landfill
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VI. BEST PRACTICES (GOOD PRACTICES) AND OPPORTUNITIES FOR THEIR IMPROVEMENT

6.1 Best Methods (Good Practices)

127. In the process of monitoring the site, the CSC noted on Lot 2 the organization of environmental protection department as a good practice. A local environmental specialist was mobilized at the site, who was entrusted with work on the daily control of the dust suppression schedule, the schedule for the removal of solid waste, landscaping the town and educating employees about environmental literacy. The practice of interaction with the population continues at the site. Leading specialists of the Contractor on a weekly basis participate in meetings of the local akimat and routinely resolve all issues that have arisen from the local population. The contractor has formed good communication with the local population, which allows him to resolve any problems in a short time, without waiting or ignoring the needs and requirements of the local population in obtaining information on the impact of the project on the life and lifestyle of the local population. This practice allowed the GRM to operate effectively in this area. Not a single appeal was recorded on this site. All issues are resolved on the spot in a working order.

6.2 Opportunity for improvement

Recommendations for this area are identified in table 32.

VII. CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

128. The following activities can be noted as effective protective measures on the project:
129. - All emissions into the atmosphere were within acceptable limits. Instrumental measurements did not show the excess of permissible norms.
130. - The Contractor environmental specialist independently conducts internal audits and issues instructions to his divisions to eliminate inconsistencies and violations.
131. The analysis of the work done by the environmentalists of both Contractors to bring them into compliance with the standards, rules, and requirements of environmental protection activities is generally assessed as satisfactory.
132. The work was carried out in accordance with the EMP. Detailed information is provided in the table 31.

7.2 Recommendations

133. It is recommended to follow existing safeguard processes with an emphasis on compliance and proactively identifying and remediating risks.
134. The corrective action plan for the next six-month period is presented in the table below.

Table 32: Corrective Action Plan for January - June 2021

Issue	Required action	Responsibility	Time (target
-------	-----------------	----------------	--------------

			dates)
environmental permits for base construction have not been received	To obtain environmental conclusion for base	Lot 1 Contractor	January 2022
contracts for removal of waste and wastewater have not been concluded	To conclude contracts for removal of waste, wastewater	Lot 1 Contractor	January 2022
no ecologist at site	to hire a qualified ecologist on a permanent basis	Lot 1 Contractor	January 2022

Annex 1

Examples of laboratory measurements protocols

Испытательная лаборатория ТОО "АКТЮБНИГРИ" Ф.01.ДП.11-7.8

Испытательная лаборатория ТОО «АКТЮБНИГРИ»
Республика Казахстан, г. Актобе, улица А.Бокейханова, дом 17
Телефон/факс 8 (7132) 40-63-40, 40-63-38 e-mail: lab.nigri@mail.ru
Аттестат аккредитации №КЗ.И.05.1004 от 07 декабря 2020 года

Протокол испытаний №131
От 15.12.2021г.

Наименование и адрес заказчика: ТОО «АССАНА-ДорСтрой»,
РК, г.Актобе, 41 разъезд. строение 324
Наименование продукции: Атмосферный воздух
Место отбора: Автомобильная дорога Актобе-Астрахань км 52-100
Дата проведения испытаний: 13.12.2021г.
Количество точек замера: 5
Основание для испытаний: Заявка № 131
Обозначение НД на продукцию: Приказ № 168 - Гигиенические нормативы к
атмосферному воздуху городских и сельских
населенных пунктов
Обозначение НД на метод испытаний: СТ РК 2.302-2014, МВИ-4215-006-56591409-2009

Всего страниц: 1

Точка замера	Метеофакторы, параметры, ед.изм.			Загрязняющие вещества (доля ПДК (ПДВ))							
	температура, °С	влажность, %	давление, мм.рт.ст	NO ₂ , 0,2	NO ₂ , 0,4	С, 0,15	SO ₂ , 0,5	CO, 5,0	С ₁₀ -С ₁₀ , 1,0	Пыль, 0,3	Вязкостн. частнцы, 0,3
1	2	3	4	5	6	7	8	9	10	11	12
52 км	-14	26	754	<0,02	<0,03	0,0116	<0,025	1,534	<0,5	0,0132	0,0101
62 км	-14	26	754	<0,02	<0,03	0,0101	<0,025	1,566	<0,5	0,0146	0,0109
72 км	-13	24	754	<0,02	<0,03	0,0121	<0,025	1,547	<0,5	0,0133	0,0107
82 км	-13	24	755	<0,02	<0,03	0,0115	<0,025	1,583	<0,5	0,0129	0,0112
92 км	-13	23	755	<0,02	<0,03	0,0109	<0,025	1,546	<0,5	0,0141	0,0106

Протокол распространяется только на образцы, подвергнутые испытаниям

И.о.начальника ИЛ ТОО "АКТЮБНИГРИ": Харибина Т.Н.
 Ответственный за подготовку протокола: Нуртазин А.Т.
 Исполнитель: инженер-эколог Нуртазин А.Т.
 Запрещается частичная перепечатка протокола без разрешения ИЛ ТОО «АКТЮБНИГРИ»

Страница 1 из 1 Протокола №131

01-ФН-4-1

Испытательная лаборатория ТОО «ГидроЭкоРесурс-Л»
Аттестат аккредитации № КЗ.Т.05.1400 от 29 июля 2020 г.
Фактический адрес: Республика Казахстан, г. Актобе, Промзона
уч.488, телефон 8 (7132) 53-24-50, 53-13-60

ПРОТОКОЛ ИСПЫТАНИЙ №195
использование воздуха населенных мест, санитарной зоны, сельской территории.
от «23» август 2021 г.

Наименование и адрес заказчика: ТОО «АССАНА-ДорСтрой»
Место отбора: Асфальтобетонный завод BENNINGHOVEN MBA 2000 (4 точки – по сторонам света)
Акт отбора проб: №181
НД на отбор образцов: ГОСТ 17.2.3.01-86
Количество образцов: 4
Дата поступления образцов: 17.08.2021 г.
Дата проведения испытаний: 17.08.2021 г.
Обозначение НД на объект испытания: ГН приказа №168 от 28.02.2015 г.
Вид испытаний: лабораторный
Средства измерения, применяемые при испытании, сведения о поверке: ГАНК-4, поверка № ВА09-19-2905, от 25.01.2021 г.
Условия проведения испытаний: температура 35 °С, влажность 40 %, давление 743 мм рт.ст.

Результаты испытаний:

Наименование показателей	НД на методы испытаний	Норма по НД мг/м3	Фактически полученные данные мг/м3			
			№1	№2	№3	№4
01	02	03	04	05	06	07
Двоксида азота		0,2	0,0540	0,0057	0,0060	0,0048
Оксида азота	МВИ-4215-002-	0,4	0,0074	0,0058	0,0054	0,0052
Двоксида серы	56591409-2009	0,5	н/о	н/о	н/о	н/о
Оксида углерода		5,0	0,060	0,062	0,054	0,070
Углекислоты	МВИ-4215-007-	1,0	0,157	0,160	0,154	0,145
С12-С19	56591409-2009					
Пыль (70%>SO ₂ >20%)	МВИ-4215-006-	0,3	0,0150	0,0150	0,0164	0,0149
Сажа (углерод)	56591409-2009	0,15	0,0130	0,0147	0,014	0,012

Исполнитель: Серебас Б.А.
 Начальник ИЛ: Брицкая Ж.С.

Протокол распространяется только на образцы, подвергнутые испытаниям.
Частичная перепечатка протокола без разрешения ИЛ «ГидроЭкоРесурс-Л» запрещена

Environmental monitoring monthly reports

AKKOL **ACCANA**

To: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

From: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

Ref. No.: 2021-207
Date: 07.12.2021

Project: Construction works for Contract
AKRPNW.EC.B-01 Lot 40 (km 15-18)
Lot 41 (km 18-20) and Lot 42 (km 20-23)
Contractor: ACCANA-BOYUNG
Contractor: ACCANA-BOYUNG

Subject: **Annual Environmental Monitoring Report**

In reply to your letter No. 08-108-131731, dated November 12, 2021, please, find attached the land plan to place and maintain temporary works roads near the road.

As a result, it was concluded that temporary works roads are located at a distance from the safety of individual buildings, buildings and industrial areas, residential areas, facilities of health, education, and culture, religious and public organizations, facilities of religious, scientific and cultural buildings, facilities of individual citizens and other private land uses are not affected.

In addition to this, please, find attached the annual Environmental Monitoring Report for construction and operation, taking into account measures to mitigate the impact of temporary works roads on the environment.

On November 12, 2021, please, find attached the land plan to place and maintain temporary works roads near the road.

As a result, it was concluded that temporary works roads are located at a distance from the safety of individual buildings, buildings and industrial areas, residential areas, facilities of health, education, and culture, religious and public organizations, facilities of religious, scientific and cultural buildings, facilities of individual citizens and other private land uses are not affected.

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AKKOL **ACCANA**

To: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

From: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

Ref. No.: 2021-207
Date: 07.12.2021

Project: Construction works for Contract
AKRPNW.EC.B-01 Lot 40 (km 15-18)
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AKT

Subject: **Annual Environmental Monitoring Report**

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Акционерное Общество «Национальная Компания «Казатранс» Республика Казахстан

ПЛАН УПРАВЛЕНИЯ ОКРУЖАЮЩЕЙ СРЕДОЙ ДЛЯ ПРОЕКТА «РЕКОНСТРУКЦИЯ АВТОМОБИЛЬНОЙ ДОРОГИ РЕСПУБЛИКАНСКОГО ЗНАЧЕНИЯ А27 «АКТОБЕ-АТЫРАУ-Т.Р.Ф (НА АСТРАХАНЬ)», КМ 52-100»

«Реконструкция автомобильной дороги республиканского значения А27 «АКТОБЕ-АТЫРАУ-Т.Р.Ф (НА АСТРАХАНЬ)», КМ 52-100»

Исполнитель: ТОО «ACCANA-BOYUNG»

Утверждаю: _____

AKKOL **ACCANA**

To: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

From: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

Ref. No.: 2021-207
Date: 07.12.2021

Project: Construction works for Contract
AKRPNW.EC.B-01 Lot 40 (km 15-18)
Lot 41 (km 18-20) and Lot 42 (km 20-23)
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IV - LLP SP SINI MIDAS STROY & TOBINO CONSTRUZIONI GENERALI S.P.A.

To: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

From: Mr. Jang, Bala In
Team Lead
BOYUNG Engineering Co. Ltd

Ref. No.: 2021-207
Date: 07.12.2021

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AKRPNW.EC.B-01 Lot 40 (km 15-18)
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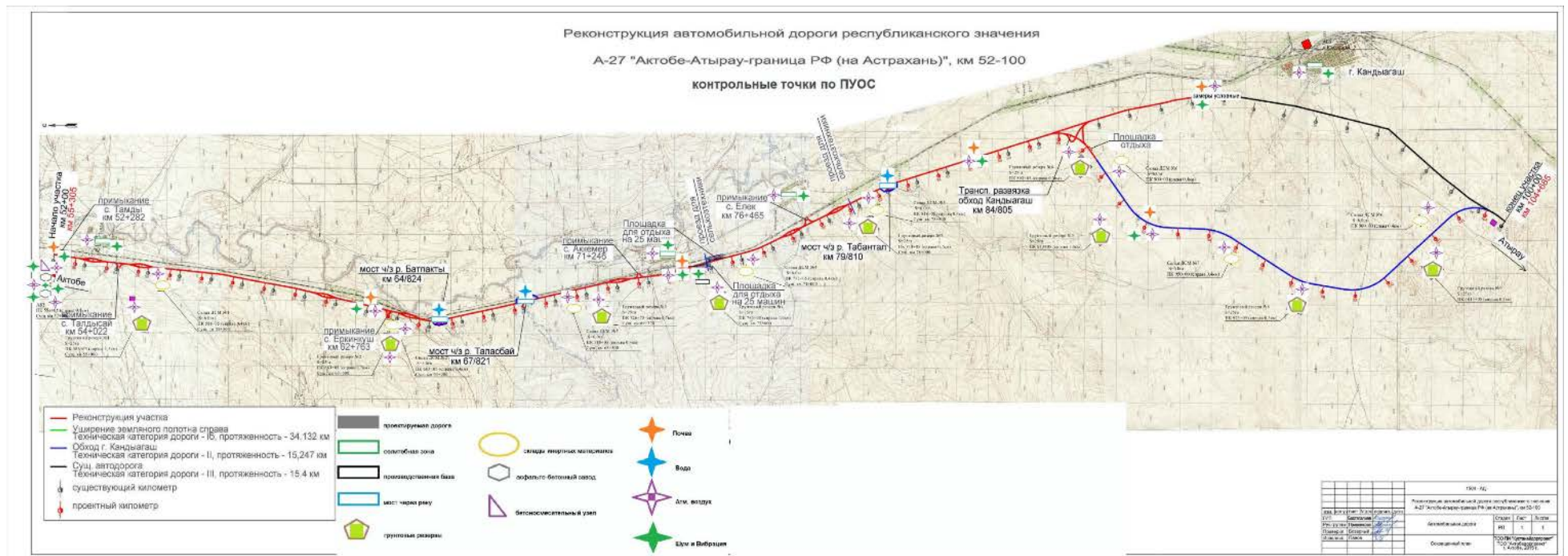
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Annex 3. Sampling control points schemes - Lot 1



Annex 4. Sampling control points schemes - Lot 2



Annex 5
COVID Seminar and environmental training protocols - Lot 2

**Протокол
семинар-совещания**

10.11.2021 г. г. Кандыагаш

Место проведения: Вахтовый поселок, село Аккемир Мугалжарского района
Актюбинской области

Время проведения: 11 часов 30 минут

Тема: Противодействие распространению коронавирусной инфекции COVID-19

Выступили:
Руководитель отдела Мугалжарского районного
управления санитарно-эпидемиологического - Иржан Радина Жаксылыковна
контроля

Заместитель главного врача Мугалжарской - Сугиров Айбек Сагингалиевич
районной больницы

Слушатели:
Трудовой коллектив ТОО «АССАНА-ДорСтрой»

Рассмотренные вопросы:

- Возникновение и распространение коронавирусной инфекции COVID-19
- Санитарно-эпидемиологическая ситуация в Республике Казахстан и Мероприятия по предупреждению распространения
- Определение случая заболевания
- Клинические особенности
- Порядок организации скорой, в том числе скорой специализированной, медицинской помощи
- Организация медицинской помощи в стационарных условиях
- Профилактика, диагностика и лечение
- Порядок выписки пациентов из медицинской организации

Руководитель отдела Мугалжарского районного управления санитарно- эпидемиологического контроля	Иржан Р.Ж.
Заместитель главного врача Мугалжарской районной больницы	Сугиров А.С.
Директор ТОО «АССАНА-ДорСтрой»	Драш В.В.
Специалист по социальным защитным мерам ТОО «АССАНА-ДорСтрой»	Ерекенов А.К.

РГУ "МУГАЛЖАРСКОЕ РАЙОННОЕ УПРАВЛЕНИЕ САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКОГО КОНТРОЛЯ
ДЕПАРТАМЕНТА САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКОГО КОНТРОЛЯ АКТЮБИНСКОЙ ОБЛАСТИ КОМИТЕТА
САНИТАРНО-ЭПИДЕМИОЛОГИЧЕСКОГО КОНТРОЛЯ МИНИСТЕРСТВА ЗДРАВООХРАНЕНИЯ РК"

**Протокол
курса повышения квалификации по экологической безопасности
на тему «Экология и промышленность»**

г. Кандыагаш

21.12.2021 г.

Данный курс повышения квалификации организован в рамках выполнения условий природопользования и плана природоохранных мероприятий.

Присутствовали:

- **Жалмагамбетов М.С.** – руководитель учебного центра ТОО «КАЗТЭКО».
- **Ерекенов А.К.** – эколог ТОО «АССАНА-ДорСтрой».
- **Горбулько С.Ю.** – заместитель руководителя проекта.
- **Инженерно-технические работники** – лица, ответственные за обеспечение экологической безопасности на закрепленных участках.

Рассмотрены следующие вопросы:

- Экологическое законодательство республики казахстан
- Цель и задачи экологического законодательства республики казахстан
- Общие положения об окружающей среде и ее охране
- Права и обязанности субъектов в области охраны окружающей среды
- Экологическая информация
- Экологическое нормирование
- Экологические разрешения
- Производственный экологический контроль
- Охрана атмосферного воздуха
- Охрана водных объектов
- Охрана земель
- Требования при управлении опасными отходами
- Экологический ущерб
- Ликвидация последствий деятельности на объектах, оказывающих негативное воздействие на окружающую среду

**Первый руководитель
ТОО «АССАНА-ДорСтрой»**



Драш В.В.

**Руководитель учебного центра
ТОО «КАЗТЭКО»**



Жалмагамбетов М.С.

Annex 6 Photomaterials



Lot 1. Air sampling



Lot 2. Soil sampling



Lot 1. Shift camp. Trailer for medical point arrangement (not equipped)



Lot 1. Shift camp. Feedback box within the Grievance Redress Mechanism



Lot 1. Shift camp. Containers for solid waste collection



Lot 2. Shift camp. Training on COVID prevention measures



Lot 2. Shift camp. Medical point. Informational posters with description of anti-covid measures



Lot 2. Shift camp. Containers for collection and storage of solid waste