

Environmental Monitoring Report

Project Number: 43439-033
July 2018

KAZ: CAREC Corridor 2 (Mangystau Oblast Section) Investment Program – Tranche 2

Prepared by the Grusamar Ingenieria y Consulting in association with subconsultant "SNS-2017" LLP for the Ministry of Investments and Development, Republic of Kazakhstan and the Asian Development Bank.

This bi-annual environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature. Your attention is directed to the "terms of use" section on ADB's website.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status or any territory or area.



**COMMITTEE FOR ROADS
MINISTRY OF INVESTMENT AND DEVELOPMENT
REPUBLIC OF KAZAKHSTAN**



LOAN NUMBER 2967-KAZ

**CENTRAL ASIA REGIONAL ECONOMIC COOPERATION (CAREC) TRANSPORT CORRIDOR 2
INVESTMENT PROGRAM – MANGYSTAU REGION, PROJECT 2**

**RECONSTRUCTION OF ROAD
“ZHETYBAY-ZHANAOZEN-KENDERLI-BOARDER OF TURKMENISTAN”
Section km 0 - km 73**

Financed by ADB through Multi-Tranche Financing Facility (MFF)



First Bi-Annual Environmental Monitoring Report

(Period: January 2018 - June 2018)

July 2018



**GRUSAMAR Ingenieria y Consulting/
“SNS-2017” LLP**



*Prepared by GRUSAMAR Ingenieria y Consulting in association with «SNS- 2017» LLP in
accordance with the reporting requirements of the Contract for Consultant's Services
No. 1-ADB/CSC-2017 dated March 17, 2017*



1st Bi-Annual Environmental Monitoring Report

Period: January – June 2018

July 2018

**The Republic of Kazakhstan: MMF Transport Corridor CAREC 2:
Investment Program, Project 2**

Financed by Asian Development Bank

Prepared by:
GRUSAMAR Ingenieria y Consulting in association with «SNS- 2017» LLP

Ministry of Investment and Development, Kazakhstan
Committee for Roads

This report does not necessarily reflect the views of ADB or the Government concerned, and ADB and the Government cannot be held liable for its contents

ABBREVIATIONS

ADB	Asian Development Bank
AOI	Area of Influence
ARE	Assistant Resident Engineer
CAREC	Central Asia Regional Economic Cooperation
CR	Committee for Roads
CSC	Construction Supervision Consultant
EHS	Environment Health and Safety
EIA	Environmental Impact Assessment
EMMP	Environmental Management and Monitoring Plan
EMP	Environmental Management Plan
EHS	Environment, Health and Safety
FGD	Focus Group Discussion
FIDIC	Federation International Des Ingenieurs Conseils (the French acronym for International Federation of Consulting Engineers)
GRM	Grievance Redress Mechanism
GPS	Global Positioning System
IEC	Important Environmental Components
IUCN	International Union for Conservation of Nature
KKSGR	Karagie-Karakol State Game Reserve
MoTC	Ministry of Transport and Communications
MID	Ministry of Investment and Development
MFF	Multi-tranche Financing Facility
MPD	Maximum Permissible Discharge
MPE	Maximum Permissible Emission
O&M	Operation and Maintenance
PMC	Project Management Consultant
PPE	Personnel Protective Equipment
PEA	Preliminary Environmental Assessment
RK	Republic of Kazakhstan
RoW	Right of Way
SPS	Safeguard Policy Statement
SSEMP	Site Specific Environmental Management Plan
TOR	Terms of Reference
TS	Technical Specificatio

Table of Contents

PART I: INTRODUCTION	5
1. PRILIMINARY INFORMATION.....	5
1.1 Brief information	5
1.2 Objectives	6
1.3 Methodology	6
1.4 The Project Area	7
▪ Sub-Section 1: km 0 - km 35 (Zhetybay -Zhanaozen)	
▪ Sub-Section 1: km 35 - km 73 (Zhetybay -Zhanaozen)	
1.5 Technical Description of the Road Project	9
1.6 Environmental Characteristics of the Project Area	9
1.7 Scope of Works	10
1.8 Construction Activities and Project Progress during Previous Six Months.....	11
1.9 Relationships with Contractor's, Owners, Lender, etc.....	15
1.10 Construction Supervision Contract	16
1.11 Establishing the Construction Camp	16
PART II: ENVIRONMENTAL MONITORING	19
2. ENVIRONMENTAL MONITORING FRAMEWORK	19
2.1 Methodology for Environmental Monitoring in Construction Supervision	19
2.2 Construction Supervision Consultant (The Engineer) Environmental Monitoring Work Protocol	23
2.3 Contractor's Environmental Monitoring Procedures	25
2.4 Contractor's Health and Safety Management and Monitoring	28
2.5 Required Environmental Reporting	29
3. PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES	29
3.1 Compliance status with Environmental Management and Monitoring Plans	31
3.2 Environmental Monitoring Procedures of the Contractor	31
3.3 Environmental Monitoring Activities of the Contractor	32
3.3.1 Air Quality Analysis	34
3.3.2 Noise and Vibration Level Measurement	37
3.3.3 Soil Quality Monitoring	39
3.4 Environmental Audit of the Engineer	41
PART III: ENVIRONMENTAL MANAGEMENT	42
4. ENVIRONMENTAL MANAGEMENT PLAN (EMP)	42
4.1 Overview	42
4.2 Implementation of the EMMP	42
4.3 Observed Environmental Impacts and Mitigation Measures	45
4.4 Site Inspection and Audits	51

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

4.5	Complains and Consultations	55
4.6	Training and Meetings	55
4.7	Notices and Letters	56
4.8	Corrective Action Plans	56
	Conclusions and Recomendations	58
	Conclusions	58
	Recomendations	59

List of Tables

Table 1.1: Description of works performed in Contract-001-ADB / CW-2014 before the end of June 2018	11
Table 1.2: Description of works performed in Contract-002-ADB / CW-2014 before the end of June 2018	13
Table 2.1: Relevant laws, policies and norms on environmental protection in RK	21
Table 2.2: Parametric Measurement Guidelines	26
Table 3.1: Air Quality Monitoring Results	34
▪ Section 1: km 0 - 35 (Zhetybay - Zhanaozen)	
▪ Section 2: km 35 - 73 (Zhetybay - Zhanaozen)	
Table 3.2: Noise and Vibration Monitoring Results.....	37
Section 1: km 0 - 35 (Zhetybay - Zhanaozen)	
Section 2: km 35 - 73 (Zhetybay - Zhanaozen)	
Table 3.3: Soil quality test results	40
Section 1: km 0 - 35 (Zhetybay - Zhanaozen)	
Section 2: km 35 - 73 (Zhetybay - Zhanaozen)	
Table 4.1: Observed Issues during the Environmental Inspections	46
Table 4.2: Summary of the Number and Type of Site Visits	52
Table 4.3: Letters on Environmental Issues	56

List of Figures

Figure 1.1: Location of the project road.....	8
Figure 2.1: Work Coordination Arrangement.....	20
Figure 4.1: The SSEMP and its supporting documents.....	43

List of Annexure

Appendix A: Contract for EM of Contractors Lot 1 and Lot 2	
Appendix B: Environmental Monitoring Photos	
Appendix C: Bi-annual Environmental Protection report of Contractor Lot 1	
Appendix D: Bi-annual Environmental Protection report of Contractor Lot 2	

PART I: INTRODUCTION

1. INTRODUCTORY INFORMATION

1.1 Brief information

The Republic of Kazakhstan, acting through the Ministry of Investment and Development implements a program on modernization the Zhetybay-Zhanaozen road under the Tranche 2 Central Asian Regional Economic Cooperation (CAREC) Investment Program (Mangystau region).

The project includes the reconstruction of the existing road between village Zhetybay and city Zhanaozen and construction of one new bypass around Zhanaozen. The project is located in Mangystau region, the border of the Caspian Sea. The final point of this road project is Zhanaozen, which is an important economic center for export cargo, including terminals for pipelines that supply regional oil products to Western Europe.

This report is the first bi-annual environmental monitoring report prepared by the Project Engineer. This bi-annual environmental monitoring report under Contracts 1 and 2 (km 0 - km 35 and km 35 - km 73) covers the period from February 2018 to June 2018 within the framework of the environmental part of the construction supervision. The main purpose of this monitoring is to ensure the implementation of measures to mitigate environmental impacts during construction through the Engineer supervision during the construction phase. Environmental problems should also be identified in advance in order to avoid untimely and to ensure the timely completion of the Project.

This bi-annual environmental monitoring report has been prepared as a report in accordance with Contract requirements for the provision of construction supervision services of the Ministry of Investment and Development (MID), the Committee for Roads of the Republic of Kazakhstan for CAREC Corridor 2 (road sections in Mangystau region), Investment Program, Project 2, led by Asian Development Bank, Loan 2967-KAZ.

According to the Preliminary Environmental Assessment (PEA) report, the project was classified as "B" category, based on cumulative environmental impacts. This Project may be attributed to Category B, i.e. a Project having some negative impact on the environment, which can be leveled or mitigated through a set of special measures. Therefore, this project requires the implementation of PEA. Under this Project, there is no need for land allocation or resident resettlement; therefore, in accordance with existing ADB policies, it also does not go beyond the established limits of Category B projects on the social front.

As mentioned in the TOR of construction supervision, the environmental aspects involves the environmental monitoring and management of project implementation and assistance in ensuring the implementation of environmental management practices at each stage of construction. In addition, the specialist has prepared an environmental audit protocol for the construction period, had developed a detailed environmental monitoring program and EMMP, regularly monitors the implementation of environmental monitoring and provides periodic reports based on monitoring and laboratory analysis data.

1.2 Objectives

The objective of environmental monitoring was to allow ADB and the Committee for Roads gather information to: i) evaluate the environmental management plan (EMP) progress by establishing compliance status, ii) detect and correct non-conformances, iii) identify unanticipated impacts and implement necessary mitigation measures, and iv) provide evidence to support enforcement of penalty provisions of the civil works contract to deter non-compliance. The purpose of the Final Bi-annual Environmental Monitoring Report was to provide a summary of the key issues relating to environmental management on environmental impacts and mitigation measures over the past months. The summary includes an update on overall project progress, the status of EMP implementation, any progress made with environmental management, environmental monitoring results, and other relevant issues such as non-compliance and corrective actions, and monitoring of the Grievance Redress Mechanism (GRM). The report was prepared by GRUSAMAR Ingenieria y Consulting and was intended to inform ADB and any other interested parties of the status of environmental management of the project. The report was summaries; more detailed information were included in the monthly and quarterly report prepared by the Engineer and the Contractor.

The objective of this final report was to comply with environmental security requirements of the Republic of Kazakhstan in accordance with ADB's Safeguard Policy Statement (SPS) 2009, as well as to fulfill the loan covenants as described in the loan and project agreement signed by the Government and ADB and to ensure that all environmental mitigation measures was given in EIA and EMP incorporating all the Environmental concerns of the project. The principle objectives of the project with respect to Environment were:

- to ensure environmentally compatible project implementation by avoiding and mitigation of negative impacts that are likely to arise from the project;
- to ensure that EMP recommendations are adequately followed and to meet the Environmental compliance of statutory requirements.

The report was based on findings during the field visits, the monthly and annual environmental protection progress reports submitted by Contractor, information and discussions with consultant staffs, contractor representatives and other relevant stakeholders.

1.3 Methodology

This Bi-annual Environmental Monitoring Report has been prepared by reviewing and extracting key information from a number of sources, as follows:

- Contractors' Monthly and final annual Environmental Protection Report;
- Contractors' and Consultants Grievance Registers Book;
- Engineer's Monthly and Quarterly Progress Reports;
- Engineer's Environmental Specialist's Field Reports and regular site visits;
- Contractors' Monthly instrumented monitoring results on air quality, water quality, soil quality and noise & vibration;
- *Ad Hoc* reports from the Contractors / consultants on training and stakeholder consultations;
- Correspondence between Engineer and Contractors relating to environmental issues;
- Consultations with several stakeholders.

In addition, some information and opinion in the report results from site visits, technical meetings and public meetings and interviews over the preceding past months.

1.4 The Project Area

The project involves reconstruction of the road between Zhetybay-Zhanaozen and construction of one new bypasses around Zhanaozen. The project is located within Mangystau Oblast bordering Caspian Sea. The end point of this road project is the city of Zhanaozen, an important economic hub and port for export goods, including terminal for pipelines delivering the regional oil products as far as Western Europe. The project consists of two sub-sections, constructed separately.

Location of the project road in terms of contracts is shown in **Ошибка! Источник ссылки не найден..**

Sub-Section 1: km 0 - km 35 (Zhetybay - Zhanaozen):

This sub section includes reconstruction of the existing road from Category I-B with a four-lane roadway, dividing strip and a roadway broadening. On this section, the direction coincides with the existing embankment of the roadbed. The total length of the projected section is 35 km. The reconstruction project provides the construction of 2 covered bus stops and 3 recreational areas, as well as the construction of 11 culverts:

- construction of rectangular pipes (cattle run) in size 4x2.5 m at Pk195+07 and Pk331 + 91;
- construction of a two-section culvert at Pk215+45;
- and construction of 8 pipe culverts.

Section 2: km 35-km 73 (Zhetybay- Zhanaozen)

The total length of the project is 38 km. The reconstruction project provides:

- Pk350+00 - Pk573 + 87 - reconstruction of the existing road according to the parameters of Category I-B with four-lane roadway and the roadbed broadening by 27.5 m;
- construction of one level interchanges at the entrance of Zhanaozen, from Pk573+87- Pk636+83 will be a new II category road section;
- in the populated area, the average repair of the section of the urban road with 7.616 m length will be carried out;
- construction of a railway overpass at Pk615+48 and construction of an overpass at the interchange to Zhanaozen at Pk574+48.
- construction of 12 pipe culverts, and 1 cattle pass in size 4x2.5 m;
- outdoor lights of the traffic interchange at Pk574+45.

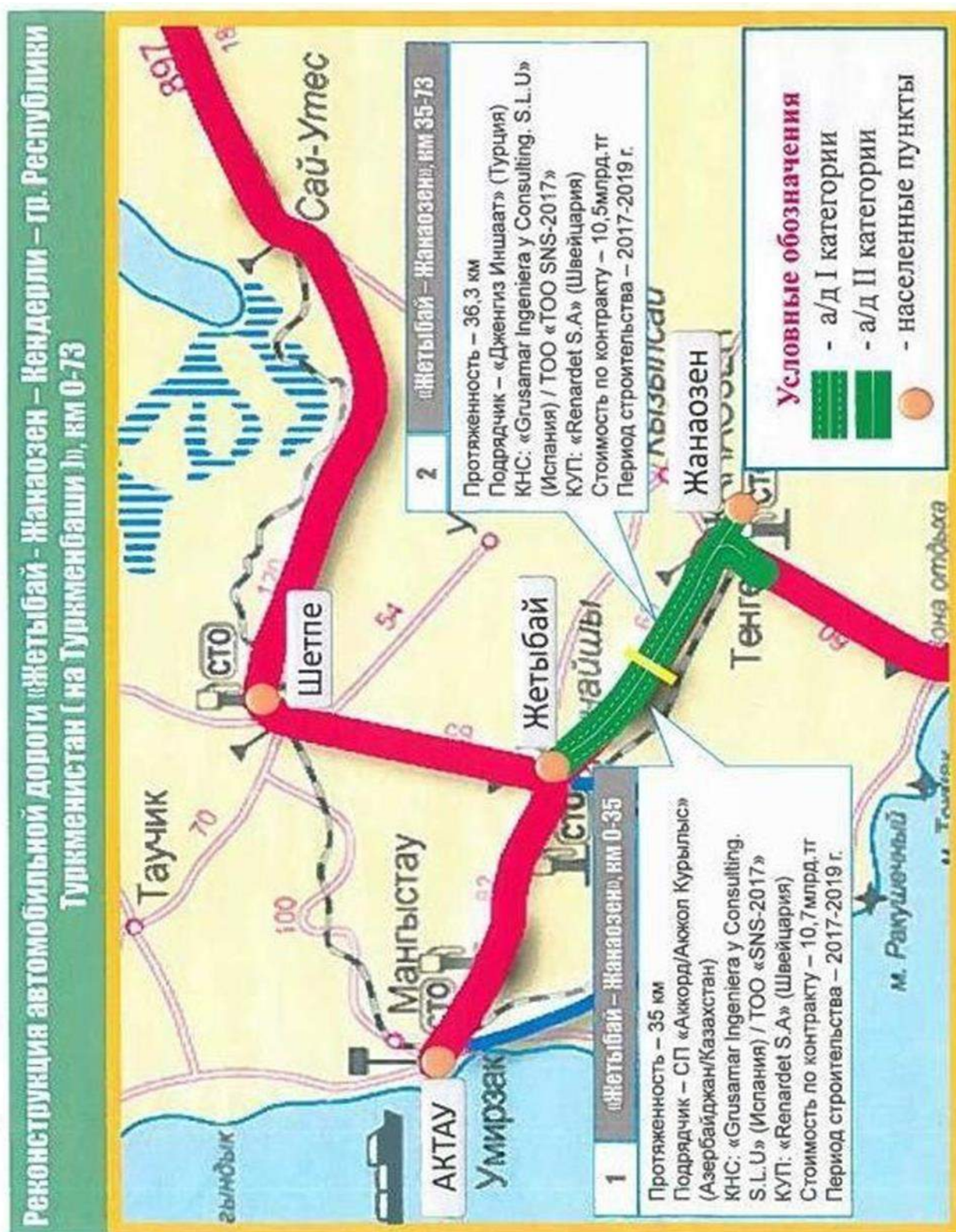


Figure 1.1 Location of the Project Road

1.5 Technical Description of the Road Project

The scope of works mainly consists of:

- reconstruction of the pavement of the existing carriageway 35 km Lot 1 and 22.4 km Lot 2 together with geometric improvements of vertical and horizontal alignment, transferring the existing technical category III to IB (4-lane);
- construction of the new carriageway with length of 6.293 km Category II (2 lanes);
- rehabilitation of the pavement by milling and overlays at the last 4.9 km section of the road to Zhanaozen;
- structural works involving construction / reconstruction / repair of bridges and construction / extension / repair / reconstruction of existing culverts;
- drainage works consisting of pavement edge gutters and road side drainages;
- relocation of existing utilities;
- construction of bus shelters, rest areas and car ramps;
- improvement of road safety by provision of guardrails, road signs and marking.

The project road sections and upgrading standards is given below:

Contract	Lot	Length	km	Type	Lane
C-001	1	35 km	km 0 – km 35	I-B	4
C-002	2	38 km	22,4 km	I-B	4
			6,2 km	II	2
			4,9 km	III	2

1.6 Environmental Characteristics of the Project Area

Typical for vast desert and semi-desert zones, the main climatic features are (moderately) cold winters and hot summer periods. The amount of precipitation in the Project Area usually does not exceed 150mm per year. Precipitation mainly falls as rain, and in winter as snowfall. Complete snow cover of large areas is usually lasting only for few weeks during wintertime (January- March). Thus driving condition in this road sections from climatic point of view is relatively good throughout the entire year. Low rainfall in the project site leads to extreme drought during the summer months. However, the long duration of the warm period is favorable for performing construction work during the year. Hail, snowstorms and sandstorms are rare.

Within the urban area of Zhetybay dust is a common problem that results from the soil and climatic conditions of the region. During the EIA preparation, consultations with villagers in Zhetybay revealed that they did not feel that dust from construction activities which would impact upon them significantly. The fact is that the existing naturally induced dust issues were considerably more of a problem than construction impacts would be. They also noted that construction would be occurring in bypass locations outside of the village which will be reducing further dust impacts to villagers. In addition, more than 90% of the road is uninhabited steppe. Dust impacts and air quality issues will not play any significant role in these uninhabited areas.

Water supply in Mangystau region remains one of the most acute social problems. There are 60 settlements in the region. Today, 17 of them are provided with centralized water supply, decentralized - 35. In the rest, because of the small number of inhabitants it is inappropriate to build a water supply system, the imported water of the city of Aktau and Zhanaozen with adjacent settlements is used, and oil companies consume 93% of the total volume of water. The share of all the rest is only 7%. Technical water will be supplied from the centralized water supply of Aktau and Zhetybay. Tank trucks will deliver water from pipelines to the relevant construction sites. Drinking water will be provided in five-liter bottles. There are other water supply centers, but it is unlikely that it will be used as drinking water. The contractor is responsible for the location of the site, for other non-technical waters and for obtaining mining permits.

According to the archaeological expertise published in the PEA, in the immediate vicinity of the project area there are no protected natural sites. Karakiya-Karakol State Nature Reserve and the State Regional Natural Park "Kyzylsai" lie in the distance at a distance of several tens of kilometers and will not experience any impact during the construction works. The state reserve Karakiya-Karakol (GZKK) is a reserve (Category 4), located in the Karakiyansky and Munayli districts of the Mangystau region. The reserve occupies the entire area of the lower Karakia zone, the Aschiagar valley, as well as the marine coastal areas to the south of Aktau.

In the Project area there are no habitats of species included in the Red Book of Kazakhstan. However, since this territory is adjacent to the habitats of some animals listed in the Red Data Book, this fact should be taken into account when carrying out the Project Activities.

1.7 Scope of Works

The present report is the First Bi-annual Environmental Monitoring Report covering the period from January to June 2018. The report reviews the compliances of environmental activities set in EMP during the period and processes practices/innovation leading to improved and sustainable environment in the future. The scope of works includes identification of environmental impacts during construction stage and implementation of environmental mitigation measures for various environmental components as given in technical specification in the contract. In addition, the construction supervision consultant has to undertake specific environmental safeguard measures during the execution of work.

The following activities has been considered for effective Environmental Safeguard Monitoring through periodic inspection and supervision during execution of works as per the General Requirement of the Technical Specification for construction of whole the work under clause 105 (Health and Safety) and clause 106 (Protection of the Environment).

- Loss of top soil;
- Soil erosion;
- Contamination of soil by fuel and lubricants and wastewater;
- Quarry and hot mix plant operations;
- Siltation into water bodies;
- Alteration of drainage;

- Dust Control-haulage road and work sites;
- Pollution from crusher, hot mix plant and batching plant;
- Noise from plant and equipment;
- Safety and accidental risks;
- Medical facilities;
- Traffic safety and control.

The environmental management and monitoring plan (EMMP) signifies the environmental action to be undertaken under Mangystau Oblast section in Project 2, delineating various mitigation measures/avoidance of negative impacts. The EMP also incorporates various environmental enhancement measures required for protecting the cultural properties in both contract packages.

1.8 Construction Activities and Project Progress during Previous Six Months

The mobilization of personnel, material and technical resources for the project were completed in full (Table 1.1, 1.2 and 1.3). Total number of employees for the report period is 1205 persons. Hiring of personnel in the process. Detailed information is available in the monthly report of the consultant.

Contract 001, km 0-35 (Zhetybay - Zhanaozen):

The Contractor "SP Akkord/Akzhol Kurylys LLP" LLP provided 9 accommodations in Aktau and a furnished and equipped office on the territory of the working camp "Zhetybay", 9 units of transport, all 9 are received.

The current number of personnel on the site reached 320.

A land plot with a total area of 10 hectares was set up for the construction of the camp, asphalt plant, a bitumen storage facility with a volume of 7,000 tons, and electricity supply, wiring and all internal communications were also performed in accordance with the contract agreement concluded. The second asphalt plant was purchased by the Contractor, and the crusher plant has been also installing in Shetpe. The mobilization of personnel, material and technical resources has not been fully completed.

Contract 002, km 35 - 73 (Zhetybay - Zhanaozen):

For provision of the working camp the following contracts were concluded: with SE "Turmys-Service" - for drinking water, with "KazTransGaz Aimak" LLP- for gas, with "Mangystau Zharyk" LLP - for electricity, with "Temirzholsu-Mangystau" LLP - for sewage, with "Caspiy Operating" LLP - for the export of solid waste, with "Landfil" LLP - for utilization of construction waste.

Also, the Contracts for the supply of drinking and industrial water with SE "OzenInvest". Crushing plants were input into operation on "Yerzhurek" borrow pits No.1 and No. 2.

The concrete plant, the working camp "Zhetybay", in the territory of which there are dormitories for 290 people, a canteen for 80 people, a complete construction laboratory, the offices of the Engineer and the Contractor.

The Contractor provided the Engineer with accommodation, transport facilities and an office, equipped with furniture, equipment and office equipment, on the territory of the camp of Zhetybay.

In general, the mobilization work was carried out with the achievement of 100%. The current average indicator of the workforce reached 1205 workers, the total number of machines and equipment at the site is 337 units.

Table 1.1: Work description performed in Contract -001-ADB/CW-2017

No.	Work	Units	Volume in the project	Performed in 2017	Actual in the end of June	Planned for the end of June	Actual from the Project, %	Planned from the Project, %	Difference %
1	Preparation works	tenge	16406900,14		10304106,37	10 169 418,21	62,80%	61,98%	0,82%
	Milling and	m ²	252199,46						

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

2	existing pavement layers removal	tenge	112 776 032,53		0,00	0,00	0,00%	0,00%	0,00%
3	Removal or relocation of existing utilities	psc	49		0,00	10,00	0,00%	20,41%	0,00%
		tenge	167 135 550,53		0,00	34 109 296,03			20,41
4	Earth works	thousand m ³	1 356,89		526,00	360,00	42,39%	26,53%	15,86%
		tenge	1 066 819 605,96		452 183 253,36	283 040 255,35			
5	Subbase layer	km	35		17,88	10,84	25,00%	15,10%	9,90%
		tenge	1 263 048 504,38		313 945 422,03	190 668 492,86			
6	Base course	km	70/35		14,78	9,94	20,00%	13,45%	6,55%
		tenge	1 144 013 521,42		228 140 503,00	153 853 600,00			
7	High porous asphalt	km	70/35		11,02	4,07	15,37%	5,65%	9,72%
		tenge	1 585 354 316,64		243 744 380,39	89 518 476,59			
8	Porous asphalt	km	70/35		0,00	0,00	0,00%	0,00%	0,00%
		tenge	1 378 681 152,47		0,00	0,00			
9	Wearing course (SMA)	km	70/35		0,00	0,00	0,00%	0,00%	0,00%
		tenge	1 067 446 561,42		0,00	0,00			
10	Culverts	pc	11		5,00	3,00	38,32%	27,27%	11,05%
		tenge	177 379 301,71		67 979 215,4	48 376 173,19			
11	Road feature	km	35		0,00	0,00	0,00%	0,00%	0,00%
		tenge	742 527 67 6,73		0,00	0,00			
12	Other works	tenge	862 499 905,04	72245 881,6 4	182 706 779,94	196 176 368,85	21,18%	22,75%	-1,57%
Total:		tenge	9 584 089 028,97	72245 881,6 4	1 499 0 03 660, 49	1 005 9 12 081, 08	15,64%	10,5%	5,14%

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Table 1.1: Work description performed in Contract - 002-ADB/CW-2017

No.	Work	Units	Volume in the project	Actual in the end of June	Planned for the end of June	Actual from the Project, %	Planned from the Project, %	Difference %
1	Preparation works	tenge	217 154 555	597 609 ,00	21 659 175,53	0,28%	9,97%	-9,7%
2	Earth works	tenge	409 476 557	-1 207 753 ,09	71 070 309,6	-0,29%	17,36%	-17,65%
3	Subbase layer	km	58,74	4,6	6,00	8,46%	9,79%	-1,33%
		tenge	508 946 519	43 041 684,12	49 829 235,53			
4	Base course	km	58,74	5,3	7,2	5,82%	14,06%	-8,24%
		tenge	1 002 682 037	58 403 697,66	141 026 022,98			
5	High porous asphalt	km	58,74	6,3	5,50			
		tenge	2 122 311 239	261 229 591,08	195 057 708,34	12,31%	9,19%	3,12%
6	Porous asphalt	km.	58,74	6,3	9,5	13,11%	14,2%	-1,09%
		tenge	1 836 761 617	240 807 824,22	260 812 793,07			
7	Wearing course (SMA)	km	58,74	0	0,00	100,00%	100,00%	0,00%
		tenge	1 109 301 487	0	0,00			
8	Bridges and overpasses	%	100	8,4	10,16	8,4%	10,16%	-1,76%
		tenge	597 174 378	50 151 412,34	60 651 461,82			
9	Culverts	pcs	13	0,00	5,00	0,00%	46,52%	-46,52%
		tenge	44 371 556	0,00	20 642 050,65			
10	Road feature	km	58,74	0	0,00	100,00%	100,00%	0,00%
		tenge	392 401 306	0	0,00			
11	DEU construction	%	100	0	5,00	35,00%	10,00%	25,00%
		tenge	360 977 856	126 342 250	36 097 785,6			
12	Other works	tenge	821 784 778	7 361 2 46,44	45 219 226,86	0,9%	5,01%	-4,11%
Total:		tenge	9 423 343 885	786 727 561,37	902 065 769,97	8,35%	9,57%	-1,22%

**Information on the availability of permits
on environmental protection in accordance with the requirements of the Legislation of RK
for reconstruction of "Zhetybay - Zhanaozen" road section (0-35 km)
"SP Akkord/Akzhol Kurylys" LLP as of July 20, 2018**

No.	Name	Authorization number / Authorized state authority	Period of validity
1	Permission for the construction work of "SP Akkord/Akzhol Kurylys" LLP on Zhetybay - Zhanaozen road section (0-35 km)	KZ37VDD00090407 Akimat MO The Department of Natural Resources and Environmental Management	06/03/2018 – 31/12/2019
2	Permission for the right to use subsoil resources for commonly used minerals used in the construction (reconstruction) and repair of public roads, railways and hydro structures (borrow pits No. 1, 2 Munayli district, No. 3, 4, 4-1, 5, 5-1, 6 of the Karakian district)	No. 0000040 Agreed: - Mangystau Regional Inspectorate for Geology and Subsoil Use; - Department of Ecology in Mangystau region; - Akimat of MO	10/01/2018 – 01/01/2020
3	CONCLUSION OF STATE ENVIRONMENTAL EXPERTISE in the section "Environmental Impact Assessment" to the project "Industrial development of sand and gravel mixture, sand, clay rocks and limestone (semi-rock soil) on 8 soil reserves for the reconstruction of "Zhetybay-Zhanaozen" road section, km 0-35, CAREC-2 in Karakiyansky District of Mangystau Region of RK»	KZ94VDC00069868 SE "Management of natural resources and environmental management in Mangystau region"	

**Information on the availability of permits
on environmental protection in accordance with the requirements of the Legislation of RK
for reconstruction of "Zhetybay - Zhanaozen" road section (35-73 km)
"Cengiz Insaat" BJSC as of July 20, 2018**

No.	Name	Authorization number / Authorized state authority	Period of validity
1	Permission for Shetpe Construction Site	KZ70VCZ00095646 ME RSE "Department of Ecology in Mangystau region" of Committee for Environmental Regulation, Control and State Inspection in Oil and Gas complex of the Ministry of Energy of RK	20/07/2016- 31/12/2025
2	Permission for Zhetybay Construction Site	KZ25VCZ00108096 ME RSE "Department of Ecology in Mangystau region" of Committee for Environmental Regulation, Control and State Inspection in Oil and Gas complex of the Ministry of Energy of RK	20/20/2016- 31/12/2025
3	Permission for the operation of the bitumen storage and emulsion installation on the territory of the construction site located in Karakiyansky district of Mangistau region	KZ72VDD00061453 SE "Management of natural resources and environmental management in Mangystau region"	01/01/2017- 31/12/2020

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

4	Permission for Operation of the camp in the Karakiyansky district	KZ23VDD00082317 Akimat of MO the Ministry of Natural Resources and Natural Resources Management MO	30/11/2017 - unlimited
5	Conducting prospecting and evaluation works of clay rocks (loams, sandy loams) and sand of soil sections 1,2,7, 7-2, 8, 8-1 located in Mangystau region of RK for the reconstruction of "Zhetybay-Zhanaozen" road section (35-73 km)	KZ81VDD00089712 Akimat MO The management of natural resources and regulation of nature management MO	22/02/2018 - unlimited
6	Permission for the Construction work of "Cengiz Insaat" BJSC on the section on Zhetybay-Zhanaozen road section (35-73 km)	KZ71VDD00091153 Akimat of MO The management of natural resources and environmental management MO	20/03/2018 - unlimited
7	Permission for the right of subsoil use for common mineral resources used in the construction (reconstruction) and repair of public roads, railways and hydro constructions (for the extraction of clay rocks and limestone in the areas of soil reserves No. 1, 2,7,7-2, 7-3,8,8-1)	№0000050 AGREED: Mangystau Regional Inspectorate for Geology and Subsoil Use Regional Department of ZapKazNedra Department of Ecology in Mangystau oblast Akimat of MO	31.12.2018

1.9 Relationships with Contractor's, Owners, Lender, etc.

The relationships between Contractor, Engineer, Owner, and Lender were considered normal working relationships. At the working level, coordination of environmental issues were good; the specialists mentioned in article 1.6 above are from frequent communication and consultation.

While developing and implementing this MFF CAREC Corridor II (sections in Mangystau Oblast) Investment Program, Project 2 road construction project in Mangystau Oblast, the Contractor 1 (SP Akkord/Akzhol Kurylys LLP) and the Contractor 2 (Cengiz Insaat), and Owner/Lenders are required to contract with and successfully manage a wide range of consultants, service providers, and equipment and materials suppliers. All of these parties are specialists in their respective trades, and as with any business enterprise, they operate with their own best interests in mind. For these professional contractors, "best interest" should include providing the Owner/Lender with the highest quality construction and performance possible in the most cost effective manner as indicated in Technical Proposals. However, the Construction Supervision Consultant (CSC), Owners and/or Lenders were the experience or knowledge to adequately evaluate some of the more specialized requirements of the project, or the resources to effectively manage it.

The Contract between the Employer and the Contractor "SP Akkord/Akzhol Kurylys LLP" was signed on May 30, 2017.

The Contract between the Employer and the Contractor "Cengiz Insaat" was signed on June 19, 2017.

1.10 Construction Supervision Contract

The Employer is the Committee for Roads (COR) of the Ministry of Investment and Development. The Employer hires the Project Management Consultant (PMC) "Renardet S.A." for the assistance to COR in the project implementation. The Employer has appointed RSE "Mangystauzhollaboratory" as its assistant for the decision of the local issues, related to the Contracts.

GRUSAMAR Ingenieria y Consulting in association with "SNS-2017" LLP (the Consultant/Engineer) were entrusted by the Employer to provide consultancy services for the contract administration and construction supervision works. The Contract between the Employer and Consultant was signed on January 15, 2018.

The Contract for consultant service between the COR and GRUSAMAR Ingenieria y Consulting (Spain) in association with "SNS-207" LLP (Kazakhstan) was signed on July, 2017. The commencement date of consultant service was planned within 21 days after signing of the Contract.

1.11 Determining the location of the construction site

The Contractor Cengiz Insaat Lot 2 had a construction camp (from the previous project) in the village of Zhetybay (photo 1.1):

- The construction camp of Zhetybay (km 729.5) covers an area of $S=5600\text{m}^2$ for the accommodation of 544 people (offices, living quarters);
- Mobile asphalt plant "BENNINGHOVEN" MBA-2500 with a capacity of 200 t/h is used to prepare the necessary high-quality road pavement materials;
- Concrete installation MB-60M with a capacity of $60\text{ m}^3/\text{h}$;
- All equipment is installed in a specially designated area with a total area of 11 hectares (the plot is identified by the decision of the Akimat of Karakiyansky district No. 226 dd. 30/09/2014).

The installation of crushing, asphalt, concrete plants was carried out in accordance with the working projects that were agreed with the interested state bodies. The camp, in which the asphalt and concrete plants are located, is on 73 km of Aktau-Zhetybay road section and administratively belongs to the territory of Karakiyansky district of the Mangystau region. Distance to the nearest settlements - Zhetybay and a Munaishy village is about 12 km away. The road section for the reconstruction is characterized by a complete lack of surface water. Temporary watercourses arise only during heavy rains or heavy snowmelt. There are no permanent watercourses.

The office and the accommodations of the Engineering Service are located in Zhetybay camp. The Contractor mobilized all necessary equipment to the site. On the site of the camp there is a production laboratory and a warehouse for storing fuel. A crushing plant, an asphalt plant and a storage site for reinforced concrete are located nearby. Fresh water is available and in the camp there is a special sewage system directed to the septic tank.



Photo1.1: Construction site and office of the Consultant (Cengiz Insaat) in Zhetybay

The septic tank and solid waste are collected regularly for disposal in an approved location. The camp includes offices for the Contractor and Consultant and accommodations for employees working in the Project. In the camp there are available mobile connections. Verify the availability of broadband 3G access. The medical service of the camp works full-time and has a fully equipped medical center.

Construction site of “SP Akkord/Akzhol Kurylys” LLP Lot 1 of Zhetybay is located in accordance with the approved project, coordinated with authorized state bodies. The site is located outside the water protection zone at a distance of more than 1 kilometer from the nearest inhabited territory. To reduce the impact on the environment and reduce the removal of pollutants from the territory of the construction site, the following measures were taken:

- a topsoil layer of soil was removed and measures taken to protect it from pollution: mixing with mineral soil, pollution, water and wind erosion;
- the territory of the site is covered with a protective insulating layer;
- regular cleaning and watering of the territory of the site;
- operation of the asphalt plant, concrete bond, production of mineral powder is carried out with dust and gas cleaning systems at treatment plants;
- the construction site is fenced;
- the storage and transportation of loose and liquid materials is regulated.

The contract for disinfection works was concluded.

There is a medical point.

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)



*Photo 1.2: Construction site and office of the Consultant
(SP Akkord/Akzhol Kurylys LLP) in Zhetybay*

PART II: ENVIRONMENTAL MONITORING

Environmental Monitoring System

The environmental monitoring system was based on the TOR for construction supervision, technical specifications, the IEE project for category B and ADB manual.

2.1 Methodology for conducting environmental monitoring during construction supervision

Environmental monitoring is a supervision function, and the goal is to ensure compliance with the EMP. Monitoring is a day-to-day process that ensures deviations avoidance from the EMP or correction, or quickly detection and elimination of any unforeseen consequences. Specific actions in the EMP that are subject to control are included in the Monitoring Plan. During construction, environmental monitoring will require measures to ensure the preservation of hills, slopes and embankments from potential soil erosion, exploitation and restoration of quarries, identification of work sites and storage facilities for materials, placement of concrete mixing plant and asphalt concrete plant, especially close to populated areas points and reserves, and the preservation of religious areas, cemeteries or burials, public relations, as well as provisions for safety.

As provided in the Project Contract, the Contractor will adhere to the requirements of the environmental aspects of the contract document, in particular, the requirements in the General Conditions of the Contract (FIDIC) such as: 4.8: Security Order; 4.18: Environmental protection; 4.15: Access road; 4.24: Fossils; and 6.7: Health and Safety.

In addition, detailed requirements are established in the **Technical Specification**, in particular:

Section 106: Environmental protection

- A. Overview
- B. Fuel and chemical storage
- C. Water quality
- D. Air quality
- E. Noise
- F. Earthworks
- G. Ancient monuments preservation
- H. Environment enhancement
- I. Special conditions

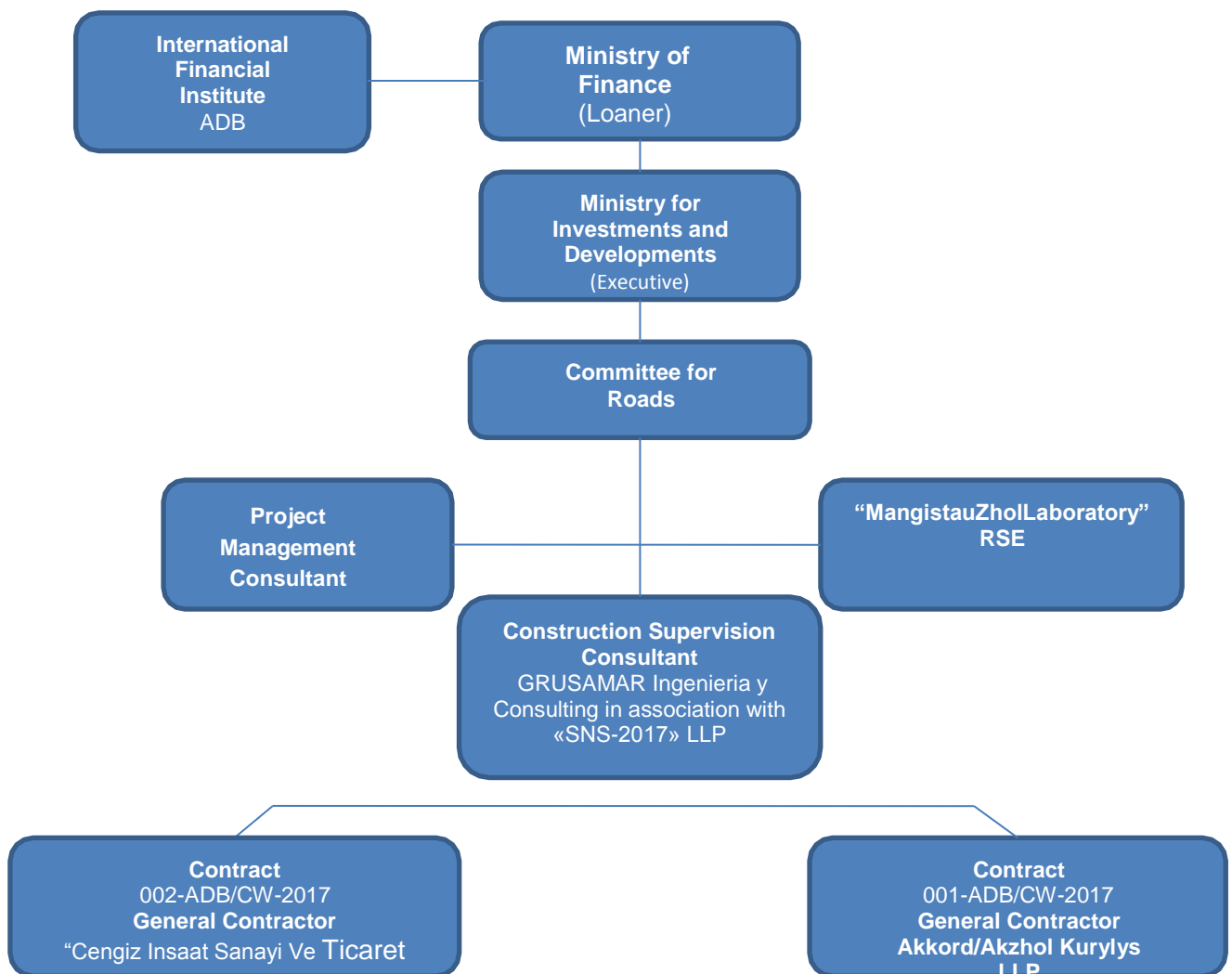
Section 113: Bypass and traffic control measures - especially B. Road Traffic Management Plan.

The main responsibility of the Contractor is the development of the Environmental Management Plan (EMP) project based on the materials contained in the IEE report for May 2015. The contractor provided a detailed/specific Environmental Management Plan based on the report of the IEE, which corresponds to the contract documentation. In the course of the work, the Consultant shall monitor the compliance by the Contractor with the Environmental Management Plan and report on the arising consequences and the measures taken to mitigate the impact and provide further recommendations as necessary.

In general, as provided for in the TOR for the implementation of construction supervision on an environmental aspect, the Consultant should "Perform the following duties related to measures to mitigate environmental impacts during construction:

a) ensure that all mitigation measures to be implemented are included in the contract documents;
b) overseeing and monitoring the implementation of the EMP/negative impact mitigation plan;
c) in the event of an unforeseen environmental impact occurrence, coordinate with the PMC to recommend the necessary actions to the Committee for Roads and ADB for further procedures. Based on this, the Environmental Protection Specialist establishes coordination work with the relevant Consultant and Contractor personnel to ensure that environmental problems are identified/detected before or during the execution of the work. The EMP for the project should be the basis for monitoring, and therefore, the Contractor submitted the EMP to the Engineer for approval (under Contracts 1 and 2).

Coordination communication channels should be installed according to the following scheme of coordination work Figure 2.1:



MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

In addition, the following laws, regulations and standards should also be considered and applied as guidance during the execution of construction works by the Contractor:

Table 2.1: Appropriate laws, policies and regulations on environmental protection in the Republic of Kazakhstan

Legislation	Registration date and No.
Methodology for determining the pollutant emissions to the environment	Approved by the Order of the Minister of Environmental Protection (MEP) dd. May 21, 2007 No.158-i.
Instructions for conducting an environmental impact assessment of the proposed economic activity in the development of preliminary planning, planning, designing the initial design and project documentation,	Approved by Order of the Minister of Environmental Protection dd. June 28, 2007. No. 204-i.
Amendments to the Order of the Minister of Environmental Protection of the Republic of Kazakhstan, on approval of the "Instruction for carrying out environmental impact assessment of the proposed economic activity in the development of preliminary planning, planning, designing the initial design and design documentation.	Approved by Order of the Minister of Environmental Protection dd. March 20, 2008. No. 62-i.
Regulation on conduction of the state environmental review.	Approved by Order of the Minister of Environmental Protection dd. June 28, 2007. No. 207-i.
Amendments to the Order of the Minister of Environmental Protection of the Republic of Kazakhstan, on approval of the Norms on the conduction of state environmental review	Approved by Order of the Minister of Environmental Protection dd. October 9, 2007. No. 296-i.
The rules for holding public hearings	Approved by Order of the Minister of Environmental Protection dd. May 7, 2007 No. 135-i.
Instruction on qualification requirements for the implementation of licensed activities for environmental design, development of norms and environmental impact assessment	Approved by Order of the Minister of Environmental Protection dd. October 21, 2003 No. 239-i.
Methodological guidance for the implementation of licensed activities for environmental design, development of standards and environmental impact assessment	Approved by Order of the Minister of Environmental Protection dd. February 10, 2005 No. 51-i.

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Legislation	Registration date and No.
The final conclusion of environmental experts on certain types of licensed works and services	Approved by the order of the Minister of EP, July 1, 2004 No. 192-i.
Instructions for negotiating and permitting the use of water in the Republic of Kazakhstan.	The joint order of the Minister of Health of the Republic of Kazakhstan No. 824 dd. November 24, 2004, the Minister of Environmental Protection of the Republic of Kazakhstan No. 309-i dd. December 1, 2004, Acting Chairman of the Committee on Water Resources of the Ministry of Agriculture of the Republic of Kazakhstan No. 236-s dd. November 11, 2004, Chairman of the Committee of Geology and Subsoil Use of the Ministry of Energy and Mineral Resources of the Republic of Kazakhstan No. 161-i dd. December 2, 2004. Совместно с Ministry of Justice of the Republic of Kazakhstan No. 3263 dd. December 13, 2004.
Rules for licensing and qualification requirements for the performance of work and services in the field of environmental protection	Approved by the Order of the Government of the Republic of Kazakhstan, MEP dd. June 5, 2007, No. 457-i.
Code of Environmental Protection of the Republic of Kazakhstan	MEP dd. January 9, 2007 No. 212-i.
Normative framework requiring environmental impact assessment	Instructions for conducting an environmental impact assessment of the proposed economic activity in the development of preliminary planning, planning, registration of initial design and project documentation, approved by Decree of the Minister of Environmental Protection dd. June 28, 2007, No. 207-i.
The Law of the Republic of Kazakhstan "On Amendments and Additions to Certain Legislative Acts of the Republic of Kazakhstan on Environmental Issues"	MEP dd. January 9, 2007 No. 213-i.
Law of the Republic of Kazakhstan "On ratification by the Republic of Kazakhstan of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade"	MEP dd. March 20, 2007, No. 239-i
	June 7, 2007, No. 259-i

Legislation	Registration date and No.
The Law of the Republic of Kazakhstan "On ratification of the Stockholm Convention on Persistent Organic Pollutants"	
The concept of transition to sustainable development for 2007-2009. (Action plan)	Decree of the President of the Republic of Kazakhstan dd. November 14, 2006, No. 216-i.
The Ecological Safety Concept of the Republic of Kazakhstan for 2004-2015.	Decree of the President of the Republic of Kazakhstan, December 3, 2003, No. 1241

The monitoring program will include continuous monitoring of construction works to ensure that they comply with environmental requirements, in accordance with relevant laws, policies and regulations, standards, specifications and EMP.

During construction, environmental monitoring will help preserve slopes and embankments from potential soil erosion, ensure the restoration of quarries, work sites and storage areas, a sorting plant, concrete and asphalt plants, preserve public relations, and provide security measures.

2.2 Working protocol on environmental monitoring of the Construction Supervision Consultant (Engineer)

Under the guidance of the Consultant Engineer/the local environmental specialist, jointly with the contractor's environmental specialist, conducted regular site inspections to identify environmental problems. The findings and results of their monitoring activities are included in the monthly report of the consultant and the quarterly report on environmental monitoring, and are also included in the first semi-annual report on environmental monitoring for the Project.

The environmental specialist of the consultant engineer constantly visits construction sites and notifies the Project Manager of environmental and nonconformance issues, as outlined in the EMP. In case of non-compliance, the necessary instruction is given to the contractor on the site and issues or requirements are solved through letters of procedure. Field inspections were carried out in various areas of impact, such as a borrow pit, an asphalt plant, quarry areas, as well as the location of the base camp of the Contractor and settlements located near the project road. Environmental issues were identified and presented to the Contractor as part of the consultation process, as a result of which these issues will be resolved. The effectiveness of mitigation measures is assessed after performing work on the site in order to determine whether such measures have been effective. According to environmental requirements, the Contractor's measures are considered acceptable for the initial stage of the project, but there will be more improvements needed for environmental activities. The Contractor is obliged to take measures to eliminate all environmental problems for further improvements.

As part of the construction supervision in accordance with the TOR, which states that "the Environmental Protection Specialist will prepare an environmental audit protocol for the construction period, develop a detailed environmental management and monitoring plan (EMMP)", the workflow must be completed by the project engineers, and also an international environmental specialist. The scope of control and management can be divided into the following activities:

▪ **Site supervision**

- ✓ **Site inspections:** Environmental specialists should visit sites on an ongoing basis to observe and identify any environmental problems that violate the EMP and any applicable regulations.
- ✓ **Photos taken during site inspection:** During site inspection, photographs of any situation on the site should be taken as part of the documentation.
- ✓ **Survey of people on the site:** Reference data should be collected relating to the issues monitored, and it can be obtained as a result of a survey with workers on site, by inspectors and by society.
- ✓ **Measurement of parameters during inspection:** Whenever any field measurements will be performed by the Contractor, the EMP Specialist (local)/Engineers should always be present to monitor the process and record the details of the process.

▪ **Meetings and discussions**

- ✓ **Consultation with the Project Manager (PM)/Engineers:** The EP specialist should consult with the PM and the Engineers on any environmental issues. It should give recommendations to the PM and the Deputy Resident-Engineers on physical and legal matters and consider these points in the "Notice of Non-compliance" issued to the Contractor.
- ✓ **Discussion with the Contractor's EP specialist:** Any environmental issues should be discussed with the Contractor's Environmental specialist to determine their commitment to implementing measures to reduce the negative impact on the environment.
- ✓ **Training:** Part of the effective work of the Environmental Protection Specialist is the development of a training program for the Contractor's and Consultant's staff during the implementation of the EMMP. A specialist for environmental protection for the personnel of the Consultant in the construction base camp Zhetybay, as well as for the Contractor's personnel is scheduled to conduct trainings in July-September 2018, as the specialist staying on site. Regular meetings with representatives of the environmental protection contractor were organized during this period for further improvements in the field of ecology.

▪ **Documentation verification**

- ✓ **EMP/Additional Plans and Methods:** Environmental specialists should check the documents submitted by the Contractor and comment on their appropriateness and completeness, as described in the Technical Specifications and Contract Documents.
- ✓ **Checking the measurement results:** The EP specialist should carefully check the results of the measurement parameter in order to determine any signs of any situation that are different from the usual conditions. When such moments are revealed, the Environmental Protection Specialist must notify the Contractor for immediate action. Repeated acknowledgment of the data will serve as a secondary check, if they comply with acceptable standards.

- ✓ **Contractor's report and monitoring data:** The EP specialist also needs to check the reports submitted by the Contractor, especially in assessing the results of measurement of parameters, air and water quality, noise.
- **Verification of legal documents:** Permits and all legal documents related to environmental aspects should be carefully checked by the Environmental Protection Specialist for compliance with legislation. This applies to permits for the use of soil quarries and permits for the construction of a construction site, an asphalt plant and a crushing plant.
- **Reports preparation**
- ✓ **Monthly reports:** Environmental problems should be reported regularly in the Contractor's monthly reports and should be commented on by the Environmental Protection Specialist. The results of measurements of air quality parameters, noise and dust should be submitted by the Contractor on a monthly basis, as indicated in the environmental monitoring plan. These results should be evaluated by the Environmental Protection Specialist to take appropriate mitigation measures. Environmental problems should be described by the Environmental Protection Specialist in monthly reports on an ongoing basis to provide information to the Employer and ADB.
- ✓ **Semiannual reports on environmental monitoring:** As mentioned in the Special Conditions of Contracts, the Contractor shall prepare a semi-annual report on environmental monitoring. After submission, the Environmental Protection Specialist should evaluate the report and provide general comments. As part of the reporting obligation of the Engineer, a semi-annual environmental monitoring report should be prepared by the Environmental Protection Specialist and presented to the Employer and ADB after each monitoring, conducted within six months.

2.3 Procedures for the environmental monitoring of the Contractor

The contractor began monitoring the environment in the immediate vicinity of the project road in April 2018 and continues to monitor regularly on the project sites. Parameters that are measured: (i) noise and vibration, (ii) air quality, chemical soil analysis (iii). These indicators of the initial monitoring of parameters for the project road can be considered during the construction of the project road, as well as during its operation. In addition, the following sites are also monitored by the Contractor to detect any impact from construction work: quarries, bypass roads, bridge sites, Contractor's construction site and temporary subcontractor camps, concrete plant, crusher, asphalt plant, villages (along the bypass road) and cross roads. The impact will be recorded and reduced in accordance with the EMP. The basic procedures are described below:

- **Air quality:** The quality of air is monitored at all road construction sites, Contractors camps, concrete plants, crushers, asphalt concrete plants, by obtaining parameters of the all indicators for the reporting period Lot 1 - 8 samples were taken at 4 monitoring points and Lot 2, 27 samples were selected at 9 monitoring points. The indicators of air quality meet the standards and do not exceed the maximum permissible concentration.

- **Noise and vibration:** The noise and vibration level is measured on a monthly basis along the project road (camp, settlements, etc.), where impacts are expected in connection with the construction. The environmental protection regulations against noise and vibration comply with established standards. No excessive noise was detected in this section.
- **Soil quality:** Soil quality control is carried out on a monthly basis for all road construction sites by obtaining indications at 9 monitoring points. Indications of soil quality meet the standards and do not exceed the maximum permissible concentrations.

In April 2018, the Contractors submitted an Environmental Management Plan (EMP) to the Engineer. The Environmental Protection Specialist of the CSC issued to the Contractor Lot 1 comments on the EMP to correct and submit to the Engineer for approval. The EMP describes the mitigation and monitoring requirements, including how, when, where and by whom mitigation and monitoring measures should be implemented during the construction period. In the course of construction, mitigation measures will focus on ensuring that the Contractor undertakes to perform all environmental work, namely proper disposal of waste, control of the use of fuel and lubricants, clearing the territory of waste during the construction, careful management of water use and Contractors should be aware that it is necessary to make dust removal in the construction site, since dust can spread over long distances. The Contractor appointed specialists (Umirbekova Natalia, Environmental Protection Specialist of the Contractor, Contractor Lot 2, Aytenov Serik, Environmental Protection Specialist of the Contractor Lot 1) as a representative of the Contractor for environmental protection to fulfill responsibilities in the field of environmental protection activities of the project.

In accordance with the EMP and in addition to the Environmental Monitoring Plan, Contractors are required to perform measurements and observations of air quality, soil, noise level, vibration and social and cultural resources. The measurement locations were identified at the beginning of the project. Accordingly, the principles of monitoring were established, as shown below:

Table 2.2: Principles for measuring parameters Lot 1

Place of sampling	Point Numbers	Specific parameters	Frequency of monthly measurements
Chemical analysis of air			
Road section under reconstruction km 0-35	2	Dust inorganic, carbon monoxide, nitrogen dioxide, sulfurous anhydride	1 sample
The boundary of the SPZ of Asphalt concrete plant	2		1 sample
Chemical analysis of soil			
Road section under reconstruction km 0-35	2	pH,	

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Place of sampling	Point Numbers	Specific parameters	Frequency of monthly measurements
		petroleum products, cadmium, lead, zinc	1 sample
The boundary of the SPZ of Asphalt concrete plant	2		1 sample
Noise, vibration measurement			
Road section under reconstruction km 0-35	2	Noise, vibration	1 sample
The boundary of the SPZ of Asphalt concrete plant	2		1 sample

Table 2.2: Principles for measuring parameters Lot 2

Place of sampling	Point Numbers	Specific parameters	Frequency of monthly measurements
Chemical analysis of air			
Along the road, every 10 km:	4	Dust inorganic, carbon monoxide, nitrogen dioxide, sulfur dioxide, anhydride	1 sample
Base camp Zhetibay	4		1 sample
The boundaries of Zhanaozen settlement	1		1 sample
Chemical analysis of soil			
Along the road, every 10 km:	4	petroleum products, cadmium, lead, zinc	1 sample
Base camp Zhetibay	4		1 sample
The boundaries of Zhanaozen settlement	1		1 sample
Noise, vibration measurement			
Along the road, every 10 km:	4	Noise, vibration	1 sample
Base camp Zhetibay	4		1 sample
The boundaries of Zhanaozen settlement	1		1 sample

2.4 Management and monitoring of labor and safety of the Contractor

As provided for in item 105 - Occupational Health and Safety of General Specifications, the Contractor has the following duties:

- Ensuring that all Subcontractors and their personnel are fully involved in the activities provided for in this item on occupational safety and health of workers.
- Take all reasonable precautions to prevent unauthorized access to the site and to protect the public from any activity under its control.
- Notify the Engineer immediately of any unsafe incidents or accidents that lead to death, serious injury or can lead to disability for more than three days.
- Providing and ensuring all the Contractor's personnel with protective equipment.
- Take all necessary measures to protect health, including from sexually transmitted infections (STI) and HIV/AIDS, safety and well-being of the Contractor's personnel.
- In order to establish a health and safety department, the Contractor must appoint one responsible person from his staff who will work full time as health and safety specialist and he/she should/will notify the Engineer about it. A HS specialist should organize an orientation course on safety during the first week of his stay on site and the Contractor's personnel must attend this seminar.
- Conduct regular meetings, at least monthly, with local healthcare authorities/institutions.
- To keep such records and prepare such reports related to occupational safety and health issues, including sexually transmitted infections (STI) and HIV/AIDS, and the well-being of persons that the Engineer may from time to time demand and at the request of authorized representatives bodies.
- Provision with lighting (including backup facilities in case of electricity failure), especially where any work is being done at night to ensure safety at that workplace.
- Ensure that there are enough toilets and other sanitation facilities in the areas where work is being done.
- Ensuring that the work remains in a safe condition, in the event that the Contractor temporarily closes work on the site, seasonally or for any other reason.

In addition, the following security issues should be checked:

- **Use of personal protective equipment (including replacement in accordance with climatic conditions):** summer and winter personal protective equipment (PPE) were provided. Managers should control and strictly monitor the safety of the worker, providing with special protective clothing and personal protective equipment, including monitoring the mandatory use of this clothing on the site. Violations of non-use of PPE, use of alcohol and drugs can lead to the immediate dismissal of an employee.
- **Dust and noise:** Additional water carriers were mobilized to prevent dust during the summer period. Long-term adverse effects should be minimized, consisting of poor air quality, mechanical vibration (noise, vibration, ultrasounds and others) and emissions (ion, electromagnet, laser, ultraviolet rays and others) at workplaces.
- **Operation of equipment and machinery:** For all equipment on the site there must be necessary copies of documents and test certificates. For dump trucks, there must be registration certificates, and drivers must have a driver's license. Every day, drivers should be checked for alcohol, blood pressure should be checked as well. The Contractor checks the

technical condition of vehicles intended for the transportation of people and conducts systematic training for drivers on the rules of road traffic and road safety.

- **Construction Danger (height, electric shock, etc.):** The Head of the Subcontractor must issue instructions or orders for the observance of safety. Everywhere should be provided for the protection of workers, for example, protection from electricity, from an electric tool, from gas, and it is necessary to use seat belts.
- **Emergency procedures/Coordination with external medical institutions:** For emergency situations, an action plan was developed to provide first aid and in such cases to deliver a victim to the city hospital in Aktau. The medical center was established in the contract base camp at the beginning of June 2018, and is fully operational since July 2018. In case of fire, it is necessary to fulfill the evacuation plan. Emergency telephone numbers and ambulance services were easily accessible.

2.5 Required Reporting on Environmental Protection issues

As mentioned in the item 106 of the Technical Specification: environmental protection of section 100: general requirements, the Contractor's environmental management plan should include a description and explanation of the communication procedures between personnel of construction and the environment, including (i) communications and regular contacts and reporting system.

As well as section 106 of the TS mentions: initial environmental report should be submitted in accordance with section 106. Based on this section, the initial monitoring program should be presented with the content of the basic environmental study (BEI) (I) air quality; (II) water quality; and (III) the noise level. In addition, Environmental Reports should include brief weekly updates and be prepared for the Engineer's monthly reports. The Contractor will submit to the Consultant a semi-annual report on environmental monitoring as required. The Engineer should also be notified of any EMP activities, and effective communication should be established with all Subcontractors. Summary of these items should be a part of the Contractor's monthly environmental monitoring report.

As indicated in the TOR, the consultant should submit a semi-annual report on environmental monitoring, compiled from monthly reports with relevant issues, activities and measures undertaken during this period. Therefore, this report is the first semi-annual report on environmental monitoring for the Project. In addition, the local environmental specialist of the Consultant/Engineer will often monitor the environmental contractor's activities in accordance with the EMP and regularly prepare a monthly environmental monitoring report for the Project.

3. ACTIVITIES OF THE ENVIRONMENT MONITORING

In April 2018, basic sampling measurement was carried out. All selected samples were compared with the normative values - MPC maximum permissible concentration, established by the regulatory requirements of the Republic of Kazakhstan. The Contractor conducted monthly monitoring of air, noise and vibration and soil quality in certain places from April to June 2018. In addition, the Engineer, within the scope of his tasks, monitors the environmental aspects of the project, and also reviews the Contractor's environmental monitoring activities. During the reporting period, the Engineer's EP specialists visited the site in April-June 2018 as part of the Consultant's periodic monitoring. During the reporting period, the joint inspection was carried out by specialists (local Specialist for Environmental protection GRUSAMAR/"SNS-2017" LLP, Environmental Protection Specialists of the Contractors and

Environmental Protection Specialist of PMC "Renardet") and Contractor personnel responsible for environmental protection, HSE and TB. Construction sites, storage areas, a construction camp, and plants were also inspected.

Mobilization of Environmental Protection Specialists

Organization	Position	Full name	Activity	Period
Contractor Cengiz Insaat	Environmental specialist	Ivlev Andrey Umirbekova Natalya	Compliance with obligations according to the terms of reference of the contract	Involvement on an ongoing basis dd. April 20, 2018
Contractor "SP Akkord/Akzh ol Kurylys" LLP	Environmental specialist	Serik Aitenov	Compliance with obligations according to the terms of reference of the contract	Involvement on an ongoing basis dd. April of 2018
CSC	EMP local specialist	Tursunbayeva Makhabbat	Compliance with obligations according to the terms of reference of the contract	Involvement on an ongoing basis dd. February 5, 2018
PMC «Renardet S.A.»	EMP local specialist	Novosadova Natalya	Compliance with obligations according to the terms of reference of the PMC contract	Involvement on an ongoing basis dd. April 15, 2018

From January to June 2018, environmental specialists and the consultant's engineers were responsible for conducting site audits and further improvement for the contractor's staff and consultant. The results of monthly monitoring are included in the environmental section of the Engineer's monthly report. This report is the first semi-annual report on environmental monitoring for the Employer and ADB.

During the period April-June 2018, monthly monitoring works were carried out and environmental parameters were measured on the basis of the monitoring schedule for the updated EMP. The contractor is obliged to take the necessary measures to mitigate the environmental consequences within its activities. In addition, instrumental measurements should be performed in accordance with the agreed schedule for IEE/EMP, in particular according to the environmental monitoring plan. The monitored parameters are (i) air quality, (ii) noise and vibration level (iii) soil quality. On the basis of the contract for the provision of services, specialists of the environmental laboratory "Aktobe Chromium Compounds Plant" JSC during the first half of 2018 carried out laboratory and analytical studies for the reconstruction of the section "Zhetibay-Zhanaozen" 35-73 (38 km). The Client of the works is a branch "CENGIZ INSAAT" JSC in Aktau.

After approval of the Action Plan, which included a monitoring program based on the service

agreement, environmental laboratory specialists, the "KAPE-Aktau" branch of the "Kazakhstan Agency of Applied Ecology" LLP in May 2018 conducted laboratory and analytical studies on the road under reconstruction of "Zhetybay-Zhanaozen" section 0- 35 (35 km). The Client of the works is "PS Akkord/Akzhol Kurylys" LLP in Aktau.

3.1 The status of compliance with the Environmental Management and Monitoring Plan

The Project Management Consultant (PMC), through its professional staff, will closely monitor the implementation of the Environmental Management and Monitoring Plan/s (EMMP) for two lots (Contract 001 and 002) through meetings with the EP specialist of CSC and by inspecting construction sites. For effective management, implementation of the EMMP, the CSC gave its employees the task of coordinating issues related to the environment. The Contractor for the relevant contract appointed representatives for environmental protection for the rational implementation of the EMP.

The CSC submitted a monthly environmental monitoring report to the PMC, which includes information on the implementation of EMMP. The information of this semi-annual report on environmental monitoring includes the status of environmental monitoring at construction sites, measures for the safety of workers at the construction site and in the camp, as well as measures taken to control, etc. The implementation of EMMP during the reporting period was recognized as appropriate and should be improved in such parts as environmental quality monitoring, waste disposal, occupational safety and the use of personal protective equipment.

3.2 Procedures for the environmental monitoring of the Contractor

Contractors began monitoring the environment in the immediate vicinity of the project road in April 2018, monitoring continues on a regular basis. The measured parameter is air and soil quality, noise and vibration level. These indicators of the initial monitoring of parameters for the project road can be considered during the construction of the project road, as well as during its operation. Nevertheless, the Local Environmental Specialist has given the Contractor a recommendation to survey places where the impact on people is more noticeable. The basic procedures are described below:

Air quality: Air quality is monitored at appropriate sites and along the road construction sites by obtaining measurement results on a monthly basis during the reporting period (January-June 2018) at different locations, as shown in Table 3.1.

Noise and vibration: Noise and vibration measurements were made during this period (January-June 2018) at various locations, as shown in Table 3.2.

Soil quality: During this period (January-June 2018) soil quality is monitored at appropriate sites and along the road construction sites by obtaining indicators on a monthly basis in different locations, as shown in Table 3.4.

In addition, some sections are also controlled by the Contractor to identify any impact from the construction works. Similar impacts were recorded and reduced in accordance with the EMP. Such areas are:

- Quarries and quarries areas: These areas are located far from populated areas and do not represent any influence. The environmental specialists of the Contractors will regularly monitor the area and maintain records for inclusion in the monthly reports;
- Project road: The monitoring of the project road is carried out continuously, and frequent

watering of the sections with water is used to prevent dust. In the reporting period, to improve the process of soil moistening, the Contractor advised the operators of road tankers to report on their watering (irrigation) works;

- Construction camp of the Contractors and temporary camps of the Subcontractor: The conditions in these camps were checked regularly;
- Concrete plant, crusher, asphalt plant: Concrete plant and crushing plant was tested repeatedly, and the result of the inspection showed that the noise and vibration level is within the permissible.

3.3 Activities of the Contractors for Environmental Monitoring

The Contractor "Cengiz Insaat" mobilized the environmental specialist in April 2018 to supervise construction works. More active monitoring by obtaining parameters for testing air quality, noise and vibration levels, soil quality, and monitoring of flora and fauna was launched in April 2018. Information on monthly indications of parameters and observation with a brief report were prepared. In the previous period, the Contractor (Cengiz Insaat) conducted instrumental monitoring as prescribed in the EMP and in section 100 - General requirements of the Technical Specification. During this period, the Contractor carried out the following measurements according to the list of control points.

The list of control points with the indication of coordinates and pickets under Contract 002 (Contractor Cengiz Inshaat)

The name of the points with the indication of km, picket and coordinates	Date of air sampling	Date of sampling of soils	Measurement date of noise, vibration
Road			
žž -1 PK350 (N43°23.157'E052°30.132')	20.04.2018 22.05.2018 18.06.2018	20.04.2018 22.05.2018 18.06.2018	20.04.2018 22.05.2018 18.06.2018
žž -2 PK450 (N43°21.134'E052°36.971')			
žž -3 PK550 (N43°20.567'E052°44.088')			
žž -4 PK636+83 (N43°18.048'E052°47.819')			
Zhetybay construction camp			
AK-23 (730 km) PK120 (N43°32.644'E051°58.296')	20.04.2018 22.05.2018 18.06.2018	20.04.2018 22.05.2018 18.06.2018	20.04.2018 22.05.2018 18.06.2018
AK-24 (730 km) PK120 (N43°32.555'E051°58.660')			
K-25 (730 km) PK120 (N43°32.646'E051°58.764')			
AK-26(730 km) PK120 (N43°32.757'E051°58.351')			
The boundaries of Zhanaozen settlement			
žž -5 PK60+80 (N43°21.052'E052°48.104')	20.04.2018	20.04.2018	20.04.2018
	22.05.2018	22.05.2018	22.05.2018
	18.06.2018	18.06.2018	18.06.2018

Laboratory investigations under the Contract 002, 35-73 km were carried out in the environmental laboratory "Aktobe chrome compounds plant" JSC Accreditation Certificate No. KZ.I.05.0916 dated July 27, 2015, valid until 27.07.2020, according to the service agreement No. 10/03-18 dated 07.03.2018.

During the previous month, the Contractor (Cengiz Insaat), on the basis of monthly measurements and observations prepared a semi-annual report on environmental protection and presented to the Engineer in July 2018. The results of previous monitoring activities are presented in the report (Appendix D).

All works on monitoring under the Contract 001, 0-35 km (Zhetybay-Zhanaozen) were implemented on the basis of Contract No. 122/3/AJKK dated April 30, 2018 for rendering services from "KAPE-Aktau" branch of "Kazakhstan Agency Applied Ecology" LLP Accreditation Certificate No. KZ.T.02.0211 dated 22.12.2017 valid until 22.12.2022). Place of performance of works is Mangystau region, Karakia district, Zhetybay village. The scope of works and the terms of their implementing the monitoring of atmospheric air (4 points) once a month. Monitoring of noise and vibration at a construction site in two locations, once a month.

3.3.1 Air quality analysis

The results show that air quality is below the limit (MPC - maximum permissible concentration), as shown in Tables 3.1 and 3.2, indicating that the project does not affect air quality in the immediate vicinity. Tables 3.1 and 3.2 show a comparative analysis: the results of measurements for the reporting months from April to June 2018 and the maximum permissible concentration of pollutants. The results confirm that there were no excesses during the monitoring period. The monitoring results show that the content of pollutants does not exceed the MPC in accordance with the requirements of environmental protection in the Republic of Kazakhstan. It should be noted that the concentration of emissions will vary according to meteorological conditions (wind speed and direction and relative humidity), the amount and mechanical condition of the construction machinery and the volume, type of vehicle, direction and traffic.

Although concentrations are within the limit, the Contractor shall continue the same work and increase the frequency watering the road in order to minimize the formation of dust from traffic along the roads, that not paved with asphalt.

The measurements were carried out monthly at 2 sampling sites (photo 3.1).



Photo 3.1: Air quality measurement (SP Akkord/"Akzhol Kurylys" LLP)

Table 3.1: Air quality measurement

a) Section 1: км 0 – 35 (Zhetybay - Zhanaozen)

Sampling location	Date	Measurement No.	Concentrations of harmful substances, mg/m ³				
			Dust	CO	2	2	NO
Maximum permissible concentration			0,15	5	0,5	0,2	0,4
T-1	29.05.2018	1	<0.075	<1,5	<0,025	<0,02	<0,03

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Samplin g place	Date	Measur ement No.	Concentrations of harmful substances, mg/m ³				
			Dust	CO	2	2	NO
Maximum permissible concentration			0,15	5	0,5	0,2	0,4
		2	<0.075	<1,5	<0,025	<0,02	<0,03
		3	<0.075	<1,5	<0,025	<0,02	<0,03
T-2	29.05.2018	1	<0.075	<1,5	<0,025	<0,02	<0,03
		2	<0.075	<1,5	<0,025	<0,02	<0,03
		3	<0.075	<1,5	<0,025	<0,02	<0,03



Photo 3.2: Air quality measurement (Cengiz Insaat)

b) Section 2: km 35 – 73 (Zhetibay - Zhanaozen)

Sampling points characteristic		Concentrations of harmful substances, mg/m ³			
Description	Sampling date	Dust	carbon monoxide	nitrogen dioxide	sulphurous anhydride
		The values of MPC			
		Not more 0,5	Not more 5	Not more 0,2	Not more 0,5
ROAD					
žž -1	20.04.2018	0,31	1,56	<0,02	<0,03
žž -1	22.05.2018	0,44	1,72	<0,02	<0,03
žž -1	18.06.2018	0,14	<1,5	<0,02	<0,03
žž -2	20.04.2018	0,32	2,34	<0,02	<0,03
žž -2	22.05.2018	0,42	<1,5	<0,02	<0,03

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

žž -2	18.06.2018	0,4	<1,5	<0,02	<0,03
žž -3	20.04.2018	0,3	1,98	<0,02	<0,03
žž -3	22.05.2018	0,4	<1,5	<0,02	<0,03
žž -3	18.06.2018	0,32	<1,5	<0,02	<0,03
žž -4	20.04.2018	0,33	2,4	<0,02	<0,03
žž -4	22.05.2018	0,39	2,01	<0,02	<0,03
žž -4	18.06.2018	0,4	<1,5	<0,02	<0,03
žž -5	20.04.2018	0,31	1,72	<0,02	<0,03
žž -5	22.05.2018	0,41	1,93	<0,02	<0,03
žž -5	18.06.2018	0,42	<1,5	<0,02	<0,03
basis	average	0,314	2	<0,02	<0,03
	minimum	0,3	<1,5	<0,02	<0,03
	maximum	0,33	2,40	<0,02	<0,03
in the first half-year of 2018	average	0,354	1,96	< 0,02	<0,03
	minimum	0,14	1,56	< 0,02	<0,03
	maximum	0,44	2,4	< 0,02	<0,03
BASE CAMP ZHETyBAY (713 km)					
AK-23	20.04.2018	0,35	< 1,5	<0,02	<0,03
AK-23	22.05.2018	0,41	2,12	<0,02	<0,03
AK-23	18.06.2018	0,43	<1,5	<0,02	<0,03
AK-24	20.04.2018	0,35	< 1,5	<0,02	<0,03
AK-24	22.05.2018	0,43	2,41	<0,02	<0,03
AK-24	18.06.2018	0,44	<1,5	<0,02	<0,03
AK-25	20.04.2018	0,31	2,1	<0,02	<0,03
AK-25	22.05.2018	0,42	1,98	<0,02	<0,03
AK-25	18.06.2018	0,16	<1,5	<0,02	<0,03
AK-26	20.04.2018	0,32	1,6	<0,02	<0,03
AK-26	22.05.2018	0,43	1,9	<0,02	<0,03
AK-26	18.06.2018	0,42	<1,5	<0,02	<0,03
basis	average	0,3325	1,85	<0,02	<0,03
	minimum	0,31	<1,5	<0,03	<0,03
	maximum	0,35	2,1	<0,04	<0,03
in the first half-year of 2018	average	0,3725	2,02	< 0,02	<0,03
	minimum	0,16	<1,5	< 0,02	<0,03
	maximum	0,44	2,41	< 0,02	<0,03

3.3.2 Noise and vibration measurement

With regard to noise and vibration, the Contractors Lot 1 and Lot 2 are obliged to conduct on a monthly monitoring of the measurement of noise and vibration along the project road.

The noise level measurements were below the specified level of 80 decibels. The noise measured at the sites is below the limit, which confirms that the noise is actually controlled by the Contractor. The Contractor is instructed to reduce the number of equipment and machinery producing noise and maintain them properly in order to reduce noise. However, there was no complaint about noise.



Photo 3.3: Noise and vibration measurement Lot 1

Table 3.2: Measurement results of noise and vibration

a) Section 1: km 0 – 35 (Zhetybay - Zhanaozen)

Sampling place	Date	Noise, dB	Vibration, dB
Maximum permissible concentration		70	110
On the territory of the residential house No. 20	26.06.2018 07.00-23.00	52,6	73,9
On the territory of the residential house No. 7	26.06.2018 07.00-23.00	55,7	70,3

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)



Photo 3.4: Measurement of noise and vibration levels Lot 2

Sampling location	Measurement date	Noise, dB		
		Equivalent	Maximum	Minimum
ENTRANCE TO CITY OF ZHANAOKEN				
žž -5	20.04.2018	70	76	60
žž -5	22.05.2018	78	80	70
žž -5	18.06.2018	79	80	72
basis		70	76	60
in the first half-year of 2018	average	76	79	67
	minimum	70	76	60
	maximum	79	80	72

b) Section 2: km 35 – 73 (Zhetybay - Zhanaozen)

BASE CAMP ZHETYBAY (730 km)				
AK-23	20.04.2018	60	70	50
AK-23	22.05.2018	65	71	37
AK-23	18.06.2018	68	74	40
AK-24	20.04.2018	64	74	54
AK-24	22.05.2018	68	73	40
AK-24	18.06.2018	72	76	44
AK-25	20.04.2018	70	80	60
AK-25	22.05.2018	60	71	42
AK-25	18.06.2018	62	74	44
AK-26	20.04.2018	54	64	44

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

AK-26	22.05.2018	70	76	42
AK-26	18.06.2018	74	78	46
basis	average	62	72	52
	minimum	54	64	44
	maximum	70	80	60
in the first half-year of 2018	average	66	73	45
	minimum	54	64	37
	maximum	74	80	60

3.3.3 Soil quality monitoring

The soil quality was checked monthly for Lot 2 at 11 sampling sites along the road, villages and camp. The results show that the soil quality is below the limit (MPC), as shown in Table 3.4, indicating that the project does not affect the quality of the soil in the immediate vicinity. Table 3.4 provides an analysis of: the results of measurements for the reporting months from April to June 2018 and the maximum permissible concentrations of soil quality. The results confirm that there were no excesses during the monitoring period. The monitoring results show that the content of pollutants does not exceed the MPC in accordance with the requirements of environmental protection in the Republic of Kazakhstan. While concentrations are within the limit, the Contractor must continue the same work on an ongoing basis to verify the quality.



Photo 3.5: Soil sample selection Lot 2

Table 3.3: Test results on soil quality

Section 2: km 35 – 73 (Zhetybay - Zhanaozen)

Sampling points characteristic		Concentrations of harmful substances				
		pH	Petroleum products, mg/g	Cadmium mg/kg	Lead, mg/kg	Zinc, mg/kg
Description	Sampling date	The values of MPC				
		-	-	0,5	32	23
ROAD						
ŽŽ -1	20.04.2018	8,6	0,014	0,05	3,4	10,13
ŽŽ -1	22.05.2018	8,4	0,014	0,06	2,14	8,68
ŽŽ -1	18.06.2018	8,8	0,006	0,07	2,42	13,9
ŽŽ -2	20.04.2018	9	0,013	0,21	7,38	21,32
ŽŽ -2	22.05.2018	8,8	0,012	0,12	4,58	20,62
ŽŽ -2	18.06.2018	8,8	0,012	0,12	5,65	22,21
ŽŽ -3	20.04.2018	8,8	0,013	0,14	6,05	19,98
ŽŽ -3	22.05.2018	8,6	0,014	0,24	6,29	20,28
ŽŽ -3	18.06.2018	8,6	0,008	0,06	3,21	21,52
ŽŽ -4	20.04.2018	8,5	0,024	0,19	6,16	19,37
ŽŽ -4	22.05.2018	8,3	0,032	0,1	9,36	18,95
ŽŽ -4	18.06.2018	8,3	0,034	0,065	6,48	20,44
ŽŽ -5	20.04.2018	9,4	0,081	0,13	11,27	20,77
ŽŽ -5	22.05.2018	8,8	0,062	0,09	17,19	19,66
ŽŽ -5	18.06.2018	8,6	0,09	0,06	9,58	17,99
basis	average	8,86	0,029	0,144	6,852	18,314
	minimum	8,5	0,013	0,05	3,4	10,13
	maximum	9,4	0,081	0,21	11,27	21,32
in the first half-year of 2018	average	8,69	0,03	0,11	6,74	18,39
	minimum	8,3	0,006	0,05	2,14	8,68
	maximum	9,4	0,09	0,24	17,19	22,21

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Sampling points characteristic		Concentrations of harmful substances				
Description	Sampling date	pH	Petroleum products, mg/g	Cadmium, mg/kg	Lead, mg/kg	Zinc, mg/kg
		The values of MPC				
		-	-	0,5	32	23
BASE CAMP ZHETYBAY (730 km)						
AK-23	20.04.2018	8,7	0,012	0,15	5,94	17,02
AK-23	22.05.2018	9,1	0,016	0,16	5,85	20,9
AK-23	18.06.2018	9	0,01	0,14	2,17	21,67
AK-24	20.04.2018	8,7	0,012	0,2	4,98	17,89
AK-24	22.05.2018	8,8	0,017	0,17	3,19	21,6
AK-24	18.06.2018	8,4	0,009	0,15	2,3	20,33
AK-25	20.04.2018	8,7	0,023	0,17	6,04	19,72
AK-25	22.05.2018	8,9	0,02	0,11	4,35	20,09
AK-25	18.06.2018	8,9	0,01	0,15	3,37	22,59
AK-26	20.04.2018	8,6	0,013	0,25	6,36	17,88
AK-26	22.05.2018	8,5	0,02	0,16	5,88	19,1
AK-26	18.06.2018	8,7	0,01	0,16	3,74	21,95
basis	average	8,675	0,015	0,1925	5,83	18,1
	minimum	8,6	0,012	0,15	4,98	17,02
	maximum	8,7	0,023	0,25	6,36	19,72
in the first half-year of 2018	average	8,75	0,014	0,164	4,51	20,06
	minimum	8,4	0,009	0,11	2,17	17,02
	maximum	9,1	0,023	0,25	6,36	22,59

Contractor Lot 1 was recommended urgently by the Engineer's specialist to conclude a contract for the provision of services for monitoring soil quality, and conduct monthly soil sampling on a regular basis.

3.4 Engineer's environmental audit

Environmental Monitoring is one of the main tasks of the Construction Supervision Team. As well as, according to the Construction Contract, the Contractor is obliged to ensure that the construction does not have a negative impact on the environment and settlements. Consultants and the Contractor should work closely jointly to monitor the works related to environmental protection, so that it is effective in reducing and avoiding negative impacts.

This is the requirement of the IEE of Project that the section of the Special Environmental Management Plan (SEMP), with a separate management plan is provided by the Contractor to provide the construction site personnel with an instructive document for their requirements and responsibilities. This document was prepared by the Contractor, the SEMF is the main

document related to environmental protection at the Project implementation stage supported by other environmental protection plans defined in the IEE.

The basis for the development of the Supplementary Plan by the Contractor is the IEE document (with emphasis on the EMMP), Technical Specification, and current laws, regulations and rules of the Republic of Kazakhstan. These additional plans should serve as a guide in the process of the Contractor's performance of environmental works, as well as in environmental monitoring reports.

PART III: ENVIRONMENTAL MANAGEMENT

4. ENVIRONMENTAL MANAGEMENT PLAN (EMP)

4.1 Overview

The main objective of the Environmental Management Plan (EMP) during the implementation and operation of the project to avoid, reduce, or at least minimize the adverse environmental impacts that could result from the activities. Accordingly, the EMP considers all phases of the Project cycle, namely the detailed design, construction and operational phases of the Project. It consists of various mitigation measures needed to be undertaken in the course of the Project cycle.

During the construction phase, certain situations can arise which may not have been anticipated by the Contractor. It is for this reason that the project EMP is considered as a dynamic document, which need to be revised by the Contractor as the need arises. The EMP will be continuously updated to include issues unforeseen during the formulation of the EIA. In relation to this MFF CAREC CORRIDOR II Project, efforts were made to avoid and reduce adverse environmental impacts in the Project Design, and additional recommendations to further avoid or reduce impacts are provided to Contractors, which should reflect in the EMP upgraded by the Contractors. Additionally, the Safeguard Policy Statement (ADB-SPS 2009) goes on to state that concerning mitigation and compensation, the EMP should address “the following key components: Mitigation, Monitoring, Implementation, and Performance Indicators” through defined plans. As such, the Contractors should reflect the level of detail and complexity of the environmental planning documents and the priority of the identified measures and actions that commensurate with the project's impacts and risks. Key considerations include monitoring and mitigation of potential adverse impacts to the level of “no significant harm to nature and humans”; the polluter pays principle, the precautionary approach, and adaptive management, etc.

4.2 Implementation of the EMMP

The Contractors are responsible for implementation of EMMP during construction works and Construction Supervision Consultant (CSC) and primarily responsible for supervision of monitoring of the implementation of the EMMP. The Committee for Roads engaged PMC as an external monitoring consultant' to monitor implementation and supervision of EMMP. As such, the PMC-ADB, CSC monitor and measure the progress of implementation of the EMP on behalf of the Borrower/Client.

Site inspections were conducted on various environmental aspects of the project and these were audited to form part of the monthly & quarterly progress reports and bi-annual environmental monitoring reports. During the audit, a number of environmental and safety issues were noted. These problems were subsequently communicated to the relevant personnel of the CSC, and discussed by the Contractor. These identified problems in general concerned with dust formation in Lot 1 and Lot 2, and the administrative and economic work of the contractor's camp of Lot 2.

Following the CSC' instructions and advice, the Contractors should implement these corrective actions and follow up on these actions to ensure their effectiveness.

Site Specific Environmental Management Plan for a specific section:

The PEA project requires the Contractor to prepare a Site Specific Environmental Management Plan (SSEMP) to provide a guidance document for staff on the site at their request. The SSEMP was prepared by the Contractor, but another relevant management plan has not completed yet. The SSEMP is the main document on environmental protection at the project implementation stage, and supplemented by other environmental plans established in the PEA and indicated in Figure 4.1.

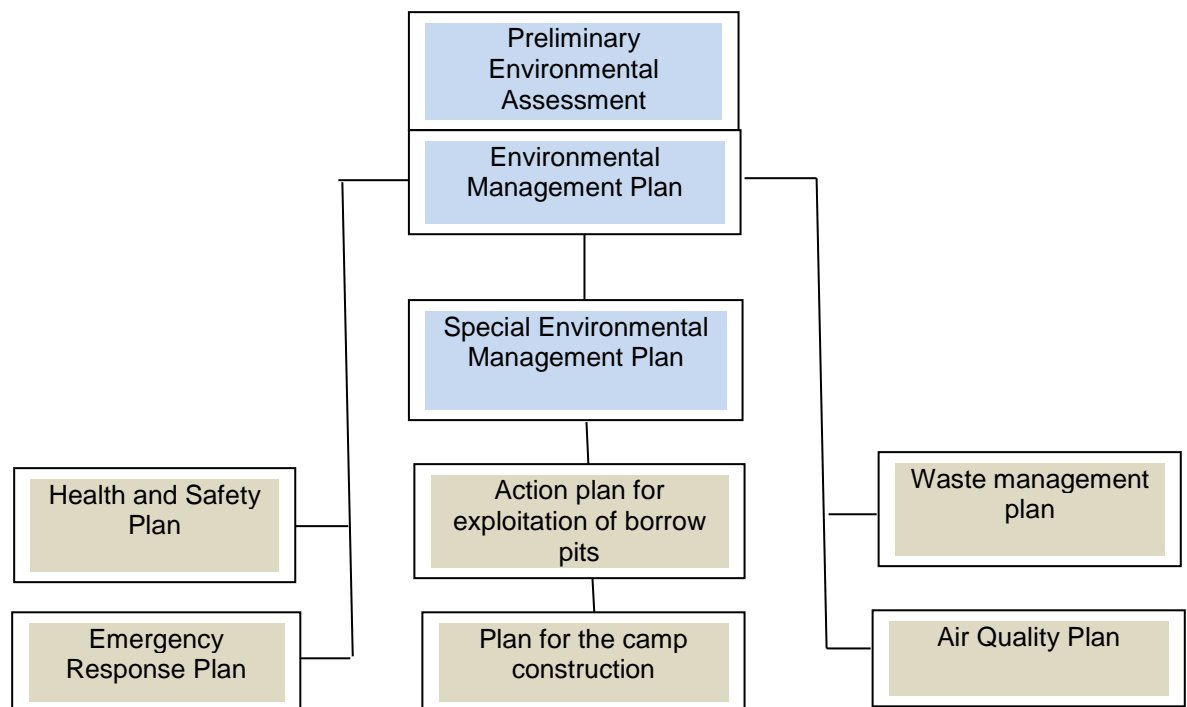


Figure 4.1: The SSEMP and its supporting documents

In accordance with the requirements of the contract prior to the work commencement the Contractor Lot 1 “SP Akkord/Akzhol Kurylys LLP” LLP developed an Environmental Management Plan which includes:

- Water quality management plan;
- Management plan for air protection and dust prevention activities;
- Management plan and borrow pits restoration;
- Soil management plan;
- Site management plan for the construction site;
- Solid waste management plan;
- Noise minimization control plan;
- Management plan with specific construction operations.

In accordance with the requirements of the contract prior to the work commencement the Contractor Lot 2 “Cengiz Insaat” JSC developed an Environmental Management Plan which includes:

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

- Water quality management plan;
- Management plan for measures to protect the air and to prevent dust;
- Quarry Management and Recovery Plan;
- Soil (soil) management plan;
- Fuel and Chemical Management Plan;
- Site management plan for the construction site;
- Solid waste management plan;
- Noise minimization control plan;
- Management plan with specific construction operations;
- Management plan with historical and cultural heritage.

4.3 Observed Environmental Impacts and Mitigation Measures

During the periodic field mobilization and inspection of the environmental specialist short visit in June 2018 and regular monitoring the work scope undertaken in coordination with Contractors Cengiz Insaat and Alzhol Kurylys for the project road. The observed environmental issues were noted and discussed with the Contractor's representatives for clarification within the framework of the PEA, Contractual provisions and technical specifications. Photos were taken on a number of them and shown in **Ошибка! Источник ссылки не найден.** but some observations are given in Table 4.1. The details activities are given in below:

- Field inspection of the worksites including facilities and ancillary work areas. Field investigation included worksites along the project road sections, borrow pit areas, access roads, bridges and culverts, sanctuary boundaries, canals, and Contractor's Cengiz Insaat and Alzhol Kurylys work camp;
- Detailed inspection was done on the environmental and safety issues set-up along the project road, camp sites and especially different culvert sites;
- Detailed discussion with the contractor representatives of Lot 1 and Lot 2 on status of the required EMP and mandatory additional management plan.

Environmental monitoring was continued with the deployment of local environmental specialist, whose main duties was to oversee the impacts generated and monitors the measures being implemented. It is observed that there was no serious environmental impact in the project area according to site investigation in April, March, June and July 2018. Presented below are the some environmental, health and safety issues observed at the vicinity of project worksites during the monitoring of the CSC personnel and PMC Environmental Specialist (

Table **Ошибка! Текст указанного стиля в документе отсутствует..1).**

Table **Ошибка! Текст указанного стиля в документе отсутствует..1: Observed Issues during the Environmental Inspections**

Description of Environmental Issues	Description of Proposed Measures
Dust pollution occurs in certain limited areas of base repair and maintenance. Water truck was used to minimize the consequences	To reduce dust during construction through watering. It was recommended to the Contractor's Environmental Specialist to schedule watering of the road, where it is necessary to prevent the effects of dust on the local residents.



Photo 4.1: Dust Collection by watering the bypass road

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

<p>Wearing of protective clothing, safety gear and safety shoes:</p> <p>Some workers were provided with PPEs like helmets, reflective clothing, and signs to alert during traffic, there are controllers to give a signal to road users. However some workers do not use security measures during construction of the overpass: (1) Workers do not wear helmets and reflective clothing.</p>	<p>Required response from the Contractor:</p> <p>(i) The Contractor shall instruct each employee on the site to wear the prescribed helmets, reflective clothing and special footwear.</p> <p>(ii) The Contractor shall report compliance with the measures as soon as possible.</p> <p>It is recommended to wear safety shoes during working hours. The Contractor's Road Safety Engineer shall provide workers with PPE.</p> <p>It is recommended to comply strictly the policy of protective measures at all construction sites.</p>
<p>Air pollution and noise on nearby settlements:</p> <p>As a result of consultations with local authorities, it is recommended to water the road carefully before cleaning, as it bothers the locals, especially the road that is close to the villages.</p>	<p>Air quality is at an acceptable level for existence according to air quality measurement data (performed from March to June 2018). The noise and vibration measurements were made in compliance with the local standard limit, according to noise and vibration data from April to June 2018.</p>

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)



Photo 4.2: Crushing plant in the camp of “SP Akkord/Akzhol Kurylys LLP”

The contractor mobilized new construction equipment and machinery for the project. It is observed that they are well supported, and no adverse effect is expected from ineffective engine operation, and was not determined during the inspections

The Contractor will support and inspect the construction equipment to keep it in accordance with the technical state, to control the emission of exhaust gas. Such equipment (including monitoring equipment) is subject to regular inspections by the Engineers. Such inspections shall be registered in the log as part of monitoring activities.

Possible contamination of waterways or groundwater with bitumen products or solvents used in pavement laying

Since it is possible to spill fuel during construction, it is recommended that all equipment and machinery do not have oil, solvent and bituminous material flowing along the road construction site

The Contractor uses traffic control techniques to limit interference to traffic and ensure traffic and pedestrian safety.

The Road Safety Engineer instructed the Contractor to strengthen safety and traffic control

Possible impact on road user safety:

All employees of the Contractor were acquainted first with safety. The regulator is used for traffic control, control schemes and were provided to the Traffic Engineer approval.

Similarly, the safety of workers is monitored, and complaints were received during the reporting period.

The Contractor shall instruct the Subcontractors and workers, that they should wear PPE all the time in the workplace in order to minimize accidents and health hazards.

Traffic accidents were monitored. No accidents were reported during the reporting period.

Pollution caused by domestic waste and solid waste:

The Environmental Protection Checklist was distributed for monitoring during the execution of works and for the elimination of the environmental problem, if any.

In the camp used toilets with a septic tank (in the office of the Engineer) or washed into the sewer system.

It should be noted that until now there were no pollution of sewage caused by road construction.

The septic tank is properly equipped. Agreements on the export of domestic fecal wastewater were concluded for Lot 1 and Lot 2.



Photo 4.3: Toilets for the Engineer and Contractor offices in Zhetybay camp

Mandatory borrow pits recovery plan:

The project uses borrow pits for road pavement. Excavation without a plan will lead to difficulties in the sections rehabilitation.

The Contractor shall develop and submit a recovery plan for all borrow pits. The implementation of the plan must be carried out before demobilization.



Photo 4.4: Borrow pit excavation for embankment

Disposal of excavated material from the roadside and cut materials. During the site visit, it was revealed that the materials of the excavation are not removed from the edge of the road.

The excavated materials were stacked on the edge of the road, then to collect them at the landfill sites. It is proposed to remove all the material from the edge of the road after completion of work.

Technique without canopy:

A large number of dump trucks of the Contractor without canopy. This can be dangerous, because the technique also moves along local roads.

Contractors should check the equipment of all dump trucks with canopies and shelter to avoid accidents along the road and to prevent the falling of any materials from dump trucks.



Photo 4.5: Technique without canopy

First Aid Kits / Medical Equipment:

Medical equipment with a doctor and an ambulance provided in Zhetybay camp

In April 2018, it was strongly recommended that medical facilities be in the camp and the Contractor agreed to provide medical facilities with first aid facilities. Accordingly, medical institutions were mobilized in the camps of Lot 1 and Lot 2.





Photo 4.6: The ambulance service in Zhetybay camp

Additional plans required for the EMP:

The following detailed management plan should be provided to the Consultant for approval:

- ☐ Management and rehabilitation plan for borrow pits
- ☐ Plan of the camp organization
- ☐ Solid Waste Management Plan
- ☐ Management plan for hazardous waste management
- ☐ Soil development management plan
- ☐ Water Quality Management Plan
- ☐ Dust Collecting Management Plan
- ☐ Noise Management Plan

The Contractors submitted additional management plans to the Engineer in June 2018.

4.4 Site Inspection and Audits

Periodic audits of the work camps, construction sites of Lot 1 and Lot 2 were conducted during the construction period (from January to June 2018) and resulted in improved conditions at the camps and project work sites. Camps and project work sites will be regularly monitored throughout the construction season and particular focus was given to works along the entire project alignment.

According to the observations during site inspections by environmental specialists of CSC and PMC further improvements were done at the different project sites within this period. Joint inspections of the consultant environmental specialist with the Contractor, joint inspections with Road Safety Engineers, and frequently meetings helped to sort out some of the problems at the site. The following table presents the summary of site visits from April to June 2018.

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Table 4.2: Summary of quantity and type of site visits

Date	Contract		Notes
	Contract 1 km 0-35	Contract 2 km 35-73	
05.04.2018	@	@	Meeting with Contractors and site inspection
11.04.2018	@	@	Site inspection and document review
13.04.2018	@	@	Meeting with ADB Ecologist team and site visit
21.04.2018		@	Site visit, monitoring and control the sampling from the environment for air and soil quality, noise and vibration measurements with the PMC specialist
07.05.2018	@	@	Site visit and meeting with the Contractor
18.05.2018	@	@	Site visit and consultation with local residents of Zhanaozen
22.05.2018	@	@	Site visit, monitoring and control the sampling from the environment for air and soil quality, noise and vibration measurements with the PMC specialist
29.05.2018	@		Site inspection and document review
08.06.2018	@	@	Meeting Contractors and PMC specialists in the office
16.06.2018	@	@	Site visit, monitoring and control the sampling from the environment for air and soil quality, noise and vibration measurements with the PMC specialist
30.06.2018	@	@	Site inspection with representatives of the Contractor, CSC and PMC
07.07.2015	@	@	Site visit and consultation with local residents of Zhetybay
19.07.2015		@	Site visit, monitoring and control of the taking samples from the environment for air and soil quality, noise and vibration measuring
23.07.2015	@	@	Site inspection and document review

@ Указывает количество

Site visits of ADB: Loan Review Mission 2967-KAZ CAREC Corridor 2 Investment Program (Mangystau Oblast Areas) Project 2. As part of the mission, Mr. Ari Kalliokoski, Transport Economist / Head of Mission; Ms. Rika Ideay, Transport Specialist; Ms. Asem Chakenova, ADB Project Specialist in RK; Ms. Glenda Jurado, Project Analyst and Mr. Zhuntai Zhang; Mr. N. Jencchuraev, Chief Environmental Specialist of the ADB; Ms. Malika Babadjanova, ADB Consultant on Environmental Protection Measures of the ADB Representation; Ms. Satylganova Aida, ADB consultant on resettlement and land acquisition.



MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)



Photo 4.7 ADB team site visit

The ADB team visited the road sections in Mangystau oblast on April 13, 2018 to review and discuss with the authorized bodies and executing agencies the status of the implementation of the Zhetybay-Zhanaozen project including:

- 1) Progress of work / issues / quality of construction works;
- 2) Compliance with the provisions of the loan agreement;

- 3) Observance of protective measures;
- 4) Awarding contracts and payments for the forthcoming period of the project;
- 5) Submission of project reports.

The ADB mission conducted an inspection of Zhetybay-Zhanaozen and Shetpe-Zhetybay-Aktau roads, including discussions on the implementation of the project, compliance with protective measures, meetings with representatives of the COR, Mangystauzhollaboratory, Contractors, Engineer and PMC. In the course of the mission, ADB's experts / consultants of safeguard measures recommended the COR/PMC/CSC to mobilize the environmental specialists of the CSC, PMC and social safeguard specialists and public relations of the CSC/ PMC sociologist.

4.5 Counseling and Complaints

A grievance mechanism was established to review complaints / suggestions of local people on the increased level of dust, noise, improper waste disposal and other environmental issues. The grievance mechanism is complementary to existing petitions in the form of letters and personal requests established by local authorities.

The Contractors of Lot 1 and Lot 2 maintain a recording complaints book, which is stored at work sites / construction sites and is accessible to members of the local community. Ms. Umirbekova Nataliya, an environmental specialist for Contractor of Lot 1 and Aitenov Serik, an environmental specialist for the Contractor of Lot 2, are responsible for collecting complaints about the project activities. There are no registered complaints and / or proposals for environmental issues for the reporting period.

The Environmental Specialist consulted with stakeholders from the local community and Akimats to provide them with information on the progress of construction and on upcoming construction activities. Construction work is carried out in rural areas, which have limited access to electronic media, such as the Internet. During the consultations, local residents were informed of the above by the staff of consultants and local authorities (the village Akimat), also directly by the Environmental Specialist.

During the project implementation, there may be several issues related to the danger to the environment, and there may be disputes over the rights to be paid due to the project's work. For example, an intensive schedule of construction work; unacceptable time of movement of construction equipment; waste; noise and air pollution from construction activities; environmental violations; cultural conflicts between migrant workers are some of the environmental problems that may arise as a result of the implementation of the project activities.

During this reporting period, no difficulties or complaints were received from local residents.

4.6 Training and Meetings

One of the functional responsibilities of the environmental specialist is the development of programs for environmental protection training of Staff of the Consultant Engineers and Contractor staffs. The aim of the environmental protection training program was the environmental inspection and monitoring of their compliance with environmental reporting, which was done in conjunction with the assistance of international experts for environmental protection. The International Environmental Specialist was to develop a program for hands on training of Consultant's and Contractor's staff in implementing the EMMP. Consequently, the Environmental Protection Specialist planned the organization of a training seminar / training for the period of specialist mobilization in August-September 2018 under the title of "Implementation of the Environmental Management Plan". The main goal of the training is environmental inspections and their compliance with monitoring of environmental reporting, which will be conducted with the

assistance of the Environmental Protection Specialist. Training will be useful for everyone, as questions will be clarified and measures for its implementation determined.

4.7 Notices and Letters

In the previous six months, the Environmental Consultant actively monitored the performance of the Contractor's work in environmental aspects. The issues were identified and communicated officially to the Contractor in the form of official letters. The list of such letters on environmental aspects and their status is indicated below:

Table 4.3: Environmental Letters

Letter No.	Date	From	To	Subject
AAZK-CS-0079-2018	11.04.2018	SP Akkord/Akzhol Kurylys LLP	Grusamar/SNS-2017	Provision of a plan for environmental protection / Lot 1
AAZK-CS-0113-2018	30.04.2018	SP Akkord/Akzhol Kurylys LLP	Grusamar/SNS-2017	Environment Management Plan
ZZO-CGZ-GI-2018-0071	30.03.2018	Cengiz Insaat	Grusamar/SNS-2017	Environment Management Plan
AAZK-CS-0139-2018	17.05.2018	SP Akkord/Akzhol Kurylys LLP	Grusamar/SNS-2017	Monthly Environmental Monitoring Report
ZZO-CGZ-GI-2018-0197	18.05.2018	Cengiz Insaat	Grusamar/SNS-2017	Environmental Monitoring Checklist
ZZO-CGZ-GI-2018-0197	01.06.2018	Cengiz Insaat	Grusamar/SNS-2017	Monthly Environmental Monitoring Report for May 2018
AAZK-CS-0165-2018	08.06.2018	SP Akkord/Akzhol Kurylys LLP	Grusamar/SNS-2017	Monthly Environmental Monitoring Report for May 2018
ZZO-CGZ-GI-2018-0213	11.06.2018	Cengiz Insaat	Grusamar/SNS-2017	Environmental Monitoring Checklist
ZZO-CGZ-GI-2018-0232	20.06.2018	Cengiz Insaat	Grusamar/SNS-2017	Environmental Monitoring Checklist
ZZO-CGZ-GI-2018-0248	02.07.2018	Cengiz Insaat	Grusamar/SNS-2017	Monthly Environmental Monitoring Report for June 2018
AAZK-CS-0194-2018	02.07.2018	SP Akkord/Akzhol Kurylys LLP	Grusamar/SNS-2017	Monthly Environmental Monitoring Report
ZZO-CGZ-GI-2018-0261	09.07.2018	Cengiz Insaat	Grusamar/SNS-2017	Bi-annual Environmental Monitoring Report (6 month report)
ZZO-CGZ-GI-2018-0272	16.07.2018	Cengiz Insaat	Grusamar/SNS-2017	Environmental Monitoring Checklist
ZZO-CGZ-GI-2018-0282	24.07.2018	Cengiz Insaat	Grusamar/SNS-2017	Environmental Monitoring Checklist

4.8 Corrective Action Plans

From January to June 2018, the environmental monitoring was carried out on the road under the GRUSAMAR Ingenieria y Consulting Construction Contract in association with LLP "SNS-2017", for the sections of Mangystau Oblast connecting the road Zhetybay-Zhanaozen. This created a number of observed negative moments that the Contractor should minimize. In a number of cases, the Contractors of Lot 1 and Lot 2 were able to minimize some of the problems identified in the sites. This report also presents recommended mitigation measures that can be implemented by the Contractors to mitigate the observed situation and should be

monitored by CSC Engineers. Issues arising during the periodic inspection were in the aspects of site safety, the organization of an asphalt plant, and the management of dust formation, road traffic obstruction and oil pollution. Works related to the environment, health and safety were raised during the period.

Most of the issues encountered during periodic inspections were identified in the initial stages of construction, such as safety issues, environmental issues, documentation and dust pollution issues. Accordingly, mitigation measures were also recommended and included in this report. An intensive inspection was conducted by the Environmental Protection Specialist in April and June 2018 and the result was presented and discussed in the training program and meetings were held at the Engineer office of Lot 1 and Lot 2 (Zhetybay). Descriptions of the proposed measures are included in Table 4.1. The observed problems identified during the environmental inspection should be decided by the Contractors “Cengiz Insaat” and “SP Akkord/Akzhol Kurylys” LLP in the monthly environmental report. Inspectors of the CSC will have to regularly include these points during their regular site inspection. The above issues should be resolved timely by the Contractors. Some problems are easily solved and only a few needed to be promptly adjusted by the Contractor. In addition, the format of the Procedures for Monitoring the Environmental Inspectorate was previously provided to the Environmental Contractor Specialist by the Environmental Specialist as a guide to facilitate regular inspections and monitoring of environmental, health and safety.

In April 2018 and June 2018, the CSC mobilized the Environmental Protection Specialist for environmental inspection and auditing, as described in the ToR and for the preparation of the first quarterly environmental monitoring report (February to April 2018) and the first annual environmental report monitoring (for January-June 2018) for the supervision of the quality of construction works. The work was carried out with the participation and coordination of representatives of “Renardet” PMC, Contractors “Cengiz Insaat” and “SP Akkord/Akzhol Kurylys LLP”, local CSC Engineers on Road Safety, Safety Engineers and other Project Engineers. The activities carried out by the environmental specialists are listed below:

Discussion with the acting Team Leaders regarding their duties and obligations.

- Meeting with representatives of ADB, PMC, CSC and Contractors.
- Familiarization with monthly progress reports and other relevant documents on Environment and Safety
- Acquaintance with ecological parameters and records on environment and safety prepared by the Contractors of Lot 1 and Lot 2.
- Meeting with representatives of the Contractors and discussing issues related to environmental protection, the mobilization of a specialist in environmental protection of Contractors, environmental monitoring procedures, monthly and bi-annual reports on environmental monitoring.
- Meeting with CSC Engineers regarding the rehabilitation work on the borrow pit performed by the Contractors.
- Initiate an environmental inspection and carry out an inspection under Contracts 001 and 002 (with Road Safety Engineers).
- Meeting with the Acting Project Manager and with CSC Engineers to discuss the environmental monitoring report.
- Subsequent inspections with regard to documentation are carried out as the identified environmental problems are resolved.

In addition, the EMP of the Contractors was approved, and the Contractors` monthly environmental reports are required further discussions of technical issues for clarification in

presentation so that the Contractor can show solutions to these issues. The specialist made a note and instructed the Contractor to make further constructive improvements.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

This is the first bi-annual report on environmental monitoring (from January to June 2018), prepared in the form of a report with the requirements of the Contract for the provision of the Construction Supervision Service, the Ministry of Investment and Development (MIR), the Committee for Roads of the Republic of Kazakhstan for Loan 2967-KAZ: MFF CAREC Corridor 2 (sections in Mangystau Oblast), Investment Program, Project 2, under the leadership of the Asian Development Bank, Loan No.2967-KAZ. This report is developed by the CSC Environmental Specialist on the basis of interaction and consultation with CSC Engineers, review of relevant environmental documents (PEA and the Project EMP, Monthly / Quarterly / Bi-annual Reports prepared by the Contractors); site visits, the results of the necessary sampling, laboratory analysis and measurements.

During the current monitoring period, a number of problems related to the environment and safety were observed by the monitoring team and brought to the attention of the Contractors for adjustment. The audit was carried out by the CSC Environmental Specialist in April-June 2018, which became the basis for writing the first bi-annual report on environmental monitoring for Clients (COR, MID) and the Financier (ADB). Environmental problems identified during the period, usually regarding the operation of existing borrow pits, dust formation in a crushing plant, soil contamination due to a spillage of fuels and lubricants, aspects of septic tanks of Contractors camps, general safety and monitoring program, etc. Continuous tracking through inspections is one of the necessary processes to improve the environmental performance of the project in accordance with the requirements of the (Client) and ADB (Financier). Training and competence development are carried out by an environmental specialist for the Contractor's personnel and Engineer staff through a series of discussion meetings, PowerPoint presentations, joint audits, development of checklists, instructions, etc. The meetings were useful in clarifying environmental issues, and facilitated the implementation of necessary measures.

During the reporting period from January to June 2018, the Contractor conducted monitoring of atmospheric air, soil, noise and vibration in April, May and June 2018. In all aspects, the results of monitoring comply with the standards of the Republic of Kazakhstan.

During environmental monitoring, the followings were determined:

- Lack of serious environmental problems at an early stage of construction. Construction works are in the early stages of development. Accommodation, office premises are ready in accordance with environmental requirements;
- Contractors take the necessary measures to implement the requirements of the EMP. Currently, necessary permits have been obtained from local authorities;
- Monitoring and checklists specified in the EMP are carried out regularly as required;
- Training of the Engineer's technical staff on compliance with environmental monitoring and reporting should be conducted with assistance from the Project Manager;
- The Contractors at the project level developed the grievance mechanism, and contact persons were proposed for appointment.

In addition, a list for the inspection procedure for environmental monitoring was provided by the CSC ecologist as a model to facilitate regular environmental inspections and monitoring (Annex D).

The next bi-annual report on environmental monitoring will be presented to COR, MIR and ADB in January 2019.

Recommendations

The conduct of several site inspections by the International Ecologist identified a number of potential environmental problems. These issues were discussed with the Contractors, which promptly eliminated some of the identified elements. However, some issues remain unresolved and must be corrected by the Contractors within the next reporting period. In addition, it was noted that some issues, such as waste management, the use of personal protective equipment, the storage of hazardous materials, require continuous monitoring to ensure the requirements of the Contractor's EMP (and its additional plans). In order to minimize the negative impact on the environment, Contractor's monitoring should also be focused on construction activities such as blasting, excavations, top soil removal, compaction, unsuitable soils, removal and backfilling, sub- base layer, CSCM base, slopes, drainage.

The Contractor is also required to complete and submit environmental checklists (daily monitoring), submit monthly reports, a bi-annual environmental monitoring report and today the Contractor has submitted a monthly report for April, May, and June 2018 and a bi-annual environmental monitoring report (from April to June 2018). The Contractor was instructed that the checklists, monthly and bi-annual reports are the Contractor's obligation under the Contract and these reports / checklists must be filled daily, and a monthly report and a bi-annual report on environmental monitoring should be timely provided for review to the Engineer.

MMF Transport Corridor CAREC 2: Investment Program, Project 2
(Reconstruction of Zhetybay-Zhanaozen road section)

Appendix A

Alignment sheet

Agreement No. _____ Date: _____ 2018

Akzhol Kurylys LLP

Branch office "KAPE-Aktau" and "KAPE" LLP

For the provision of services

Amount: 1,200,000 tenge excluding VAT

No.	Position	Name	Signature and date
1	Financial director	Bekturova S.T.	signed
2	Deputy Director for Production	Moldabayev Zh.B.	
3	Chief Accountant	Abdikhalykov N.C.	signed
4	Initiator	Aitenov S.	signed
5	Head of the legal department	Kabashev A.T.	signed
6	Lawyer assistant	Abdullayev A.B.	signed

Service agreement No. 122/3/AZK

Aktau

Date: 30/04/2018

"Akzhol Kurylys" LLP, hereinafter referred to as the **Client**, represented by the director **Elëshov B.T.**, on the one hand, and the **Branch office "KAPE-Aktau" "Kazakhstan Agency of Applied Ecology" LLP**, hereinafter referred to as the **Contractor**, in the person of Director Babakhanov Zh .B., acting on the basis of the Regulations on the Branch and Power of Attorney No. 31 dated March 17, 2017, on the other hand, together referred to as the Parties have concluded the contract for the provision of services (hereinafter the "Agreement"), and have agreed on the following:

1. Subject Matter of the Contract

- 1.1 The Contractor assumes the obligation to provide the following services: implementation of industrial environmental control, within the terms and conditions set forth in this Agreement. The Client undertakes to accept and pay for the cost of the Services provided if the Contractor properly fulfills its obligations under the Agreement. Acceptance and evaluation of scientific and technical products is carried out in accordance with the Environmental Code.
- 1.2. Food, accommodation and transportation of employees involved under the Agreement shall be carried out at the expense of the Contractor.
- 1.3 The Contractor guarantees that he possesses all necessary permits (licenses) to fulfill obligations under the Agreement.

2. The price, term and procedure for the receipt and payment of services provided

- 2.1 The total cost of the Services is 1,200,000 tenge per year without VAT. Payment is made quarterly on the fact of the act of rendered services.
- 2.2. Not later than 3 days after the completion of the provision of the Services, the Contractor undertakes, by its own forces and equipment, to present to the Client the Act of the services performed in 2 original copies signed by its part. Along with the Act of the rendered services, an Invoice is presented in one original copy.
- 2.3. Not later than 10 days after the Client receives the Act of Services rendered, the Client will sign the Act of Services provided - in case the Services meet the conditions of the Agreement, or give a justified refusal to sign the Act of Services Provided. In the event that the Client refuses to sign the Act of Services rendered, the Contractor is obliged to eliminate the identified deficiencies in the terms agreed with the Client.
- 2.4 After signing the Act of Services rendered, the Service is deemed to be accepted, acceptance to be committed.
- 2.5 The services rendered in due course and within the agreed period are paid by the Client within 10 (ten) working days from the moment of signing by the Parties of the Act of rendered services.

3. Responsibility of the Parties

- 3.1 If the Contractor delays the delivery of the Services stipulated by the Agreement, the Contractor shall pay to the Client a penalty at the rate of 0.1% of the value of the Services not rendered in time for each day of delay in the provision of the Services, but not more than 10% of the total amount of the Agreement. Fee payment is made within 7 calendar days from the receipt of the corresponding account.
- 3.2 In case of an unjustified delay in payment for the services rendered, the Client must pay to the Contractor a penalty at the rate of 0.1% of the amount due for each day of delay, but not more than 10% of the amount due.

- 3.3 The payment of penalties does not release the guilty Party from fulfilling its obligations under the Agreement, except for the cases of termination of the Agreement provided in Section 7.
- 3.4 Calculation of penalties and fines is made on the date of signing the Act.

4. Force majeure

- 4.1 The Party shall be released from liability for partial or complete non-fulfillment or improper performance of obligations if this is a consequence of force majeure circumstances that arose after the conclusion of the Agreement as a result of circumstances of an emergency nature that the Party could not foresee or prevent.
- 4.2. Under the circumstances of force majeure are understood: flood, fire, earthquake, natural phenomena, epidemic, war or military actions, as well as decisions of public authorities or government.
- 4.3 In case of occurrence of such circumstances, the Party experiencing their action shall, within 3 (three) days, inform the other Party in writing.
- 4.4 The Party invoking the force majeure circumstances shall submit to the other Party official documents certifying the existence of these circumstances and, if possible, assessing their impact on the possibility of their fulfillment by the Party of their obligations under the Agreement. Force majeure circumstances that have a well-known nature do not require a proof.
- 4.5 If the Party affected by force majeure are not regulated by the Agreement would send documents provided presence of these circumstances, such a party loses the right to refer to such circumstances as grounds for exempting it from liability for failure or improper fulfillment of obligations under the Agreement.
- 4.6 In cases of force majeure the period of the Party's obligations under the Agreement is extended according to the time during which these circumstances and their consequences. If the force majeure and their consequences continue for more than three (3) months, the Parties shall hold additional negotiations for the determination of acceptable alternative methods of execution of the Agreement or the obligations of the Parties terminate the impossibility of execution (excluding cash liabilities) since the beginning of the obligations of force majeure.

5. Authorization of the Parties

- 5.1 Pre-trial settlement of a dispute is carried out through negotiations and claims and is mandatory.
- 5.2 The parties determine the following mandatory procedure for pre-trial settlement of the dispute:
- 5.2.1 The claim is presented in writing and signed by a duly authorized person.
- 5.2.2 The claim shall specify: the claims, the amount of the claim and the justified calculation (if the claim is to be valued); the circumstances on which the claims are based, and the evidence supporting them; list of documents attached to the claim and other evidence; other information necessary for the settlement of the dispute.
- 5.2.3 The claim is considered within 15 (fifteen) working days from the date of receipt, and the Party that submitted the claim is notified in writing about the results of the review. In response to the claim, the Party that received the claim shall indicate the reasons for the decision and the proposal for the settlement of the dispute.
- 5.2.4 If it is impossible to reach an agreement, disputes are resolved in court, in accordance with the legislation of the Republic of Kazakhstan.

6. Confidentiality

- 6.1. The provisions of this Agreement, the advanced disclosure and its annexes, documentation and information related to its implementation are confidential. The Parties ensure access to them only by persons directly involved in the performance of obligations under the Agreement. The admission of other persons is carried out on the terms agreed by the Parties in the Agreement.
- 6.2 The Parties undertake not to distribute to third parties or use for purposes other than proper performance of obligations under the Agreement any information received from the other Party in accordance with or with respect to the Agreement without the written consent of the providing Party, with the exception of information that:
 - 6.2.1 was received by the receiving Party prior to its receipt on the basis of the Agreement;
 - 6.2.2 is generally known not through the fault of the receiving Party, was submitted by a third party that did not breach such confidentiality obligations to the submitting Party;
 - 6.2.3 was independently developed by the personnel of the receiving Party, who do not have access to such information.
- 6.3 These confidentiality provisions are valid during the term of the Agreement and within 3 (three) years from the date of termination (termination) of the Agreement.
- 6.4 If an Agreement on non-disclosure of confidential information has been concluded between the Parties to the Agreement that is valid during the term of the Agreement, then, in a part of possible contradictions, the provisions of such agreement will prevail over the provisions of the Agreement.

7. Procedure for amending, terminating the Contract

- 7.1. A proposal to amend the terms of the Agreement shall be sent to the other Party within a period of not less than 10 (ten) working days prior to the proposed date of the amendment. Amendments to the terms of the Agreement are made in the same form as the Agreement by drawing up a bilateral agreement or in another written form determined by legislation.
- 7.2 Termination of the Agreement is possible by agreement of the Parties, as well as in the case of unilateral refusal to perform the Agreement (withdrawal from the Agreement) on the grounds provided for by the Agreement and legislation.
- 7.3. The proposal to terminate the Agreement by agreement of the Parties shall be sent to the other Party within a period of not less than 10 (ten) working days prior to the proposed termination date. Termination of the Agreement is carried out in the same form as the Agreement by drawing up a bilateral agreement or in another written form determined by legislation.
- 7.4 Unilateral refusal of performance of the Agreement shall be determined by written notification to the other Party within a period of not less than 10 (ten) working days before the date on which the Contract is canceled.

8. Final Provisions

- 8.1 The Agreement shall enter into force upon signature by both Parties and shall remain in force until the Parties have fully discharged their obligations.
- 8.2 After signing the Agreement, all preliminary negotiations on it, correspondence, preliminary agreements and protocols of intent on matters that somehow relate to the Agreement, lose the legal force.
- 8.3 The Agreement as well as all legal relationships arising in connection with the performance of the Agreement, are regulated and subject to interpretation in accordance with the legislation of the Republic of Kazakhstan.

8.4 The Agreement is made in two original copies, the texts of which have the same legal force: one of which is with the Client, the other with the Contractor. Applications, additions made in the manner prescribed by the Agreement are its integral part.

9. Requisites and signatures of the Parties:

Client:
Akzhol Kurylys LLP

Industrial zone 9/43, Aktau, 130000,
The Republic of Kazakhstan
IIC: KZ159650000072169580
JSC Forte Bank
BIK IRTYKZKA
BIN: 030940002856

Contractor:
KAPE-Aktau LLP

Building 10, mdc 21, Aktau, 130000
The Republic of Kazakhstan
TRN: 430100227426
Branch of ATF Bank JSC Aktau
IIC (IBAN) KZ20826R0KZTD2002003
BIC ALMNKZKA
BIN: 040541001701
Tel: 8 (7292) 606-112 / 113/114/115
Fax: 8 (7292) 606-110
Email: aktau@kape.kz

Director *signed* **Yeleshov B.T.**

Director *signed* **Babakhanov Zh.B.**

to Agreement No. 122/3 / AZK
dated 30/04/2018

**Technical specification for the indication of services for air monitoring
for Akzhol Kurylys LLP**

1. Place of work / services:

Zhetybay village, Karakia district, Mangystau region, Republic of Kazakhstan

2. Scope of work / services and terms (schedule) of their implementation:

1. Monitoring of atmospheric air of the plant (asphalt-concrete plant) (4 points) once a month

No.	Controlled substances	Amount of points	Periodicity of observation
Analysis of atmospheric air samples in the territory (SZZ) of the plant			
1	Sulfur dioxide (SO ₂) (SO ₂)	4	monthly
2	Nitric oxide (NO) (NO)	4	
3	Nitrogen dioxide (NO ₂)	4	
4	Carbon monoxide (CO)	4	

2. Monitoring of noise and vibration at the construction site in two locations, once a month.

Director *signed* **Yeleshov B.T.**

Director *signed* **Babakhanov Zh.B.**

The Committee of Technical Regulation and Metrology of Ministry of Investments and Development of the republic of Kazakhstan.

National Center of Accreditation

ACCREDITATION CERTIFICATE

Has been registered in the register of accreditation subjects

No. KZ.T.02.0211

Dated 22 December 2017

Valid up to 22 December 2022

Mobile Environmental Laboratory

LLP "The Agency of Applied Ecology of Kazakhstan"

Almaty city Zverev M., str., 47

Mangistau region, passport of notices "Aktau"

Scientific and research ship "Alina"

Accredited in the system of accreditation in the republic of Kazakhstan for compliance to the requirements of the GOST ISO/IEC 17025-2009 "General Requirements to competence of the testing and metering laboratory".

Sites of compliance assessment: Testing of products as per accreditation area.

Accreditation areas is in the attachment.

Director

Authority of Accreditation signature

M. Omirkhanov

001983

Agreement No. 10/06-18

Aktobe c.

7 March, 2018

"CENGIZ INSAAT SANAYI VE TIDZHARET ANONIM SHIRKETI" JSC, hereinafter referred to as the "Customer", represented by the acting director of the company's branch in Aktau Duisebaev A.A. acting on the basis of order No. 04-18 dated February 13, 2013, on the one hand, and the "Contractor" "Aktyubinsk plant of chrome compounds" JSC represented by the chairman of the Board Khimich A.A., acting on the basis of the Charter, on the other hand, have concluded this Agreement as follows:

1. SUBJECT OF AGREEMENT

1.1. The "Client" instructs, and the "Contractor" accepts obligations to conduct laboratory research: air, soil. The location of the facilities where samples for research will be selected is determined by the "Client".

1.2. The right of the "Contractor" to carry out the work is confirmed by the Certificate of Accreditation for compliance with the requirements of ST RK ISO / IEC 17025-2007 N. KZ.I.05.0916 dated 27.07.2015.

2. OBLIGATIONS OF PARTIES

2.1. The "Contractor" is obliged:

- perform laboratory research in accordance with the task specified by the "Customer" for a specific type of laboratory research;
- transfer to the "Customer" the results of studies as they are performed;
- perform laboratory research in full and on time within 10 working days from the moment the "Customer" application is received for a specific type of laboratory research.

2.2. "Client" is obliged to:

- assist the "Contractor" in carrying out the work provided for in the orders;
- provide transport for sampling;
- pay "Contractor" the cost of the work performed.

3. COST OF WORKS AND PAYMENT PROCEDURE

3.1. The cost of laboratory research carried out at the request of the "Client" is determined in accordance with the estimate and financial calculation of "APCC" JSC in accordance with the Annex to this agreement. The cost of travel expenses is not included in the estimate and financial calculation and will be provided for additional payment.

3.2. By agreement of the parties on the urgency of performing laboratory work, an additional payment of 10% of the cost of works for an order may be provided.

3.3. Payment for the performed laboratory tests is carried out by the "Client" upon the fact of the performed works on the basis of the invoice issued in accordance with the tax legislation and the certificate of work performed and provided by the "Contractor".

3.4. Payment for completed works is carried out in tenge within 5 banking days after the Contractor provides the test reports and invoices issued in accordance with the tax legislation and the act of work performed.

4. RESPONSIBILITY OF THE PARTIES

4.1. In the event of non-fulfillment by the "Client" of obligations to pay for work, the "Contractor" has the right to suspend the performance of its obligations.

4.2. For failure to perform and improper performance, the parties are liable in accordance with applicable law.

4.3. If there are any deviations from the assignment in the works performed due to the fault of the "Contractor", the latter is obliged to eliminate them free of charge.

4.4. In case of occurrence of circumstances for which none of the parties responds "force majeure", the parties are guided in their actions by the Legislation of the Republic of Kazakhstan.

4.5. All disputes between the parties are resolved in accordance with the Legislation of the Republic of Kazakhstan in the court of Aktobe, unless previously the parties reach a mutual agreement.

4.6. The present agreement comes into force from the moment of signing and is valid until December 31, 2018.

The Agreement is made in two copies, one for each party, each copy being equally authentic.

"Client"

"Cengiz Insaat Sanayi Ve
Tidjaret Anonymous Shirketi" BJSC in Aktau
130000, Aktau, 29-A microdistrict
house 135 Business Center "ABK"
BIN 40741024075
IIC KZ19914082203KZ0I 5C2
branch of SB "Sberbank" JSC in Aktau
BIK SABRKZKA
Tel/fax: 8 (7292) 75-02-05

"Contractor"

"Aktyubinsk Plant
chrome compounds" JSC
030015, Aktobe, industrial zone 15 "B"
BIN 950640000404
IIC KZ669260101119887000
BIK KZKOKZKX
AF "Kazkommertsbank" JSC
Tel.: 8-7132-536-501, fax 536-508

Acting Branch Directors
"Cengiz Insaat Sanayi Ve
Tidjaret Anonymous Shirketi" in Aktau

_____ Duysebaev A.A.

_____ 2018

Chairman of the Board "AZHS" JSC

_____ Himich A.A.

_____ 2018

Estimate and Financial Calculation of "AZSHS" JSC in 2018

Controlled environment	Parameters under investigation	Cost of one specimen excluding VAT
land cover	Sample, pH, oil products, cadmium, lead, zinc	16,967.14
Atmospheric air	Sample, non-organic dust, carbon monoxide, nitrogen dioxide	10,661.09
Industrial waste	Sample, non-organic dust, carbon monoxide, nitrogen dioxide	10,602.87
Surface water	Sample, dry residual, nitrate, sulphate, chlorides, oil products, common iron	10,423.23
Physical factors	Noise, vibration	1,516.87

Chairman of the Board "AZHS" JSC

signed

Himich A.A.

Acting Branch Directors "Cengiz Insaat" in Aktau

signed

Duysebaev A.A.

ACCREDITATION CERTIFICATE

Has been registered in the register of accreditation subjects

№. KZ.I.05.0916

Dated 27 July 2015

Valid up to 27 July 2020.

Environmental Protection Laboratory

"Aktyubinsk's factory of chrome compounds" JSC

Aktobe city, JSC "AFCC", Industrial Zone, section 15 "B"

Accredited in the system of accreditation in the Republic of Kazakhstan for compliance to the requirements of the ST RK ISO/IEC 17025-2007 "General requirement to competence of the testing and metering laboratory".

Sites of compliance assessment: Testing of products as per accreditation area.

Accreditation areas is in the Attachment.

Director

Authority of the Accreditation

D.Sharipov

000336

Kazakhstan agency of applied ecology
Mobile environmental laboratory
050010, Almaty, Zvereva, 47
Mangystau region, port of registration
“Aktau” Technical research ship “Alina”
E-mail: office@kape.kz

Accreditation certificate KZ.T.02.0211
dated 22 December, 2017

AIR RESERCH PROTOCOL

No. P-18-06-01
dated 4 June, 2018

(Total pages) 2

- 1 Name and address of Employer, name of object, facility:** LLP “Akzhol Kurylys”
Section of reconstruction of Zhetybay-Zhanaozen road (0-35 km)
- 2 Aim of research:** Monitoring investigations
- 3 Date of research:** 29.05.2018
- 4 Documents as per which the research is carried out:** MP-4215-002-56591409-2009
Measurement procedure of mass concentration of hazardous substances in the air by the
gas analyzer GANK-4 RK registration No.KZ07.00.01087/1-2015 dated 10.04.2015; Air
pollution control manual RD 52.04.186-89
- 5 Regulatory document establishing the standard of investigated factors:**
Order of the Republic of Kazakhstan Minister of national economy No. 168 dated 28
February, 2015 “About approval of Hygienic standards to the air in the city and rural
communities”
- 6 Measuring devices applied in the research, manufacturing number:**
GANK-4 (AR) No.1451;
Meteoscope-M No.66712; wind speed indicator (anemometer) Testo-416
- 7 Data about measuring device inspection: date and No. of inspection certificate:**
No. 17005102434 dated 24.01.2018; No.VA-10-01-00721 dated 07.02.2018; No.VA10-
01- 18818 dated 15.12.2017 accordingly
- 8 Research is carried out by: position, full name, signature**
Chief specialist of EIEIA Lyubchik-Kotsar A.A.
- 9 Head of MEL: full name, signature**
Stepanov K.A.

/place for seal/

Air research results

Point number	No. of measurement	Measurement date	Time of measurement	CO		SO ₂		NO		NO ₂		Dust	
				mg/m ³	MPC	mg/m ³	MPC	mg/m ³	MPC	mg/m ³	MPC	mg/m ³	MPC
T-1	1	29.05.2018	Morning	<1,5	5	<0,025	0,5	<0,03	0,4	<0,02	0,2	<0,075	0,15
	2		Day	<1,5	5	<0,025	0,5	<0,03	0,4	<0,02	0,2	<0,075	0,15
	3		Night	<1,5	5	<0,025	0,5	<0,03	0,4	<0,02	0,2	<0,075	0,15
T-2	1	29.05.2018	Morning	<1,5	5	<0,025	0,5	<0,03	0,4	<0,02	0,2	0,081	0,15
	2		Day	<1,5	5	<0,025	0,5	<0,03	0,4	<0,02	0,2	0,075	0,15
	3		Night	<1,5	5	<0,025	0,5	<0,03	0,4	<0,02	0,2	<0,075	0,15

Meteorological research results

Point number	Date of measurement	Time of measurement	Wind speed, m/s	Wind direction	Air pressure, mm rt.st	Humidity, %	t, °C	General weather states
T-1	29.05.2018	Morning	2.8	W	747	21.2	18	Clear
		Day	3.0	W	747	25.8	26	Clear
		Night	3.5	W	747	26.2	24	Clear
T-2	29.05.2018	Morning	2.7	W	747	21.3	18	Clear
		Day	3.0	W	747	25.9	28	Clear
		Night	3.5	W	747	26.2	23	Clear

Ministry of Public Health-Care of RK

Branch of RSE on the right of economic
management "NCE" of KOOZ MH RK MO

Form code according to National Classifier of
Management Documentation
Code of the organization according to General
Classifier of Enterprises and Organizations
Medical documentation Form No. 134 / y
Approved by the order of the Minister of National
Economy of RK
No. 415
dated 30/05/2015

Protocol on noise measurement

No. 21 dated 29/05/2018

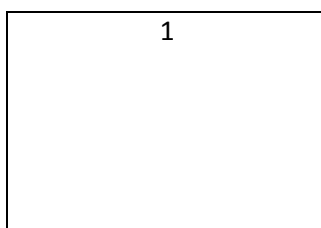
1. On the territory of residential buildings located at: house 60A, Akboken-2 microdistrict,
Munaishy village, Karakia district, Mangystau region

2. The purpose of the measurement: according to Agreement No. 184 dd. 29/05/2018
3. The measurements were carried out in the presence of the object representative
4. Measurement means: Analyzer of noise and vibration "Assistant" No. 238916
5. Information on the state verification: SV No. ЮЯ-16-1701295 from 04/12/2017 to 04/12/2018
6. ND in according which the measurements were carried out: The order of Ministry of National
Economy of RK No. 169 dd. 28/02/2015 "To approve Hygiene Standards for physical factors that
affect humans"

(indicate)

7. The main noise sources and their character: working transport on the highway
8. The number of working staff
9. Sketch of the space (territory, working place, hand-powered machine) with the application of a
noise source (vibration) and the arrows indicating the locations of installation and orientation of
microphones (sensors) (ordinal numbers of measurement points)

Residential building №60A



Ministry of Public Health-Care of RK

Branch of RSE on the right of economic
management "NCE" of KOOZ MH RK MO

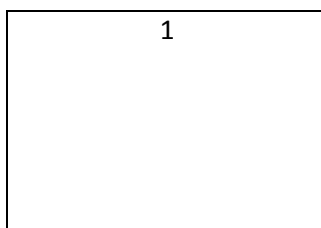
Form code according to National Classifier of
Management Documentation
Code of the organization according to General
Classifier of Enterprises and Organizations
Medical documentation Form No. 134 / y
Approved by the order of the Minister of National
Economy of RK
No. 415
dated 30/05/2015

Protocol on vibration measurement

No. 21 dated 29/05/2018

1. Name of the business property, address: Akzhol Kurylys LLP On the territory of residential buildings located at: house 60A, Akboken-2 microdistrict, Munaishy village, Karakia district, Mangystau region
-
2. The purpose of the measurement: according to Agreement No. 184 dd. 29/05/2018
 3. The measurements were carried out in the presence of the object representative
 4. Measurement means: Analyzer of noise and vibration "Assistant" No. 238916
 5. Information on the state verification: SV No. ЮЯ-16-1701295 from 04/12/2017 to 04/12/2018
 6. ND in according which the measurements were carried out: GOST 31191.1-2004 "Change of general vibration and its assessment to human impact"
 7. The main vibration sources and their character: working transport on the highway
 8. The number of working staff
 9. Sketch of the space (territory, working place, hand-powered machine) with the application of a vibration source and the arrows indicating the locations of installation and orientation of microphones (sensors) (ordinal numbers of measurement points)

Residential building №60A



Examination of the samples was carried out for compliance of ND: GOST 31191.1-2004 "Change of general vibration and its assessment to human impact"

Name of the specialist conducted the research: laboratory assistant EMP and FF Tadjhimambetova K.N. signed

Name of head of laboratory: laboratory assistant EMP and FF Kenzheeva A.K. signed

Deputy Head of RSE on the right of economic management "NCE" of KOOZ MH RK MO: Rsymbetova R.S. signed

Stamped

The protocol has been made in 2 copies.

The research results are only distributed for samples subjected to tests.

Partial reprint of the protocol without permission is forbidden.

Appendix B



Air sampling



Air sampling

Appendix C

**The Ministry for Investment and Development
of the Republic of Kazakhstan**

**Contract: 001-ADB / CW-2017 Lot 1, 0-35 km under the Loan 2967-KAZ: MFF
CAREC Corridor 2 (sections in the Mangistau region), Investment Program,
Project 2**

Funded by the Asian Development Bank (ADB)

**ENVIRONMENTAL REPORT
FOR THE FIRST SIX MONTHS OF 2018**

Road section "Zhetybai-Janaozen" 0-35 (35 km)

Prepared by: Aitenov SK

1. Description of the project

The project includes reconstruction of existing 3-category road of republican importance "Zhetybai-Zhanaozen-Kendirli-border of Turkmenistan", which is being reconstructed as the category B-1, and within the transport interchange passes in the II category.

The need for reconstruction of the road due to the fact that in this area of international road route road parameters do not meet modern safety requirements.

The project will include reconstruction of 35 km of road between the Zhetybai and Zhanaozen villages. The highway passes through desert-steppe environment, but the project does not provide a new route plan, all works will be carried out within the existing right of way (except for the construction of bypass around Zhanaozen).

The project provides filling and widening the roadbed, reconstruction and construction of new engineering structures - culverts, the construction of new transport interchanges in two levels on a bypass of Zhanaozen, the new overpass road junction in two levels on the bypass of Zhanaozen and the new overpass over the railway at 175 km PK4-50 of "Zhetybai-Uzen" haul, as well as measures on arrangement and reclamation of occupied lands.

2. Report on the implementation of environmental management plans

In accordance with the requirements of the contract before the works the Contractor made Environmental Management Plan, which includes:

- Water quality management plan,
- Plan for air protection and dust suppression,
- Borrow pit management and reclamation plan,
- soil management plan (ground)
- Fuel and chemicals management plan,
- Solid Waste Management Plan,
- Plan for noise and vibration control,
- historic and cultural heritage Management Plan

Environmental Management Plan is designed to determine the impact of planned economic and other activity on the environment, including human health and safety, air and water sources, flora and fauna, subsoil, soil, landscape, cultural and historical monuments and other material objects, the relationship between these factors and the development of recommendations on the environmental destruction of the environment prevention, degradation, damage to ecosystems and natural resources.

This report is based on the results of the work of the Contractor in May 2018, the report presents the results of air quality monitoring, noise and vibration measurements.

2.1 Water quality

The site for the reconstruction of the road is characterized by a total lack of surface water. Temporary watercourses arise only during heavy rains or heavy snowmelt. There are no permanent streams. During construction, discharge of any wastewater to the relief or to surface water sources is not carried out.

For construction works, drinking water is used to provide workers and the functioning of the Zhetybai site. Water is also used for all technical purposes (watering of roads, etc.).

To provide water, the following agreements have been concluded: with the State Utility Company "Tourmys Service" on the right of economic management of the Karakiyansky district department of housing and communal services, passenger transport and highways.

Wastes are disposed of in accordance with the concluded contracts with the Individual

Entrepreneur "Ybyrayev SE".

To prevent exposure to surface and ground water in the event of accidental bottling or leaks, the Contractor shall perform the following activities:

- Refueling is carried out on a concrete surface. All the spilled fuel is collected and disposed of, the sections are disposed of for emergency fuel spillage in accordance with the concluded agreement with Landfil LLP.
- work on the repair and maintenance of machinery are made in a specially designated repair area,
- special bitumen storage provided, bitumen transportation is carried out by road - bitumen trucks.

2.1 Air protection

To reduce the impact on the air and reduce dust in the work area, the Contractor performs the following activities:

- the production of asphalt, concrete is carried out on a specially fenced-off area in installations with an air purification system,
- watering is carried out during construction and earth works,
- uncontrolled burning of waste is not allowed,
- transportation of asphalt and other dusting materials is carried out in the presence of protective canopies on transport
- Regular repairs and maintenance of construction machinery and machines are carried out.

2.3. Borrow pits

On the road section "Zhetybai - Zhanaozen" 0-35 km are planned to excavate 8 borrow pits. The contractor developed and coordinated a project of prospecting for sand and gravel mixture, sand, clay rocks. The project of industrial development of sand and gravel mixture, sand, clay rocks and limestone (semi-gravel soil) on 8 borrow pits was developed and coordinated with authorized state bodies.

2.4. Land resources (soil)

When performing works on the reconstruction of the road to reduce negative impacts, the Contractor implements a set of measures aimed at restoring disturbed lands and preventing their contamination;

- construction work is carried out in the places assigned to the working projects,
- transportation of loose and other materials, carried out with sheltered bodies,
- if the waste strips are contaminated with various wastes, friction materials (sand, rubble), rubber wear products and garbage, waste is systematically collected and transported for utilization, processing or use,
- Refueling of vehicles with fuel and oils is carried out at stationary or mobile refueling points in specially designated places remote from water bodies. Refueling of stationary machines and mechanisms with limited mobility (excavators, etc.) is made by tankers,
- in the repair area, waste oil is collected,
- the movement of construction equipment to be carried out on existing roads,
- in places of work and intensive traffic, water is watered roads, construction sites,
- Collection and utilization of industrial wastes generated during construction is carried out.

2.5.Storage of fuel and chemicals

During performance of works the Contractor carries out refueling of equipment from tankers.

Bitumen is stored in a specially designed bitumen storage, transportation is carried out by bitumen trucks.

When storing materials of inert composition, measures are taken to prevent erosion by storm water and to carry out materials with runoff. This is achieved by storing on elevated sites with a densified and protected surface, a vertical planning of the territory, the installation of upland and drainage ditches along the perimeter of the storage area. Equipment for the production and storage of mineral powder is provided by means of pneumatic transport with sealed paths and nodes.

2.6.Plot construction site

Construction site Zhetybai is situated in accordance with the approved design, approved by the state authorities.

The site is located outside the protection zone to a distance greater than 1 kilometer from the nearest populated area,

To reduce the impact on the environment and reducing the removal of pollutants from the construction site the following activities are carried out:

- removal of topsoil and measures were taken to protect it from contamination: the mixing with mineral soil, contamination, water and wind erosion,
- site area is covered with a protective insulating layer,
- site area is cleaned and watered on a regular basis,
- operation of asphalt plants, production of mineral powder is carried out dust and gas cleaning systems in wastewater treatment plants,
- the construction site is fenced,
- storage and transport of bulk and fluid materials is in place. The contract for works on disinfection is made. Medical center is functioning.

2.7. Solid Waste Management

On all kinds of waste passports are in place. Production and consumption waste is collected, stored in a disposal site. The containers are mounted on special platforms. All production and consumption waste are exported to specialized companies for further processing, recycling or disposal.

2.8 Noise and vibration

The impact of construction noise and vibrations on sensitive receptors is limited due to the fact that the road intersects at populated areas virtually the entire length. Construction work on the construction of bypass roads will be carried out at a sufficient distance from populated areas (around 2 km), where the objects that require no special attention. Sites are monitored monthly for noise and vibration.

2.9 Building operations

Asphalt plants (ACP) are remote from any communities. Contractor has taken the necessary precautions for works with bitumen. In particular, hot bitumen contact with water and dust is constantly avoided. Bitumen spills are immediately eliminated. Concrete works: dust is regularly

suppressed by sprayed water.

2.10 Monuments with historical and cultural heritage

Natural, historical and architectural monuments were not found.

2.11 Information about the reviewing of complaints from local residents and interested members.

The procedure for handling complaints related to the project serves to provide an effective and systemic mechanism for the Projects to answer questions, provide feedback and handle complaints from affected individuals, other stakeholders and the public.

Any person who has experienced or is concerned about the project activity has the right to apply to the Contractor in writing. Applicants or interested persons can visit, call or send a letter in paper or electronic form, as well as by fax to the office of the project located on the territory of the construction site near the village of Zhetybai or to the office of the company located in Aktau. Acceptance of complaints filed personally, by phone, by letter in paper or electronic form or by fax will be confirmed. Requests and complaints concerning which clarification was carried out and a decision was made at the time of reception are closed immediately. The case requiring further evaluation and action is considered by the Contractor's specialists within ten working days, after which a written reply is sent to the Applicant. The Complaints commission coordinator at the regional level disseminates relevant information to the commission members, prepares the minutes of the complaints committee meetings and progress reports and ensures that actions and decisions are properly documented.

The contractor keeps a record of and records the complaints received and the responses provided. Information on complaints and responses received is reflected in the Environmental Protection Report of the Contractor.

Contractor Contact data

Address: construction camp Zhetybai

E. mail: 7bai-zhol@mail.ru

Contact details for Contractor in Aktau:

Address: 130000 Republic of Kazakhstan, Mangystau region, Aktau, Industrial zone 9/43

Phone: 8 (7292) 305-500, 305-504,

E-mail: akzholkurylysa@mail.ru

2.12 Correspondence between the Contractor and the Engineer

Letters received from the Engineer:

- №0055 dated 23.03.2018 - environmental protection
- №0096 dated 03.04.2018 - provision for environmental protection plan.
- № 0136 of 13 April 2018 - coordination plan environmental management and mitigation plan.

Letters sent by the Contractor to the Engineer

- №AAZK-RC-0025-2018 dated 08.02.2018 Obtaining standards on emissions into the environment.
- №AAZK-CS-0079-2018 dated 11.04.2018 provision of environmental plans.

2.13 Information on the meetings with the Consultant to other stakeholders

Within 6 months of 2018 joint meetings were held with the engineers and representatives of the ADB on common issues.

2.14 Information about the detected violations and the measures taken thereof

During 6 months of 2018 the representative of the Contractor monitored the implementation of

Road section "Zhetibay-Janaozen" 0. 35 (35 km)

environmental management plan. Control results are given in the annex in the form of control sheets. The table lists the types of violations and the measures taken.

Date control held	Found violations	Measures taken
04/16/2018	There is no container in the territory of contracting organization	Trash container placed
05/29/2018	Household waste on the territory of the construction site and the accommodation camp	Issued instructions to eliminate violations
	Construction waste on ACP site	Provide for waste disposal
06/20/2018	Oil spill on the parking lot	Issued orders to eliminate violations
	Abrasive dust on the asphalt plant site	Provide for waste disposal

3. Results of environmental monitoring in the reconstruction area "Zhetybai-Janaozen" 0-35 (35 km) per 6 months 2018 year.

After approval of the Action Plan including the monitoring program on the basis of the service agreement, specialists of the Environmental Laboratory KAPE-Aktau Branch of the Kazakhstan Agency of Applied Ecology LLP conducted laboratory and analytical studies for the reconstruction of the Zhetybai-Zhanaozen section "0-35 (35 km)". The customer of the works is Aq zhol kurylys LLP in the city of Aktau. Test reports attached in the appendix to the report.

4. PHOTOS

Measuring noise and vibration



Measuring of noise and vibration



Road section "Zhetibay-Janaozen" 0. 35 (35 km)

Sampling of air



Sampling of air



Sampling of air



Sampling of air



Sampling of air



Sampling of air



Sampling of air



Construction of ACP



Construction of ACP



Construction of second ACP



Bitumen storage



Bitumen storage



Road section "Zhetibay-Janaozen" 0. 35 (35 km)

Rolling of layer PK112+00



Cutting of embankment



Compaction of formation with roller



Compaction of bottom layer with roller



Placement of crushed stone sand



Asphalt pavement at PK29+20



Asphalt rolling



Drainage culvert at PK 6+65



Double culvert at PK215+41



Relocation of communications at PK 52+54



Road segment "Zhetibay-Janaozen" 0. 35 (35 km)

Capping of formation at PK 190+200



Installation of culvert at PK 243+82



Foundation under culvert at PK ПК 261+60



Foundation under culvert at PK 261+60



SGM at PK 202+205



SGM at PK 202+205



Crushed stone base at PK75+178



Asphalt at PK 130+134



Asphalt at PK 130+134



Asphalt at PK130+134



Road section "Zhetibay-Janaozen" 0. 35 (35 km)

Execution of works: Contractor has its own accredited laboratory Ak Zhol Kurylys Testing laboratory LLP testing of soil, gravel, SGM, asphalt and concrete products. Contracts for the supply of SGM, gravel, concrete and asphalt. Contract for supplies of bitumen is made with LLP "Caspi bitum" According to project 4 soil borrow pits 4 (№ 3, 4, 5, 6) and two pits for the extraction of sand and gravel.

All borrow pit are approved by the Engineer.

Geodetic survey is completed, working drawings under preparation.

Updated technical specifications for the reorganization of all engineering networks crossing the motorway are obtained.

The contractor provided the service personnel with an equipped office on the territory of the construction campus.

On the territory of the construction base of the contractor, the installation was completed and the second of the 2 ACPs have been put into operation.

Checklist of environmental monitoring

Checklist of site monitoring		
Site visit date:	Engineer Representatives	Engineer Ref.No.
	Contractor representatives Aitenov SK	Contractors Ref.No.
Weather Conditions:		
Work done At the moment:	The topsoil was removed from PK27 + 00 to PK350 + 00 (32.3 km) Work is underway on the construction of the roadbed. The areas within PK28 + 80 at PK270 + 00 (24.12km) and from PK300 + 00 to 315 + 00 (1.5km) are filled. The links of pipes and the heads of culverts are mounted on the right side of the road under construction on PK6 + 65, PK112 + 73, PK126 + 74, PK38 + 57, PK165 + 50 PK 195 + 70, PK 215 + 41, PK 243 + 82, PK 261+ 60 backfilling of the culvert. Foundations are made for the underpass on the right side of the road under construction on the PK 331 + 91 The construction of the subbase of SGM pavement is underway, a section with PK28 + 80 to PK219 + 00 (19.02 km) is made. The construction of crushed stone base is underway, the section PK28 + 80 to PK192 + 00 (16.32 km) is made. The asphalt base course is underway made of a coarse-grained porous asphalt-concrete mixture, a section is completed from PK 28 + 80 to PK 134 + 00 (10.52km)	
Problems,related to the environment	Possible reasons	Proposed measures to reduce risk
The environmental audit was carried out:		contractor Representative: Aitenov SK

Road segment "Zhetibay-Janaozen" 0. 35 (35 km)

#	pollution control	Completed		During		Comments
		Yes	No	Yes	No	
Contractor camp						
1	Placed septic tank and purified in accordance with the approved procedures	✓				
2	All waste water sent to the septic tank or tanks for industrial water	✓				
3	All hazardous liquids are stored in the specified place on the basis of the collection of tight runoff	✓		✓		
4	Solid hazardous materials are stored in a secure location on the established work areas	✓		✓		
5	Drains are collected in the drainage system and disposed of by the Contractor	✓				The drains are cleaned as needed.
6	All vehicles entering and leaving the town, to be controlled	✓		✓		
7	Local communities and organizations are informed of the construction schedule and any noise producing events on a regular basis by employees and other events			✓		
8	open containers of material storage are covered with canvas.			✓		
9	Open burning prohibited	✓				
10	Fire fighting equipment <ul style="list-style-type: none">▪ Bucket for sand and shovel▪ Foam fire extinguisher▪ Safety coating in the dining area	✓				Fire extinguishers have been tested in February and were refilled as necessary.
11	access of other people in the town is prohibited by installing fencing and security organization	✓				
12	All employees are provided with personal protective equipment (PPE)	✓				
13	Smoking prohibited, with the exception of rooms for smokers	✓				Smoking is strictly prohibited in offices. All set to the appropriate signs.

Road section "Zhetibay-Janaozen" 0. 35 (35 km)

14	Appropriate traffic signs and warning boards with inscriptions at the site and in dangerous areas	✓				
15	Drinking water is provided to all employees from the commercial and licensed sources.	✓				
16	Specialist. Clothing all employees are cleared on a daily basis	✓				As needed.
17	All employees are provided with three meals a day	✓				
18	Canteen with sanitary and hygienic conditions in the city	✓				
19	clinics and first aid kits in the town and work areas.	✓				Medical center on campus is open 24 hours a day. First aid kits are replenished as needed and installed in workplaces.
20	Health of all the staff is under the control of the town doctor, and provided related services, as carried out monthly medical examinations	✓				
21	The entire area has been cleared, there is no unnecessary waste, except for specially designated places for waste disposal					
22	Provision of rest areas in camp	✓				
23	Child labour (Below 15 years)	✓				
Production area						
1	Stock bitumen and chemicals is far from the watercourse and the dam walls are impermeable and can comprise 110% of the tanks	✓				
2	Liquid from the asphalt plant waste is stored in a prescribed container, and they emptied Specialized equipment suction ≤MTTSTH≥ Lyman					
3	Bitumen is stored in the prescribed place in the concrete and is bent to a volume of 110%	✓		✓		

Road segment "Zhetibay-Janaozen" 0. 35 (35 km)

4	Solid from the asphalt plant waste is stored at the designated place and disposed of in accordance with the approved procedures	✓				
5	Plant area is layered with crushed stone for the purpose of reducing the dust level	✓				The plant area partly spread gravel to reduce the dust level
6	The plant area is spread gravel to reduce dust	✓				As needed
7	The plant may not release any waste to any water flow; impermeable concrete pools will be built for the reception of such waters	✓				Plant does not produce wastewater.
9	All employees of asphalt, concrete plant and crusher used protective masks	✓				On a daily basis, TB department conducts monitoring the compliance of safety regulations in the workplace
10	Sands and fractions for concrete and asphalt are kept in humid conditions and covered place	✓		✓		
11	The asphalt and concrete plants are provided with fire equipment	✓		✓		
12	Plant or equipment, causing high levels of vibration are built properly maintained and managed accordingly	✓				
13	Rivers / fenced passage for water protection	-				
Fuelling stations						
1	Refueling is strictly Controlled and resolved only at the petrol station and workshop	✓				
2	Fuel storage tanks are protected, they are impermeable, tank covers are closed	✓				
3	gas stations are equipped with fire-fighting equipment be checked weekly	✓				
4	At the gas station warning signs are installed	✓				
5	Gas station is provided with a special extra waste basket			✓		

Road section "Zhetibay-Janaozen" 0. 35 (35 km)

Workshop and Contractor's carwash						
1	liquid dangerous materials are stored in the specified place in the workshop	✓				The territory of the workshop concreted, liquid waste is stored in closed containers.
2	Solid hazardous materials are stored in the specified place in the workshop	✓				
3	there are special containers for collecting the treated oil and hydraulic fluids	✓				There are containers for the collection of waste oil.
4	Treated oil collected in canisters concreted up to 110% volume and purified cans in accordance with the approved procedures	✓				
5	Workshop is equipped with a drainage system	✓				
6	Each transport passes inspection and maintenance on a regular basis	✓				
7	All construction equipment complies with Euro standards and equipped with modern equipment noise suppression	✓				
8	Equipment for noise suppression techniques all verified and Supported in accordance with the approved procedures	✓				
9	All employees are provided with a workshop welding equipment and personal protective equipment (PPE)	✓				
10	The entire process water is collected in the reservoir tank and concreted purified according to established procedures	✓				Cleaned as needed.
The project road						
1	All roads construction work aimed at watered using watering machine	✓				
2	On the project road in the appropriate places are the flags for the passage of cattle, sheep and other animals	✓				At the end of the assembly and engineering structures will be installed the appropriate signs.

Road segment "Zhetibay-Janaozen" 0. 35 (35 km)

3	Areas of culverts and bridges are equipped with warning tape and unscrewable signs	✓				
4	Protections and border crossing services are installed on all workstations where you want to	✓				
5	Storage waste of any type, as well as machines or parking vehicles are not permitted on the distance of 100 m from any stream (including drainage or irrigation installations)	✓				
6	working areas and dangerous areas are equipped with all the appropriate traffic signs and warning labels	✓		✓		By road signs next DB separated on a daily basis.
7	Construction equipment and plants are properly maintained to reduce gas emissions	✓				
8	Measures to Noise Control on special objects					
Borrow pits						
1	Borrow pits and quarries are equipped with drainage	✓				
2	At 200 m from the nearest settlement, all construction work ceased from 10.00 pm to 6.00 am	✓				
3	fractions of crushed stone are extracted only from approved quarries	✓				
4	Extraction of crushed stone is carried out at 100 m from the river or waterway	✓				
5	The stockpile does not exceed 3 m in height	✓		✓		
6	All vehicles with an open body used to transport materials with possible dusting designed for this purpose with a well matched folding bodies	✓				Trucks are provided with canvases for transportation of bulk materials.
7	During construction works to limit the amount of noise in accordance with national standards	✓				

Road section "Zhetibay-Janaozen" 0. 35 (35 km)

8	Materials with possible dusting not charged if the level exceeds the hinged bodies. Closed clean tarpaulin.	✓				
9	All vehicles, industrial equipment and devices comply with Euro standards on exhaust emissions	✓				
10	All the temporary acquired land is restored	✓				All temporary lands that were involved in the construction in accordance with the law, will be restored at the end of the project.
11	All remnants of materials and contaminated land sites collected and removed in accordance with the approved procedures	✓				
12	During transportation and processing of materials produced irrigation water	✓				
13	Any immediate areas damaged as a result of dumping, are restored to its original appearance	✓				All areas are involved during construction will be restored to its original appearance.
14	River banks are protected from premises or materials temporary piles Contractor	✓				
15	The negative consequences of violations or because of construction work is monitored, with an acceptable level in accordance with the standards	✓				
16	Access Road to quarries, reserves and traffic conditions are maintained in accordance with approved standards	✓				
17	Draining and water drainage, avoiding flooding or damage to other works or services causing erosion					
Flora and fauna						
1	Trees and shrubs outside the construction site, but within the road reserve is usually protected from damage	✓				

Road segment "Zhetibay-Janaozen" 0. 35 (35 km)

2	None of the old trees are not cut down during construction	✓				
3	Felling is not carried out without prior authorization from the relevant local authorities					
4	Trees and bushes cut down and removed only if they interfere with the required temporary or permanent work					On the territory of the construction site, there is no greenery
5	Construction work is carried out on the sites construction of the bridge at the time of crop (specify yes or no construction work in the transition, specify the date)			✓		Construction of bridges does not affect the vegetation, as in remote locations.
6	Construction on sections of the river occurs only during periods of low flow, to minimize pollution					

APPENDIX D



**MINISTRY OF INVESTMENT AND DEVELOPMENT
REPUBLIC OF KAZAKHSTAN**

**Loan 2967-KAZ: MMF CAREC Transport corridor II
(Sections in Mangystau oblast)
Investment program, Project 2**

**Financed by:
Asian Development Bank (ADB)**

**ENVIRONMENT PROTECTION REPORT
FOR 1 HALF OF 2018**

Section km 35 – km 73 (38 km) «Zhetibay-Zhanaozen»

Prepared by: Andrey Ivlev

Content	
1	Project description 3
2	Environment management plan performance report 3
2.1	Progress report on the measures required in Annex A to the contract documents 6
2.2	Report on monitoring plan performance on environmental protection (construction period), in accordance with Annex B to the contract documents 17
3	Environment monitoring results during reconstruction of the «Zhetibay-Zhanaozen» road section 35-73 (38km) for 1 half of 2018 21
4	Summary and Conclusions 37
5	Appendices 39

1. Project description

Project includes reconstruction of existing 3 category nationwide road “Zhetybai – Zhanaozen – Fetisovo – Republic of Turkmenistan border”, which reconstructed to 1-B category, and at the area of interchange passes to II category.

Road reconstruction necessity is connected with the non-satisfying international road route section road parameters to modern traffic safety requirements.

Project will include itself the reconstruction of the section at 38 km of the nationwide road between v. Zhetibay and c.Zhanaozen. Road crosses the desert steep area, but project does not provide new carriageway plan, all the works will be executed at the area of the existing road reservation (except the c.Zhanaozen bypass road construction).

Project provides construction of the new road pavement with permanent type, designed under the load A2 to axis 13 ton/power. Therewith provided subgrade fill and widening, relocation and construction of the new artificial structures – culverts, construction of the new double leveled interchange on c.Zhanaozen bypass road, new overpass at the double leveled interchange on c.Zhanaozen bypass road and new overpass through railway at km 175 PK4+50 railway haul “Zhetibay-Uzen”, also activities on land arrangement and recultivation.

2. Environment management plan performance report

In accordance with the requirements of Contract before starting work plan of environmental management has been finalized, as described below:

- Water quality management plan
- Dust prevention measures management plan
- Quarries restoration management plan
- Soil condition management plan
- Fuel and chemicals management plan
- Construction site management plan
- Solid wastes management plan
- Noise minimization management plan.
- Specific construction activity management plan,
- Historical and cultural heritage management plan

The Environmental Management Plan is designed to determine the impact of planned economic and other activity on the environment, including human health and safety, air, water sources, flora and fauna, minerals, soil, landscape, cultural and historical monuments and other material objects, interrelation between these factors and the development of recommendations to improve the environment, prevent destruction, degradation, damage of ecosystems and natural resources.

The Contractor developed and submitted for approval Plan on environmental impact mitigation and Monitoring Program.

Provided Plan on environmental impact mitigation and Environmental Management Plan approved by Engineer Service Grusamar Ingeniaria Y Consulting S.L.Y& TOO «SNS-2017» letter no.0137 dated on April 13, 2018.

This report is a work report carried out by the Contractor for first half of 2018.

To control the execution of the management plan, environmental specialist ecologist of the Contractor constantly monitors the entire section of the road. During construction site inspection, the Contractor filled checklist of environmental monitoring. The checklists are attached to the monthly reports.

The information on the environmental management plan implementation, monitoring results for 2018, the list of permits obtained by the Contractor to perform the work in accordance with the legislation of RK and photos are presented in tabular form of this report.

2.1 Progress report on the measures required in Annex A to the contract documents

Influence/problem related to environmental	Measures for impact reduction	Measures taken by the Contractor
A.2.1 The Contractor has not hired an ecologist for the environmental monitoring program preparation during construction and to implement all measures for impact reduction and control as specified in the Environmental Management Plan.	<p>1. As stated by law, the Contractor will be required to hire an expert licensed for the environmental monitoring program preparation during the construction works and obtaining all relevant permits. The contractor is not allowed to mobilize workers without an approved environmental monitoring program during construction and appropriate permissions in situ.</p> <p>2. The Contractor and his ecologist are provided with a training conducted by an international expert in the ecology field.</p>	The Contractor has hired an ecologist that has a higher professional education and work experience in the automobile roads construction companies.
A.2.2 Resources	<p>1. Resources are prohibited on the protected areas.</p> <p>2. If the resources required out of long time laid mining, then the following measures should be taken for the impact reduction on the potential areas:</p> <ul style="list-style-type: none"> - avoid the areas with known and/or erosion problems; - avoid the scarp slope formation; - provide a suitable location for the excavated material storage, ensuring that the drainage at the site will not be interfered and excessive mud accumulation does not happen; - set the appropriate restrictions to prevent unwarranted access and inbreaking of livestock; - avoid harming to adjoining lands during the haulage roadway installation; - the topsoil storage, protection and re-using for back-filling. The slopes formation and compaction prior to the topsoil previous level application; - develop the quarries activities management plan including all planned activities, quantity, transportation measures and precautionary and safety measurements. The plan should provide full details of measurements for environmental protection, especially taking into account the protection of local water resources and proper sites decommissioning. 	<p>In accordance with the current legislation, Contractor has developed the quarries activities management plan that was submitted to the Engineer for approval. It was developed projects on search and industrial clay rock excavation from soil sections 1, 2, 7, 7-2, 8, 8-1, located in Mangistau oblast Republic of Kazakhstan, for road reconstruction Zhetibay-Zhanaozen-Fetisovo-Republic of Turkmenistan border” km 35-73.</p> <p>8 areas on soil mining stocks that are on the State Register of Reserves are foreseen by Project. The plan has been consistent in all the authorized state bodies.</p> <p>Resolution for environmental emissions for production period was received.</p> <p>The quarries are located on the not prohibited areas.</p>

	<p>- this management plan should also specify re-using and pit arrangement. The recovery variations may include a land recultivation as it specified by Mangystau committee of forest and hunting management, using the local herbage plants and bushes that discharge function of soil fixing and prevent further washing out and erosions; choose the right season and methods to ensure the proper land recultivation and the bioengineering decisions using where it is necessary.</p> <p>- Appropriate period selection and method of good recultivation and use of bioengineering solutions, where applicable.</p>	Soil mining is being carrying out as per the approved project solutions. The supervision results are represented in the checklists.
A.2.3 Soil erosion	<p>1. All rehabilitation and correcting works on the embankments, as well as the longitudinal profiles and cross-sectional profiles, described in technical drawings, should be strictly adhered during the removing and backfilling operations.</p> <p>2. The Contractor will be responsible for ensuring the material choice is less susceptible to erosion for allocation it around bridges and culverts. In addition, he should ensure the territory recultivation including exposed; (I) range of fast-growing and resistant to eating animal species native grasses and shrubs; (II) the immediate recultivation of all slopes and embankments are not covered by gabions network; (III) the allocation fibrous substrate to accelerate plant growth.</p>	All works on the embankments and profiles are being carried out in strict accordance with the approved drawings.
A.2.4 The petrochemicals unsuccessful treatment such as fuel, lubrication butum, potentially leading to spills and pollution.	<p>1. The Contractor has to take the following measures to prevent the spills on the all production areas:</p> <ul style="list-style-type: none"> - all refueling should be made on the concrete surface with a leakage collecting reservoir tank that can be cleaned, and all spilled fuel should be recovered and retreated on the base of agreement with the fuel supplier. - all repair works and technical maintenance should be carried out on the concrete surface with dirt collector for spilled oil or oil trapping pan, they should be provided on all service places and a training should be conducted for all mechanics/operators. 	<p>The Contractor has taken the following:</p> <ul style="list-style-type: none"> - the lubricant materials storage is being carried out in leak-proof closed tanks have a fence and fire extinguishing equipment. - the road construction vehicles fueling is being carried out with a fueller «just in time system». <p>Repair works and vehicles maintenance are being carried out in the repair zone on the construction site of the Zhetybay village area. Potential contaminated areas with petrochemicals are being found during the</p>

	<ul style="list-style-type: none"> - wherever the fuel used and there is possibility of spills and leaks, for example, in the generators, the oil sump tanks should be installed to prevent leakage. All secondary raw material should be refined. - the refueling points should be equipped with appropriate fuel injectors and the means to prevent accidental spills. - it should be stored in dark, dry safe place, where it is not possible leak in the water or on land during all the works. Barrels should be recycled, at least once a year. - any spills should be cleaned as per rules and standards of Government of Republic of Kazakhstan. The protocols should be submitted to PMC immediately. 	<p>ecological monitoring and shown in the checklists.</p> <p>During the ecological monitoring in 2016 the facts of some areas pollution with petrochemicals. The assignments to eliminate violations have been given for all the identified facts. The monthly reports include assignments performance photos and bring contaminated sites in proper form.</p> <p>The areas polluted with petrochemicals are removed, the soil saturated with petrochemicals are removed as per to the concluded contract.</p>
A.2.5 Withdrawal of water may lead to the conflicts with local water users	1. The Contractor shall coordinate timely delivery of portable and process water on construction site.	<p>The Contractor concluded the following contracts: Подрядчик заключил договора:</p> <p>Contract with Ozinvest – clear water, for road watering.</p> <p>Contract GKP Turmys-Service portable water, to use in Zhetibay Camp.</p> <p>Contract Temirzholsu-Mangistau – portable water delivery and discharge water from Shetpe Camp.</p> <p>Realos LLP CGZ/26/2018 – household fecal waste water.</p> <p>Realos LLP CGZ/3/2018 - process water to Zhetibay Camp</p>
A.2.6 Impact on the air quality	<p>1. The Contractor should include all following necessary measures to reduce the air pollution and dusting that may have an impact on the residents' health:</p> <ul style="list-style-type: none"> - provide the production staff with dust respirators, - regular water pouring on bypass and approach ways to the quarries, 	<p>The Contractor fulfils the following measures to reduce the impact on environment:</p> <ul style="list-style-type: none"> - dedusting is performed by the using of distributing tanks equipped with spreading devices during earth works. Dedusting is

	<ul style="list-style-type: none"> - provide the concrete mixing plant with filter material and/or humid scrapers to reduce the dust emission level, - the exposure covers fixing on the all dump trucks transporting the material that may cause to dusting, - the bypass and approach ways construction for relevant distance from the residential districts, especially from the schools and hospitals, - not burn the wastes and other materials on the construction site without PMC permission, - construction heavy vehicle should be in good technical condition, maintained regularly, engines should be switched off if the vehicle not used, - the vehicles with an open loading of transporting the materials potentially dust-forming should be properly side panels and tailboard, as well as should be covered with a canvas cloth, - during a strong wind, it is not allowed to work with the formation of dust in the 200 m from residential areas. Special precautions should be applied about areas that require special attention, such as schools, kindergartens and hospitals. 	<p>carried out on the bypass roads, the approach roads to the construction site,</p> <ul style="list-style-type: none"> - the transportation of the soil and other mixes, prepared in mixing plants, is carrying out with special vehicles properly covered preventing erosion and spilling of the transported material to the work site, - used the serviceable vehicle with selection of the type of fuel, the type of engine and its mode of operation and the load, - the works production technology cycle is held, - the loading and unloading of dusting materials (cement and etc.) is being done mechanically, manual operating with these materials are allowed only as an exception in taking appropriate action against spraying (protection from wind, loose and etc.). -installed signs restricting speed, - performs the atmospheric air monitoring under the agreement with the accredited laboratory, - technical maintenance and repair of road construction vehicle and transports are organized in the special zone of construction camp, -vehicle traffic is carried out on the existing temporary service roads to reduce the impact of ongoing work on the composition of air, - the vehicle refueling is carried out in the special places,
--	---	--

		<p>- the operations are stopped when the weather conditions are not relevant.</p> <p>Despite on the difficult weather conditions the Contractor took additional measures to increase the frequency of the work areas watering.</p>
A.2.7 Potential impact, connected with asphalt plant	Selection of section for asphalt plant (including for crushers) not less than 2 km from nearest locality, and always on downwind side taking into account rose wind.	<p>Installation of crusher, asphalt, concrete plants executed in compliance with working designs, that were approved with concerned state authorities. Camp of road section «Aktau-Zhetibay» and related to Karakiya region in Mangistau oblast territory that located from 73 km from asphalt and concrete devices. Distance until nearest locality – Zhetibay vill. And Munaishy vill. – approximately 12km.</p> <p>Production section, where located mobile asphalt and concrete devices, located on 100m distance from north to the road.</p> <p>Section on territory where located asphalt and crushing devices located approximately 200 m to the west side from the road, on st. Shetpe-Zhetibay vill. road. Distance from section until nearest living zone – Shetpe st. is 15 km, distance until Zhetibay vill. – 62 km.</p>
A.2.8 Potential impact connected with asphalt works	<p>1. The Contractor should provide the following:</p> <ul style="list-style-type: none"> - all the time to avoid the contact of asphalt with water and dust, - asphalt and solvents should not be spilled on the ground, into the channels or water ponds. If this happens, spills must be removed immediately and disposed of in a safe place, protected from public access. - not burn the wastes together with hot asphalt mix. - to use special protection cloth (shoes and gloves) during the manual activities. 	<p>The Contractor performs all planned measurements.</p> <p>No spills during the working with asphalt and solvents.</p> <p>The Contractor's workers are provided with all necessary personal protection equipment.</p> <p>The asphalt mix transportation is being performed in dump trucks with covered canopy.</p>

	<ul style="list-style-type: none"> - asphalt works should not be performed during wintertime, rainfalls or thunderous weather. Dump trucks used for transportation of asphalt mix should be equipped by relevant order. Paving works should not place more than one lane of traffic simultaneously. 	
A.2.9 Potential impact connected with concrete works	<p>1. The Contractor should provide the following:</p> <ul style="list-style-type: none"> - avoid the concrete works performing during the windy, cold or hot weather conditions. - attempt to make quick decisions. - contend with dusting by using the relevant covers (tarpaulin cover) and/or water spreading on the construction site. - to utilize the cofferdams during the concrete structures works - to use water sprays for slow curing and fulfil all precautions to avoid the adjoining surface or underground waters contaminations. To cover fresh concrete surface with waterproofing film or sand to prevent moisture loss and accelerate the curing process by the using of radiator heater - during the working with admixtures it is necessary to use special tools for cure as per main and specific assigned notices described in the safety guidance of the Contractor. 	<p>The concrete production installation is erected on the Zhetybay construction site as per working project.</p> <p>The measurement taken against environmental pollution during the concrete production. The measurement performance control is performed during the ecological monitoring; the results are shown in the checklists.</p>
A.2.10 Interference for the residents due to the bypass of transport	<p>1. The Contractor shall prepare a specific traffic control plan for the construction site including precautionary measures, such as signs, working hours, public awareness, and preparation of action plans for emergencies and proper decommissioning of such temporary roads.</p> <p>2. In order to get necessary approvals on construction works performance, keep communication with the railway authorities.</p>	<p>The Contractor has developed the traffic control plan that provides the Contractor's responsibility to the Customer, the bypass roads maintenance, traffic control, traffic management measures, wintertime maintenance. To inform the public through the media in advance during the bypass roads construction, develop and agree the scheme fencing places of work and placement of road signs with APD DIA of Mangystau region. The daily traffic signalmen work on difficult road sections. The dangerous places (tranches, pits, reserve pits) are fenced with reflective</p>

		tape and equipped with the relevant signs for traffic accident precaution. The dust suppression work of bypass roads is organized, and road workers carry out the old roads patch works on which the traffic moves. The official investigations are carried out to identify the causes and conditions conducive to it and the perpetrators in each traffic accident case.
A.2.11 Impact of noise and vibration caused by construction activities potentially having an effect on the health and destroying the structures.	<p>1. The Contractor should make all steps for providing the following:</p> <ul style="list-style-type: none"> - choice of modern and properly serviceable equipment and plants with reduced noise level and provided relevant on-board technologies and appropriate deafening devices. - limit excessive noisy operations and heavy vehicles running within specified working hours (especially for stone crushers and impact hammers). - working hours should be accounted in accordance with the limits near residential and sensitive areas. - providing the construction workers with special ear protection equipment (earplugs). - avoid the vehicle runnings on no-operation mode. - timely declare to public about future works. 	<p>All construction works are being performed in strict accordance with the Working Plan. The physical factors noise and vibration impact is carried out during the working on the road section reconstruction. The exposure sources are: operation of a crusher, concrete mixing and asphalt plants, as well as machinery and vehicles.</p> <p>The Contractor has taken the following measures to reduce the noise and vibration impact:</p> <ul style="list-style-type: none"> - using of the facilities, equipment and technology with noise impact as per relevant sanitary standards, - the heavy vehicle working time is limited, - the construction sites that the crushers, asphalt and concrete facilities are placed on are located away from the residential places (more than 3 km), - vehicle runnings on no-operation mode are not allowed,

		<p>- to reduce the noise impact, the rubber spacers are used in the crushing facilities, a rubber-lip is used as sound insulation material; the equipment service staff uses personal protective equipment such as earplugs type.</p> <p>- road construction vehicle is equipped with protection cover.</p> <p>The technological process equipment may occur the vibration during the works, the following is provided for its reduction:</p> <p>-fixing of flexible links, resilient spacers and springs;</p> <p>- the reduction of period of stay in the conditions of vibration;</p> <p>- personal protection equipment using.</p> <p>In order to control impact level check measurements of noise and vibration on entrance to Zhanaozen c., in Zhetibay vill. Camps (707km).</p>
A.2.12 Non-compliance of good housekeeping, including solid and domestic wastes related to construction works	<p>1. The Contractor shall hold the standard norms of housekeeping including the following:</p> <ul style="list-style-type: none"> - removal and decontamination of the construction wastes and water. - fuel and lubricants for equipment, including the useless oil and fuel removal and collecting related to refueling, diesel generator service areas. - canalization and toilets should be fully cleaned after the construction end. - the wastes will be collected and removed in relevant order as per the environmental legislation standards. - the Contractor should inform all construction workers about the main issues of sanitary, health protection, safety and special hazardous items in their activities and it is necessary to ensure the fact in the construction period starting. 	<p>The production and consumption wastes are collected in separate containers and due to accumulation transported to disposal sites or landfill during the work performance.</p> <p>The containers are fixed on the special concrete areas and covered with sheet metal lids.</p> <p>The waste certificates are approved with Department of ecology of Mangystau Oblast.</p> <p>The Contractor signed a contract with “Landfil” LLP № 71-2017 dated 15.02.2017 and “CASPI OPERATING” № AO-58/17 dated 27.02.2017 for waste disposal as</p>

	- the Contractor should completely amortise the site as soon as it will be necessary no longer, with an emphasis on the debris removal/clean up any contamination or harmful materials, plus the necessary revegetation.	following: used oil filters, the soil saturated with petrochemicals, construction wastes. The Contractor has concluded an agreement with "Mangystau Disinfection" LLP, whose members regularly held treatment of rodents and insects of the camp territory.
A.2.13 Loss of cultural or archaeological heritage, including cemeteries and roadside graves / refer accident victims.	<p>1. Wherever roadside accident victims designations are located along the road sections, removal of graves requires a consultation process with the local akim, as well as the victim's family to be able to move the grave to another appropriate.</p> <p>2. Any accidental finds should be reported to the PMC, the regional department of cultural heritage and all construction work should be suspended until the authorities will not give permission to continue.</p>	No natural and architectural monuments were found. However, the Contractor's employees and subcontractors are informed that, if during the work performance any finding would be revealed they should report to the Regional Department for Cultural Heritage, and the construction work must stop until relevant conclusion.
A.2.14 Impact on communal services, access and services	<p>1. The Contractor is responsible for arrangement and confirmation of details for all public services and could potentially be affected by the works</p> <p>2. All communication utilities that subject to removal should be completely relocated prior to the existing utilities switching off.</p> <p>3. Any damage or hindrance/inconvenience to local enterprises caused by premature removal or insufficient replacement of communication utilities/networks subject to full compensation, all of this is under the Contractor's responsibility who caused to the problems.</p> <p>4. The Contractor should provide the using without hindrance and access to the social, cultural and religious subjects.</p> <p>5. In case of damaging a private property, including livestock and farmlands, the Contractor should be responsible for the payment and recovery of damages.</p>	The all utilities relocation are being carried out as per the approved project decisions and accepted technical requirements.
A.2.15 The workers' health protection and safety	1. The Contractor should prepare an approved measurements plan for construction that among others should include all safety aspects he intends to use during the work performance. The plan will concern the means, types and	The Contractor has developed a "Policy and regulations regarding the safety, job safety and environmental protection", the organizational

	<p>quantities of protective clothing, the site-specific work safety, first aid, rescue plans, hours of work and all planned measures to eliminate or proper discharge of hazardous substances, including filling operations, transportation and handling of hazardous materials and explosives, ensuring measures. The plan will contribute to the further explanation of the methods and scope of any local resource using, and to manage the common risks associated with public safety, crime, prostitution and venereal diseases.</p>	<p>measures plan for safe operation and prevention of injuries and accidents at work.</p> <p>All employees, irrespective of their length of service and qualification, are instructed once every six months, and persons performing safety work (welders, etc.) - once every three months.</p> <p>When inspecting the state of security at production sites, the qualification certificates of working personnel, the fulfillment of measures aimed at creating healthy and safe working conditions, the fulfillment of the requirements of legislative and other regulatory legal acts on labor protection, the availability of instructions for labor protection, the bringing to the attention of employees and trainees New legislative and other legal acts on labor protection, compliance with the established procedure for the content of workplaces for Conditions of labor of medical premises, places of residence and catering, timely carrying out of necessary tests and technical inspections of equipment, machines and mechanisms, the efficiency of ventilation systems, the condition of safety devices and protective devices on working equipment, provision, storage, washing, and the correct use of overalls, And other personal protective equipment; The correct expenditure of funds allocated for the implementation of labor protection measures, on the basis of checks, official memos and</p>
--	---	--

		<p>applications for the elimination of violations identified.</p> <p>Training of employees who have not received training and expired terms of validity in specialized training centers.</p> <p>In accordance with the schedule, there are briefings on safety precautions, testing of knowledge with working personnel, as well as with the drivers of contracting transport organizations.</p> <p>Premedical medical examination is organized, individuals are identified in a state of intoxication, who are brought to strict disciplinary responsibility.</p> <p>During the reporting period, medical workers and the Security Service identified 7 facts on the appearance of alcohol state in the workplace.</p> <p>For the functional work of the medical posts, calibrations of alcohol testers are carried out in a timely manner, mouthpieces are replaced, necessary medications are purchased, and operative help is provided to persons with chronic and acute manifestations of diseases.</p> <p>Medical company LLP "Vital-prestige" is working on the provision of medical services to staff, counseling, classes to promote healthy lifestyles. 24-hour ambulance service is organized.</p>
--	--	---

		<p>Directions are given in time for further treatment by medical specialists and undergoing in-patient treatment.</p> <p>Those responsible for road safety monitor the proper maintenance of the existing road. Work is underway to clean the road of debris, timely installation of road signs and fences, as well as the placement of traffic controllers in hazardous areas of the highway, watering on bypass roads. The knowledge of fire safety in the volume of fire and technical is checked. HIV/AIDS prevention seminars were held. The constant health workers duty is organized and pre-shift medical examination conducting is carried out. Daily control of providing the cars, machines and mechanisms to the line (work objects). Daily the workers of asphalt team, crushing-screening plant, concrete mixing plant, asphalt and bitumen plant and welders get cultured milk foods. The measures taken for explosion hazardous facility batching with emergency fire-fighting equipment and safety signs. Coverall scale issue is approved. Constantly monitoring is conducted at the facility for compliance with safety rules and the use of personal protective equipment staff.</p>
A.2.16 The construction sites decommissioning	1. The Contractor should provide complete decommissioning of all temporary and permanent construction of settlements as it satisfied PMC, including the removal of any contaminants.	All temporary structures will be dismantled; disturbed land sections will be recultivated, as specified in the design solutions as soon as the road section reconstruction will be over.

A.2.17 Harmful and hazardous explosive material	<p>1. The Contractor should develop a management plan for the transportation, loading and unloading activities and storage of hazardous materials and emergency plan in case of accidents with explosive materials. This emergency plan should be approved and coordinated with local health authorities.</p> <p>2. The explosive materials require special handling and arrangement of limited use and safety measures. The Contractor is responsible for the asset management plan of the hazardous materials using and it should be subject to detailed checkout.</p>	The Contractor has not used the hazardous explosive materials during the construction, so the management plan was not developed.
A.2.18 Inappropriate management of earth works and transportation and storage; negative impact as result of activity, that lead to dust generation and air contamination.	<p>1. Diversion road control, if necessary, provide its improvement until acceptable level and use possibilities in each weather</p> <p>2. Provide supporting documentation to inform that Contractor use quality fuel for its transport vehicle parking stated in Technical Specification;</p> <p>3. Use devices to dedust (regular watering);</p> <p>4. Trucks and machines operators shall strictly keep stated speed limit;</p> <p>5. Transport vehicle downtime shall not exceed 2 min.</p>	<p>The contractor shall execute watering of diversion road in regular state.</p> <p>Transport vehicle fueling is executed by special fuel.</p>
A.2.19 Dust generation in quarries due to earth works and material fill on borrow pits	Construction materials on quarries will use equipment for road construction materials excavation, and fenced section for coarse grained materials storage; outlet of equipment will be always diffuse water to dedust; equipment will be furnished with other effective dedusting technology.	During construction materials production, measures on impact reduction are taken, especially watering.

2.2 Report on monitoring plan performance on environmental protection (construction period), in accordance with Annex B to the contract documents

Monitoring plan	Monitoring activity / details / results	Information of the plan performed by the Contractor
B.1 Permission document availability for environmental monitoring plan implementation during construction works jointly with Contractor.	In the beginning of construction period make sure that Contractor has appropriate specialist on environment protection: checking of CV and certificates, licenses. Discussion with the Contractors/subcontractors regarding	Contractor has specialist in environmental sphere with experience in the road companies.

	issues on implementation of all mitigating measures stated in environmental management plan.	
B.2.3 Absence of cleanliness and order in both parts of a field base and the workplace, including proper control of sanitary waste	To confirm that the items listed in the action plan and in the technical specifications are performed fully using of an agreed monitoring list stated in environmental management plan and environmental monitoring programme.	Responsible person of Contractor shall execute construction works section monitoring to control implementation of requirements stated in Environment Management Plan. As per result that shall be formalized control check lists. Check lists are attached to the monthly reports on environment management.
B.2.5 Earth works and the materials processing workflow which includes the united sections, approach roads to the quarries and processing areas.	Using list, confirm the following: Используя перечень, подтвердить следующее: 1. Access road improved, that makes its serviceable in all weather. Подъездная дорога улучшена, что делает ее пригодной для использования в любую погоду. 2. Sections to choose fill material are used as per appropriate permits and approved documents; During decommissioning, Contractor and subcontractors signed and worked in its borders.	The temporary and approach roads are arranged in accordance with project decisions of the asphalt milled. Traffic on the road sections is limited with the fixed road signs. The Contractor has received all necessary permission documents for land sections of temporary and approach roads.
B.2.6 Actions on the works activities adjacent to the embankment that could potentially lead to the erosion of land and landscape destruction	For an inspection for the excavation type determination. The Contractor should submit an application and confirms that the roadside excavation works are not carried out, and is always out of sight from the road.	Soil excavation for formation fill shall be executed in compliance with industrial excavation project. Industrial excavation project was approved with all concerned state authorities.
B.2.7 Earth works – transportation and storage; dedusting works, noise reduction, drainage during the materials relocation	Undertake as a part of building inspection the regular confirmation that the earth works are being carried out in an environmentally acceptable manner and control of dust is carried out at all times, including the trucks use of tarpaulin covers transporting materials as irrigation along the road sections passing around/through the villages, and strict compliance with speed limits of 30 km/h. Transportation through roadside villages and places	The soil transportation is carried out in the dump trucks with closed body. Dedusting actions are being taken on the roads. The vehicle moving speed is limited. The activities are performed in the working time

	of residence shall be limited at between 7:30 and 17:30.	
B.2.10 Potential spill and contamination with bitumen/asphalt and concrete products	Make sure that the asphalt and concrete plants technical requirements meet the standards and acts, as they are located far from the settlements as defined in Table reduce the impact on the environment. Storage and use of bitumen should be carried out without the spill.	Asphalt plant and concrete device are used in compliance with approved work design. Bitumen shall be stocked in special provided project in bitumen pool. Monitoring shall be executed during monitoring execution.
B.2.11 Control that the working with POL such as fuel, lubricants and bitumen, is being performed by contractors and subcontractors without spillage and pollution	Using the control list of the spillage control and measures taken to prevent contamination. Any non-compliance will be eliminated immediately.	The Contractor has developed the Fuel and Chemical Products Management Plan. The control of measurements specified in the Plan is being implemented by the Contractor's specialists and shown in the checklists of environmental monitoring.
B.8 Air contamination of construction machine by burnt gas.	1. Prohibit works of no load transport vehicle; 2. Using of serviceable machine, quality fuel as per technical specification 3. Timely inspection of machine	Before going to machines ride will pass inspection. Periodic all machines inspection is executed.
B.2.14 Confirmation or removing of cultural or archaeological sites, including cemeteries and roadside graves / monuments to the victims of accidents.	Confirm that all roadside burial places (based on the inventory plots) are officially considered and consulted with the akims and members of the families and the implementation of processes for the transfer of the relics when available. Fact on resolving these issues shall be stated in appropriate documents and provided to the Road Committee, PMC and Supervision Company.	The cultural, archaeological sites including cemeteries and roadside graves / monuments to the victims of accidents are not found during the construction works.

2.3 Report on complaint investigation of local residents and representatives interested:

The complaints investigation procedure related to the project is to ensure the projects effective and systematic mechanism for answers to questions, the feedback providing and complaints investigation from those whose interests are affected, other persons interested and the public.

Anyone, who has been suffered or being disturbed with the project activity impact, has the right to appeal in written form to the Contractor. The applicants or interested parties may visit, call or send a letter in hard or soft copies, and fax to the project office located on the construction site territory in the Zhetybay village area or in the company office located in Aktau. Complaints receiving by personal delivery, by phone, by letter in hard or soft copies, or by fax will be confirmed.

Requests and complaints, in respect of which an explanation and a decision were given, at the admission moment are being closed immediately. The cases requiring further assessment and actions are being considered by the Contractor's specialists within ten working days and then a reply in written form is being sent to the applicant. CCI coordinator distributes the relevant information at the regional level among the CCI members, prepares the CCI minutes of meetings and construction progress reports and ensure that the actions and decisions were documented properly.

The Contractor registers the received complaints and the submitted responses. Received complaints and responses information is represented in the environmental protection report of the Contractor.

The Contractor's contact details:

Address: Zhetybay construction site

e-mail: cengiz_aktai@mail.ru

The Contractor's contact details in Aktau:

Address: 130000 the Republic of Kazakhstan,

Mangystau region, Aktau,

Micro district 29A, building 135, business center ABK, 4 floor

t/f 8(7292) 20-48-91, 20-48-92

e-mail: cengiz_aktai@mail.ru

No complaints were received during 1 half of 2018.

2.4 Report on meetings conducting with a Consultant and other representants interested

Representatives of the Contractor, the Engineer, PMC have visited the Contracts construction sites during 1 half of 2017.

2.6 Expenses on environment management plan for 1 half of 2018

Expenses description	Expenses, tenge
Sewage drain transportation	21 250 905
Wastes utilization	731 308
Activities on atmospheric air protection (dedusting)	3 389 068
Provision with portable water for workers	10 712 959
Environment monitoring	1 225 333
Payment for tax on environment emission	2 049 983
Payment for land tax	425 846

2.5 Conducting of social and ecological monitoring

As was suggested by the International Environmental Expert, the Contractor's specialists carried out environmental monitoring during the first half of 2017 with the filling of the established form - a checklist.

Exceptions were January, February 2018 in these months monitoring was not carried out due to the conservation of work on weather conditions.

Based on the results of the monitoring, the implementation of the environmental management program, compliance with legislative requirements was recorded. In the control sheets violations were recorded, according to the results of monitoring, prescriptions were issued. Control letters were included in the Environmental Protection monthly reports.

2.6 Correspondence between Contractor and ConsultantЖ

№ №	дата	Contractor's Letters number	Supervision Consultant's Letters number	Letters content
1	05.04.2018	ZZO- CGZ-GI-2018-081		Report on implementation of environment protection 2018
2	13.04.2018		0137	Approval of Environment management plan and impact reduction Plan
3	02.05.2018	ZZO-CGZ-GI-2018-0152		Monitoring implementation
4	05.05.2018	ZZO-CGZ-GI-2018-0157		Direction of monthly report on implementation of environment management plan
5	17.05.2018	ZZO-CGZ-GI-2018-0172		Sampling for environment monitoring
6	18.05.2018	ZZO-CGZ-GI-2018-0178		Monitoring implementation
7	24.05.2018	ZZO-CGZ-GI-2018-0185		Monitoring implementation

3. Environment monitoring results during reconstruction of the «Shetpe- Aktau» (632-802 km) section of the «Aktau-Beyneu» road for 1 half of 2017

Based on the contract of rendering services, the specialists of the "Aktobe plant of chromium compounds" JSC environment laboratory conducted laboratory analyzes during the reconstruction of the "Zhetibay-Zhanaozen" (35-75) (38) km. The customer of works is **branch of «CENGİZ İNŞAAT SANAYİ VE TİCARET ANONİM ŞİRKETİ» JSC in Aktau.**

Environmental monitoring is an integrated system of observations, the results of which should be:

- confirm (or disprove) the assessment and forecast of anthropogenic changes in the state of environmental components;
- together with measures for the implementation of environmental monitoring to determine compliance with existing activities norms and requirements of the Republic of Kazakhstan;
- enter as an integral part to the system of state environmental monitoring, providing an assessment and forecast of the state of the ecosystem in the regional context.

The focus of the forecast and its methodological support largely have to define the structure and

composition of the observation.

The aims of environmental monitoring are:

- obtaining information for decision-making on environmental policy of the Contractor, the targets of environmental quality and regulatory instruments of production processes, potentially affecting the environment;
- ensuring compliance with the environmental legislation of the Republic of Kazakhstan;
- minimizing the impact of manufacturing processes on the customer's environment and human health;
- more efficient use of natural and energy resources;
- prompt preemptive incident response;
- the formation of a high level of environmental awareness and responsibility of managers and employees and all interested parties.
- informing the public about the environmental activities of enterprises and public health risks;
- improving compliance with environmental requirements;
- increase production and environmental effectiveness of the system of environmental management;
- consideration of environmental risks when investing and lending.

3.1. Environment monitoring procedure

Environmental monitoring was being conducted in accordance with the normative acts.

Sampling, storage, transportation and preparation for the analysis were carried out in accordance with approved standards:

The air monitoring organization and carrying out

1. ST RK 1957-2010 "Environment protection. Atmosphere. Method for determination inorganic dust"
2. ST RK 2.302-2014 Methods of measurements. "Determination of the mass concentration of pollutants in the ambient air in the working area, in industrial emissions by a gas analyzer"

In april 2018 first air samples collected, in time following were as base for impact assessment of Contractor on atmospheric air. Air monitoring results compared with maximum permissible concentration standards, stated in regulations of Republic of Kazakhstan.

Sampling of ambient air was carried out in the following areas:

- road every 10 km - 4 control points,
- Zhetybay camp - 4 control points,
- borders of Zhanaozen settlement - 1 control point,

In half of 2018 sampling for environment monitoring conducted from april to june 2018. Results on the road sections 9 control points, in stated period 2018 y. Totally selected and analyzed 27 atmospheric air samples.

The soil monitoring organization and carrying out

1. The Nature Conservancy. Soils. General requirements for sampling. GOST 17.4.3.01-83.

2. The Nature Conservancy. Soils. Classification of chemical substances for pollution control. GOST 17.4.102-83.

2. Soils. Methods of sampling and sample preparation for chemical and bacteriological analysis helminthological. GOST 14.4.4.02-84.

4. Hygienic standards for safety of the environment (soil), approved by order of the minister of the national economy of Kazakhstan dated 25.06.2015 № 452.

In April 2018 was selected the first samples of the soil, which later became the base for assessing the impact of the Contractor on the ground. The results of monitoring of soil compared with the norms of maximum permissible concentrations established by regulatory requirements of the Republic of Kazakhstan.

Sampling of the soil was carried out in the following areas:

- road every 10 km - 4 control points,
- Zhetybay camp - 4 control points,
- borders of Zhetybay settlement - 1 control point,

In first half of 2018 sampling for environment monitoring executed from april to june 2018. Total on road section 9 control points, 27 atmospheric air samples collected and analyzed in stated period of 2018.

Noise and vibration

Noise and vibration measurements were being carried out from April to June 2018. Noise and vibration measurements executed in three poles: minimum, maximum, equivalently.

Points of measurement of noise and vibration:

- road every 10 km - 4 control points,
- Zhetybay camp - 4 control points,
- borders of Zhetybay settlement - 1 control point,

The objects of environmental research and analysis are:

- chemical analysis of atmospheric air;
- chemical analysis of the soil;
- noise and vibration measurement;
- chemical analysis of surface water.

Table 3.1

The parameters list monitored during the environmental monitoring process

№	Item of monitored parameter
Atmospheric air analysis	
1	Inorganic dust
2	Carbonic oxide
3	Nitrogen dioxide
4	Sulphurous anhydride
Soil chemical analysis	
1	pH

2	Zinc
3	Petrochemicals
4	Cadmium
5	Plumbum
Noise and vibration measurements	
1	Noise
2	Vibration
Surface water chemical analysis	
1	Dry residues
2	Nitrates
3	Sulphates
4	Chlorides
5	Petrochemicals
6	Ferrum

The methods used information of the environment monitoring

To perform instrumental measurements made for the use of methods and means of measurements included in the "Register of the state system of ensuring the uniformity of measurements", as reflected in its sections: "The approved types of measuring devices," "Approved types of standard samples," "Methods of measurement."

When tested using acting in the Republic of Kazakhstan regulations:

Atmospheric air:

2. ST RK 1957-2010 "Environment protection. Atmosphere. Method for determination inorganic dust"

2. ST RK 2.302-2014 Methods of measurements. "Determination of the mass concentration of pollutants in the ambient air in the working area, in industrial emissions by a gas analyzer"

Soil

1. Soils. Methods for determination of the composition of cationic-anionic aqueous extract GOST 26423-85 item 4.3.
2. Quantitative chemical analysis of soil. Methods of measuring the mass fraction of oil in the samples of soil and ground fluorimetric method on the liquid analyzer "Fluorat-2" registered in Kazakhstan at number KZ.07.00.01668-2013 of February 06, 2013, valid until 06.02.2018.
3. Methods of mass fraction of vanadium, cadmium, cobalt, manganese, copper, arsenic, nickel, mercury, lead, chromium and zinc in the soil samples, soil, sediment, sewage sludge by Atomic Absorption Spectrometry with electrothermal atomization using atomic absorption spectrometer modification of the MGA-915 registered in the Republic of Kazakhstan at No. KZ.07.00.03044-2014 of December 30, 2014, unlimited.

Noise and vibration

1. GOST 12.1.050-86 methods of measuring noise in the workplace.
2. GOST ISO 8041-2006 Vibration. Exposure to vibration to a human. Means of measuring

Water

1. GOST 26449.1-85 Units for distillation desalting stationary. Methods for chemical analysis of salt water.

2. GOST 18826-73 Methods for determination of nitrates.
3. KZ.07.00.01667-2013 M 01-05-2012 Methods for determination of mass of oil product concentration in the samples of natural, drinking, waste waters by fluorimetric method on the analyzer of fluid "Fluorat-02".

Sampling and analysis of the laboratory of Environmental Protection of "AZHS" JSC has accreditation certificate № KZ.I.05.0916 on 27.07.2010 valid until 27.09.2020.

In the sampling of and analysis of the samples, the following measuring tools using:

Table 3.2

Atmospheric air

Наименование прибора	Номер приборов	Сведения о поверке
Aspirator PU-ZE/12	fac. № 807	Calibration certificate № BA-07-01-01984 от 06.03.2018 г до 05.03.2019 г
Gas analyzer GANK-4	fac. № 609	Manufacturers calibration lable № 17002896059 от 12.07.2017 г. до 11.07.2018 г
Scales electronic laboratory MettlerToledoXS205DU	fac.№ B141330205	Calibration certificate № BB-02-74019 от 09.11.2017 г. до 08.11.2018 г

Soil

Device item	Device №	Verification data
Scales electronic laboratory MettlerToledoXS205DU	fac.№ B141330205	Calibration certificate № BB-02-74019 от 09.11.2017 г. до 08.11.2018 г
Combined measuring instrument SevenEasy pH	fac.№ 1231405267	Calibration certificate № BB.09-48447/ № BB.11-48413 от 07.09.2017 г. до 07.09.2017 г
Atomic Absorption Spectrometer MGA-915M	fac. № 394	Calibration certificate № BB.11-79143 от 02.02.2018 г до 01.02.2019 г
Liquid analyzer "Fluorat"-02-3M	fac. № 5593	Calibration certificate № BB-11-10000008213 от 19.05.2015г до 18.05.2017 г Calibration certificate № BB.11-10233 от 14.05.2018 г до 13.05.2019 г

Noise and vibration

Device item	Device №	Verification data
Noise and vibration analyzer «Assistant»	fac. № 162613	свидетельство о поверке № BA-12-05-991 от 07.03.2018 г. до 06.03.2019 г

All received from monitoring measurement results are compared to the standards established by the state regulatory document:

- Hygienic standards for atmospheric air in urban and rural settlements, approved by the Minister of National Economy of the Republic of Kazakhstan dated 28.02.2015, № 168.

- Hygienic standards for safety of the environment (soil), approved by order of the minister of the national economy of Kazakhstan dated 25.06.2015 № 452.

- Hygienic standards to physical factors, adversely effect to the person, approved by the Minister of National Economy of the Republic of Kazakhstan dated 28.02.2015, № 169.

Sampling points and places of measurement.

To address the objectives are necessary environmental studies, containing the preparatory period, field and laboratory analytical work, laboratory processing of materials.

The preparatory period includes the study of library materials in the district work, the technological cycle of production, preliminary zoning of the extent of natural and anthropogenic pollution of the landscape. This will determine the points scheme and the procedure for sampling, the number of each object of study.

The Customer determines the sampling points.

Fieldwork includes sampling of environmental components. Laboratory and analytical work carried out in part in the field using a gas analyzer and stationary laboratory. Office work includes cameral processing of the results of analyzes of samples and report on the results of environmental monitoring.

Table 3.3

List of control points indicating coordinates and pickets

Points names indicating km, picket and coordinates	Date of atmospheric air sampling	Date of soil sampling	Date of noise and vibration measurement
Road			
AK -1 PK 350 (N43°23.157' E052°30.132')	20.04.2018	20.04.2018	20.04.2018
AK -2 PK 450 (N43°21.134' E052°36.971')	22.05.2018	22.05.2018	22.05.2018
AK -3 PK 550 (N43°20.567' E052°44.088')	18.06.2018	18.06.2018	18.06.2018
AK -4 PK 636+83 (N43°18.048' E052°47.819')			
Zhetybay Camp			
AK-23 (730 км) PK 120 (N43°32.644' E051°58.296')	20.04.2018	20.04.2018	20.04.2018
AK-24 (730 км) PK 120 (N43°32.555' E051°58.660')	22.05.2018	22.05.2018	22.05.2018
AK-25 (730 км) PK 120 (N43°32.646' E051°58.764')	18.06.2018	18.06.2018	18.06.2018
AK-26(730 км) PK 120 (N43°32.757' E051°58.351')			
Zhanaozen village borders			
AK -5 ПК 60+80 (N43°21.052' E052°48.104')	20.04.2018	20.04.2018	20.04.2018
	22.05.2018	22.05.2018	22.05.2018
	18.06.2018	18.06.2018	18.06.2018

3.2 Sampling method

Atmospheric air

Rules of air sampling are installed in the Guidelines on Air Pollution Monitoring RD 52.04.186-89. Observations of the level of air pollution is carried out at the posts. Sampling site is located on an open area, ventilated from all sides. Since the effect of the road found only in the immediate vicinity of it, the points of selection of air are located at a distance of 50-100 meters from the road. When determining the surface impurity concentration in the atmosphere sampling and measurement of concentrations of contaminants are held at a height of 1.5-3.5 m above the ground. Determination of the concentration of many harmful pollutants in the atmosphere is produced by laboratory methods.

Sampling of air for dust content is performed by aspirating a certain amount of air through the aerosol filter to retain airborne particles. Determined impurity from a large volume of air is concentrated in a small volume of the filter. Sampling options, such as the air flow rate and the duration of its aspiration through the absorption device, absorption type device or filter, set depending on substance to be determined. In the package in which filter nested, record the date and time of sampling. After removing filter holder from the filter to be folded in half, to be put in a bag. Packet with filter to put in the bag for sending to the chemical laboratory.

Sampling for air content of carbon monoxide, nitrogen dioxide, sulfur dioxide is carried out using a gas analyzer GANK-4. Analyzer work is carried out automatically. The pump delivers analyzed air via the inlet nozzle of the gas analyzer to sensor or to the tape of chemical cassette. When measuring the concentration of the analyzed air enters through the inlet fitting on the sensor or chemical cassette. After 20-30 seconds, the signal is supplied to the computing device that converts and outputs it to the screen in the form of values of the mean concentration.

Soil

In the laboratory, to prepare the necessary materials for soil sampling depending on carried out tests to exclude the possibility of secondary pollution.

Spot samples of soil for determining heavy metal to be selected with tool containing no metal. Before the selection of spot samples small trench wall (*soil small trench - shallow soil profiles (50-75 cm), exposes only the upper horizons of the soil profile*) or the surface of the core should be cleaned with a knife made of polyethylene or polystyrene or plastic spatula.

Spot soil samples for determining oil, should be placed in glass jars with ground glass stoppers or cloth bags. Coming to the place of sampling the soil, lay at least one test area size 10x10 m.

Spot samples are taken on the trial site by the envelope method. Spot samples are taken from a knife or spatula from small trench or soil borer. The combined sample to be composed by mixing spot samples taken at one trial site.

For chemical analysis, the combined sample composing from not less than five spot samples taken from one test site. Weight of combined sample should be at least 1 kg.

Each sample must be completed with act of sampling, in which is fixed:

1) Combined sample number; 2) Date and time of sampling; 3) Sampling point name; 4) Sampling depth; 5) Sampling person name; 6) If necessary: the nature of the meteorological conditions on the day of sampling, features detected during sampling (illuminated by the sun, the use of chemicals, the presence of landfills, sewage treatment plants, etc.) and other features.

In the process of transportation and storage of the soil samples should be taken measures to prevent the possibility of secondary pollution.

On arrival at the laboratory, all samples are recorded in the combined log of soil samples.

To determine the chemical soil sample in the laboratory mash spread on paper pestle large lumps. Then discarded inclusion - roots of plants, insects, rocks, glass and other. Soil samples for chemical

analysis is dried to the air-dry state. Air-dry samples stored in cloth bags in cardboard boxes or glass containers.

Sample preparation consists of mixing, grinding and reduction to a certain weight. In order to reduce the sample using the method of quartering. The shredded material is poured onto a sheet of paper, thoroughly mixed, cast roots, stones and other hard objects. Then the soil is distributed evenly on the spot with a thin layer (0.5 cm) in the shape of a square, divided into four quadrants, the contents of the two opposite sectors are discarded, and the remaining two - combined and mixed again. Soil divide until there around 300g. Soil grounded in a mortar and pestle and sieved through a sieve with a whole diameter of 1 mm. If necessary triturated attrition.

Then pour the soil into a clean container or envelope and number, sign it. From the obtained sample taken samples for analysis.

Noise and vibration

Noise and vibration measurements are made on noise and vibration analyzer ASSISTANT. The results of measurements of noise and vibrations (maximum, minimum, equivalent) are reflected on the screen of the device at the end of measurement.

Water

Sampling of surface water made into the tank from a chemically resistant material (a polymeric material or glass). Tank capacity is 0.5 - 2 dm³. Sample of surface water collected manually by special device or sampler. Spot samples characterizing the composition and properties of the water in this water body location at a given time is obtained by selecting a single desired total amount of water. Before sampling container rinse at least twice with water to be tested and fill it to the top of the container. Before closing the container with cap, the top layer of water is poured so that under the stopper remains the air layer and when transporting stopper is not wetted.

3.3. Laboratory data

Laboratory studies were carried out in environment laboratory of "Aktobe plant of chromium compounds" JSC.

Information about the laboratory are given in the table below:

Table 3.4

№	Name of the accredited testing laboratory	Number and duration of test laboratory accreditation certificate	Testing field of laboratory accreditation
1	2	3	4
1	Environment laboratory of "Aktobe plant of chromium compounds" JSC	Accreditation certificate № KZ.I.05.0916 dated 27.07.2015 valid until 27.07.2020	Sanitary protection zone: inorganic dust, carbon monoxide, nitrogen dioxide, sulfur dioxide SOIL, GROUND, BOTTOM SEDIMENTS, SLUDGE AND INDUSTRIAL WASTES: pH, oil, cadmium, lead, zinc. Production environment factors: Noise, vibration.

			Water: dry residue, nitrates, sulfates, chlorides, petrochemicals, iron.
--	--	--	--

3.4 Environment monitoring results

Air quality monitoring

Monitoring of air pollution involves determining the concentration of pollutants in the zone of active influence. The most accurate estimate of the impact on air quality are direct measurements of pollutants. For this purpose, under the contract with the Contractor specialized accredited environmental laboratory JSC "Aktobe plant of chromium compounds" for 1 half of 2017 monitored the ambient air. The sampling points and frequency have been defined in the monitoring program, which is a mandatory attachment to PEPM. Total for reporting period 9 samplings were selected in 27 sampling points. The samples were not taken due to reduction of scope of work on construction site during January and February 2017.

In April 2018, conducted the basic measurements ambient air samples (Protocol № 3 dd March 13, 2015). All samples are compared with the normative values - MPC maximum permissible concentrations established by regulatory requirements of the Republic of Kazakhstan.

In the table below, observations of 2018 are grouped as follows: road every 10 km - 4 control points, Zhetybay camp - 4 control points, borders of Zhanaozen village - 1 control points. In addition, in the table for comparison presented average, minimum and maximum values for basic measurements (April 2018) and the average, minimum and maximum values for the entire observation period (April-June 2018).

ROAD. Averages baseline measurement (April 2018) of this section are as follows: 0,628MPC for dust (maximum one-time maximum allowable concentration), 0,4MPC for carbon monoxide, 0MPC for nitrogen dioxide, 0MPC for sulfur dioxide. The maximum basic measurements are 0,66MPC for dust, 0,48MPC for carbon monoxide, 0,1MPC for nitrogen dioxide, 0,06MPC for sulfur dioxide.

As per received monitoring results for 1 half of 2018 values are 0,708MPC for dust, 0,392MPC for carbon monoxide, less than 0MPC for nitrogen dioxide, less than 0MPC for sulfur dioxide. The maximum measurements for 1 half of 2018 0,88MPC for dust, 0,48MPC for carbon monoxide, less than 0,1MPC for nitrogen dioxide, less than 0,06MPC for sulfur dioxide.

Comparison of average basis results with average data for whole observation period showed the slight increase of dust and carbon monoxide. The MPC exceeding were not found of any controlled substances in this area.

ZHETYBAY CAMP (730 KM). Averages baseline measurement (April 2018) of this section are as follows: 0,67MPC for dust (maximum one-time maximum allowable concentration), 0,37MPC for carbon monoxide, 0,1MPC for nitrogen dioxide, 0,06MPC for sulfur dioxide. The maximum basic measurements are 0,7MPC for dust, 0,42MPC for carbon monoxide, 0,1MPC for nitrogen dioxide, 0,06MPC for sulfur dioxide.

As per received monitoring results for 1 half of 2018 values are 0,75MPC for dust, 0,404MPC for carbon monoxide, less than 0,1MPC for nitrogen dioxide, less than 0,06MPC for sulfur dioxide. The maximum measurements for 1 half 2018 0,88MPC for dust, 0,482MPC for carbon monoxide, less than 0,1MPC for nitrogen dioxide, less than 0,06MPC for sulfur dioxide.

Comparison of average basis results with average data for whole observation period showed the slight increase of dust. The MPC exceeding were not found of any controlled substances in this area.

Proceeding from the control measurements results, imply that the Contractor's actions during the works performance on the construction site provided the permissible impact on the environment. The measures taken by the Contractor within PEPM performance are effective.

Table 3.5

The measurement results of the concentration of pollutants substances in the air for 1 half of 2018

Sampling points characteristics		The harmful substances concentration, mg/m³			
Description	Sampling date	Dust	Carbon monoxide	Nitrogen dioxide	Sulfur dioxide
		MPC values			
		Not more 0,5	Not more 5	Not more 0,2	Not more 0,5
ROAD					
AK-1	20.04.2018	0,31	1,56	<0,02	<0,03
AK -1	22.05.2018	0,44	1,72	<0,02	<0,03
AK -1	18.06.2018	0,14	<1,5	<0,02	<0,03
AK -2	20.04.2018	0,32	2,34	<0,02	<0,03
AK -2	22.05.2018	0,42	<1,5	<0,02	<0,03
AK -2	18.06.2018	0,4	<1,5	<0,02	<0,03
AK -3	20.04.2018	0,3	1,98	<0,02	<0,03
AK -3	22.05.2018	0,4	<1,5	<0,02	<0,03
AK -3	18.06.2018	0,32	<1,5	<0,02	<0,03
AK -4	20.04.2018	0,33	2,4	<0,02	<0,03
AK -4	22.05.2018	0,39	2,01	<0,02	<0,03
AK -4	18.06.2018	0,4	<1,5	<0,02	<0,03
AK -5	20.04.2018	0,31	1,72	<0,02	<0,03
AK -5	22.05.2018	0,41	1,93	<0,02	<0,03
AK -5	18.06.2018	0,42	<1,5	<0,02	<0,03
Basis values	Average	0,314	2	<0,02	<0,03
	Minimum	0,3	<1,5	<0,02	<0,03
	Maximum	0,33	2,40	<0,02	<0,03
For 1 half of 2018	Average	0,354	1,96	< 0,02	<0,03
	Minimum	0,14	1,56	< 0,02	<0,03
	Maximum	0,44	2,4	< 0,02	<0,03

ZHETYBAY CAMP (713 KM)					
AK-23	20.04.2018	0,35	< 1,5	<0,02	<0,03

AK-23	22.05.2018	0,41	2,12	<0,02	<0,03
AK-23	18.06.2018	0,43	<1,5	<0,02	<0,03
AK-24	20.04.2018	0,35	< 1,5	<0,02	<0,03
AK-24	22.05.2018	0,43	2,41	<0,02	<0,03
AK-24	18.06.2018	0,44	<1,5	<0,02	<0,03
AK-25	20.04.2018	0,31	2,1	<0,02	<0,03
AK-25	22.05.2018	0,42	1,98	<0,02	<0,03
AK-25	18.06.2018	0,16	<1,5	<0,02	<0,03
AK-26	20.04.2018	0,32	1,6	<0,02	<0,03
AK-26	22.05.2018	0,43	1,9	<0,02	<0,03
AK-26	18.06.2018	0,42	<1,5	<0,02	<0,03
Basis values	Average	0,3325	1,85	<0,02	<0,03
	Minimum	0,31	<1,5	<0,03	<0,03
	Maximum	0,35	2,1	<0,04	<0,03
For 1 half of 2018	Average	0,3725	2,02	< 0,02	<0,03
	Minimum	0,16	<1,5	< 0,02	<0,03
	Maximum	0,44	2,41	< 0,02	<0,03

Soil quality monitoring

Monitoring of the soil involves determining the concentration of pollutants in the zone of active influence. The most accurate estimate of the impact on soil quality are direct measurements of pollutants. For this purpose, under the contract with the Contractor specialized accredited environmental laboratory JSC "Aktobe plant of chromium compounds" for first half of 2018 monitored the construction site soil. Sampling points and frequency defined in the monitoring program, which is a mandatory attachment to PEMP. Total for reporting period 9 samplings were selected in 27 sampling points.

In April 2018, conducted the basic measurements of soil samples (Minutes № 3 of March 13, 015). The samples were compared: for plumbum with normative values - MPC maximum permissible concentrations established by regulatory requirements of the Republic of Kazakhstan.

In the table below, the observations for 1 half of 2018 are grouped as follows: road every 10 km - 4 control points, Zhetybay camp - 4 control points, border of village Zhanaozen - 1 control point. Also in the table for comparison presented average, minimum and maximum values for basic measurements (April 2018) and the average, minimum and maximum values for the entire observation period (April June 2018).

ROAD. Averages baseline measurement (April 2018) of this section are as follows: 0,29mg/kg for petrochemicals; 0,288 for cadmium of average content in the soils of the world; 0,21MPC for plumbum; 0,80MPC for zinc.

Maximum basic measurements are as follows: 0,081 mg/kg for petrochemicals; 0,42 for cadmium in the normal range of the average content in soils of the world; 0,35MPC for plumbum; 0,93MPC for zinc.

The values are 0,03mg/kg for petrochemicals; 0,22 for cadmium on average content in the soils of the world; 0,21 MPC for plumbum; 0,8 MPC for zinc due to the monitoring results for 1 half of 2018. Maximum values for 1 half of 2018 are 0,09mg/kg for petrochemicals; 0,48 for cadmium in the normal range of the average content in soils of the world; 0,54MPC for plumbum; 0,96MPC for zinc.

Comparison of the average baseline results with the average for the entire observation period showed a slight increase in zinc. The exceeding of any controlled substances was not found in this area.

ZHETYBAY CAMP (730 KM). Averages baseline measurement (April 2018) of this section are as follows: 0,015mg/kg for petrochemicals; 0,39 for cadmium of average content in the soils of the world; 0,18MPC for plumbum; 0,79MPC for zinc.

Maximum basic measurements are as follows: 0,23 mg/kg for petrochemicals; 0,5 for cadmium in the normal range of the average content in soils of the world; 0,2MPC for plumbum; 0,86 MPC for zinc.

The values are 0,14mg/kg for petrochemicals; 0,33 for cadmium on average content in the soils of the world; 0,14MPC for plumbum; 0,85MPC for zinc due to the monitoring results for 1 half of 2018. Maximum values for 1 half of 2018 are 0,23mg/kg for petrochemicals; 0,5 for cadmium in the normal range of the average content in soils of the world; 0,2MPC for plumbum; 0,98MPC for zinc.

Comparison of average basis results with average data for whole observation period showed the slight increase of petrochemicals. The exceeding of any controlled substances was not found in this area.

Table 3.6

Sampling points characteristics		The harmful substances concentration				
Description	Sampling date	pH	Petrochemicals, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
		MPC values				
		-	-	0,5	32	23
ROAD						
ЖЖ-1	20.04.2018	8,6	0,014	0,05	3,4	10,13
ЖЖ-1	22.05.2018	8,4	0,014	0,06	2,14	8,68
ЖЖ-1	18.06.2018	8,8	0,006	0,07	2,42	13,9
ЖЖ-2	20.04.2018	9	0,013	0,21	7,38	21,32
ЖЖ-2	22.05.2018	8,8	0,012	0,12	4,58	20,62
ЖЖ-2	18.06.2018	8,8	0,012	0,12	5,65	22,21
ЖЖ-3	20.04.2018	8,8	0,013	0,14	6,05	19,98
ЖЖ-3	22.05.2018	8,6	0,014	0,24	6,29	20,28
ЖЖ-3	18.06.2018	8,6	0,008	0,06	3,21	21,52
ЖЖ-4	20.04.2018	8,5	0,024	0,19	6,16	19,37
ЖЖ-4	22.05.2018	8,3	0,032	0,1	9,36	18,95
ЖЖ-4	18.06.2018	8,3	0,034	0,065	6,48	20,44
ЖЖ-5	20.04.2018	9,4	0,081	0,13	11,27	20,77
ЖЖ-5	22.05.2018	8,8	0,062	0,09	17,19	19,66
ЖЖ-5	18.06.2018	8,6	0,09	0,06	9,58	17,99
Basis values	Average	8,86	0,029	0,144	6,852	18,314
	Minimum	8,5	0,013	0,05	3,4	10,13
	Maximum	9,4	0,081	0,21	11,27	21,32
For 1 half of 2018	Average	8,69	0,03	0,11	6,74	18,39
	Minimum	8,3	0,006	0,05	2,14	8,68

	Average	9,4	0,09	0,24	17,19	22,21
--	---------	-----	------	------	-------	-------

Sampling points characteristics		The harmful substances concentration				
Description	Sampling date	pH	Petrochemicals, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
		MPC values				
		-	-	0,5	32	23
ZHETYBAY CAMP (730 KM)						
AK-23	20.04.2018	8,7	0,012	0,15	5,94	17,02
AK-23	22.05.2018	9,1	0,016	0,16	5,85	20,9
AK-23	18.06.2018	9	0,01	0,14	2,17	21,67
AK-24	20.04.2018	8,7	0,012	0,2	4,98	17,89
AK-24	22.05.2018	8,8	0,017	0,17	3,19	21,6
AK-24	18.06.2018	8,4	0,009	0,15	2,3	20,33
AK-25	20.04.2018	8,7	0,023	0,17	6,04	19,72
AK-25	22.05.2018	8,9	0,02	0,11	4,35	20,09
AK-25	18.06.2018	8,9	0,01	0,15	3,37	22,59
AK-26	20.04.2018	8,6	0,013	0,25	6,36	17,88
AK-26	22.05.2018	8,5	0,02	0,16	5,88	19,1
AK-26	18.06.2018	8,7	0,01	0,16	3,74	21,95
Basis values	Average	8,675	0,015	0,1925	5,83	18,1
	Minimum	8,6	0,012	0,15	4,98	17,02
	Maximum	8,7	0,023	0,25	6,36	19,72
For 1 half of 2018	Average	8,75	0,014	0,164	4,51	20,06
	Minimum	8,4	0,009	0,11	2,17	17,02
	Maximum	9,1	0,023	0,25	6,36	22,59

Noise and vibration

The noise and vibration samplings were being taken monthly: Zhanaozen c. border, Zhetibay Camp.

The noise and vibration sampling were being taken in April 2018 to control the impact level. Noise and vibration samplings were being taken in three poles: minimum, maximum and equivalent.

NOISE

ZHANAOKEN BORDER. Averages baseline noise measurement (April 2018) of this section are as follows: 70dBa; the maximum basic measurements were 79dBa.

The obtained average equivalent value was 76dBa, the maximum equivalent value at the average data was 79dBa due to the monitoring results for 1 half of 2018.

The noise increasing was not found on this area.

ZHETYBAY CAMP (730 KM). Averages baseline noise measurement (April 2015) of this section are as follows: 62dBa; the maximum basic measurements were 72dBa at the rate of 80dBa.

The obtained average equivalent value was 66dBa, the maximum equivalent value at the average data was 73dBa due to the monitoring results for 1 half of 2018.

The noise increasing was not found on this area.

Table 3.7

NOISE

Sampling point	Sampling date	Noise, dBa		
		Equivalent	Maximum	Minimum
		Standard value, 80		
ENTRANCE TO AND ROAD OUT SHETPE VILLAGE				
AK-5	20.04.2018	70	76	60
AK-5	22.05.2018	78	80	70
AK-5	20.04.2018	79	80	72
Basis values	Average	70	76	60
	Minimum	76	79	67
	Maximum	70	76	60
For 1 half of 2018	Average	79	80	72
	Minimum	70	76	60
	Maximum	78	80	70

ZHETYBAY CAMP (730 KM)				
AK-23	20.04.2018	60	70	50
AK-23	22.05.2018	65	71	37
AK-23	18.06.2018	68	74	40
AK-24	20.04.2018	64	74	54
AK-24	22.05.2018	68	73	40
AK-24	18.06.2018	72	76	44
AK-25	20.04.2018	70	80	60
AK-25	22.05.2018	60	71	42
AK-25	18.06.2018	62	74	44
AK-26	20.04.2018	54	64	44
AK-26	22.05.2018	70	76	42
AK-26	18.06.2018	74	78	46
Basis values	Average	62	72	52
	Minimum	54	64	44
	Maximum	70	80	60
For 1 half of 2018	Average	66	73	45
	Minimum	54	64	37
	Maximum	74	80	60

VIBRATION

ZHANAOZEN BORDER. Averages baseline vibration measurement (April 2018) of this section are as follows: 67 dB; the maximum basic measurements were 68 dB at the rate of 100dBa.

The obtained average equivalent value was 75 dB, the maximum equivalent value at the average data was 80 dB due to the monitoring results for 1 half of 2018.

The vibration increasing was not found on this area.

ZHETYBAY CAMP (730 KM). Averages baseline vibration measurement (April 2015) of this section are as follows: 66 dB; the maximum basic measurements were 77 dB at the rate of 100dBa.

The obtained average equivalent value was 74 dB, the maximum equivalent value at the average data was 83 dB due to the monitoring results for 1 half of 2017.

The vibration increasing was not found on this area.

Table 3.8

Sampling point	Sampling date	Vibration, dB		
		Equivalent	Maximum	Minimum
		Standard value, 100		
ENTRANCE TO ZHANA OZEN				
ЖЖ-5	20.04.2018	75	80	68
ЖЖ-5	22.05.2018	79	84	72
ЖЖ-5	18.06.2018	84	88	80
Basis values	Average	75	80	68
	Minimum	79	84	73
	Maximum	75	80	68
For 1 half of 2018	Average	84	88	80
	Minimum	75	80	68
	Maximum	79	84	73

ZHETYBAY CAMP (730 KM)				
AK-23	20.04.2018		76	62
		70		
AK-23	22.05.2018		90	74
		79		
AK-23	18.06.2018		88	72
		77		

AK-24	20.04.2018	76	82	68
AK-24	22.05.2018	77	88	72
AK-24	18.06.2018	74	84	68
AK-25	20.04.2018	68	74	60
AK-25	22.05.2018	71	86	70
AK-25	18.06.2018	77	88	72
AK-26	20.04.2018	68	74	60
AK-26	22.05.2018	74	86	70
AK-26	18.06.2018	72	82	66
Basis values	Average	71	77	63
	Minimum	68	74	60
	Maximum	76	82	68
For 1 half of 2018	Average	74	83	68
	Minimum	68	74	60
	Maximum	79	90	74

SUMMARY AND CONCLUSIONS

1. The Contractor by the due date submitted for approval the environmental management plan to Consultant on construction supervision. Plan was approved by letter no.0137 dated on April 13 2018. In monthly basis, the Contractor provided Report on implementation of environment management plan, including check lists on monitoring.

2. In accordance with the requirements of the specification Contractor basic measurements of ambient air, soil, noise, vibration, surface water on the construction site. Further sampling was carried out on a monthly basis. As a result of reporting on environmental monitoring activities of the Contractor during reconstruction of section «Zhetibay-Zhanaozen» 35-73 (38 km) has allowed environmental impact. Ongoing activities are effective.

3. The Contractor has issued and received in state bodies of Manghystau region permits for land plots, for the location and operation of construction sites, Zhetybay and Shetpe camps. Issued and obtained permits for mineral extraction (loam). While obtaining permits the Contractor held public hearings on the environmental impact and the implementation of measures aimed at reducing the impact on the environment.

4. Contractor performs environmental monitoring in accordance with a checklist.

5. Concluded contracts and obtained permits for the removal and disposal of waste from construction sites, including household and fecal waste.

ANNEXES

1. List of state ecological expertize for road reconstruction sections “Zhetibay-Zhanaozen” (35-75 km)
Branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi in Aktau as of 01.07.2018
2. List of environment emission permit for road reconstruction sections Zhetibay-Zhanaozen (35-73 km)
Branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi in Aktau as of 01.07.2018
3. Photos

1. List of state ecological expertize conclusions for road reconstruction sections “Zhetibay-Zhanaozen” (35-73 km) Branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi as of 01.07.2018

Number expertize conclusion	Issue date	Conclusions description
04-08/1376	23.04.2015	For project “Road reconstruction section “Beineu-Aktau”, km 632,3-719 (Shetpe vill.-Zhetibay vill.). Adjustment in construction side of mobile asphalt and crushing devices”
KZ44VDC00040795	30.09.2015	For project “Construction of temporary camp in Karakiya region in Mangistau oblast on 730 km road Beineu-Aktau for workers of branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi in Aktau.
KZ17VCY00072334	13.07.2016	“Project of norm of maximum permissible discharges of pollutants in atmospheric air from branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi (Shetpe construction site)”
KZ66VCY00076399	30.09.2016	“Project of norm of maximum permissible discharges of pollutants in atmospheric air from branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi (Zhetibay construction site)”
R3-0214/16	24.10.2016	Project “Installation of bitumen pool and emulsion devices on construction site area, located in Karakiya region of Mangistau oblast”
KZ55VDC00066302	07.12.2017	“Project on conduction of search assessment works of clay materials and sand from soil sections 1, 2, 7, 7-2, 8, 8-1, located in Mangistau region for road reconstruction section “Zhetibay-Zhanaozen” (35-73 km)”
KZ31VDC00070711	04.06.2018	As per “Project impact assessment to environment to the project of industrial excavation of clay materials form soil sections 1, 2, 7, 7-2, 8, 8-1, located in Mangistau oblast Republic of Kazakhstan, for road reconstruction sections “Zhetiba-Zhanaozen-Fetisovo-Republic of Kazakhstan border” km 35-73 km”

1. List of environment emission permits for road reconstruction sections “Zhetibay-Zhanaozen” (35-73 km) Branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi as of 01.07.2018

Objects description	Permits number	Issue date	Commencement date	Completion date
Shetpe construction site	KZ70VCZ00095646	20.07.2016	20.07.2016	31.12.2025
Zhetibay construction site	KZ25VCZ00108096	17.10.2016	20.10.2016	31.12.2025
Using bitumen pool and emulsion device on construction site area, located in Karakiya region Mangistau oblast	KZ72VDD00061453	04.11.2016	01.01.2017	31.12.2020
Camp maintenance in Karakiya region	KZ23VDD00082317	30.11.2017	30.11.2017	unlimited
Search-evaluate works performance of clay materials and sand of soil sections 1, 2, 7, 7-2, 8, 8-1, located in Mangistau oblast of Republic of Kazakhstan for road section reconstruction Zhetibay-Zhanaozen (35-73 km)	KZ81VDD00089712	22.02.2018 г.	22.02.2018 г.	unlimited
Construction works of Branch office JCS Cengiz Insaat Sanayi Ve Ticaret Anonim Sirketi on the road section Zhetibay-Zhanaozen (35-73 km)	KZ71VDD00091153	20.03.2018 г.	20.03.2018 г.	бессрочное
Industrial excavation of clay materials from soil sections 1, 2, 7, 7-2, 7-3, 8, 8-1, located in mangistau oblast Republic of Kazakhstan, for road section reconstruction “Zhetibay-Zhanaozen-Fetisovo-Republic of Turkmenistan border”35-73 km	KZ34VDD00095311	15.06.2018 г.	15.06.2018	31.12.2018

3 Photos



PK 352 – Rock soil excavation



PK 469+20 – 478+60 – binder course



PK 497 – base course



PK 400 – soil levelling (roller)



PK 400 -597 – soil levelling (grader)



PK 516 – prime coat. (works by distributor)



Base course pavement and compaction.



Dedusting of maintenance area in Camp.



Atmospheric air sampling PK 350



Atmospheric air sampling PK 450



Atmospheric air sampling Zhanaozen border



Atmospheric air sampling





Soil sampling PK 350



Atmospheric air sampling PK-636+83



Vibration level measurement (entrance to Zhanaozen c.)



Vibration level measurement on camp border Zhetibay