

Environmental Monitoring Report

1st Bi-Annual Report (January–June 2015)
July 2015

KAZ: MFF CAREC Transport Corridor 2 (Mangystau Oblast Section) Investment Program, Project 2 (Shetpe–Aktau Sections)

Prepared by SMEC International Pty Ltd., Australia in association with Sapa SZ, Kazakhstan for the Ministry of Investment, Committee of Roads and Development and the Asian Development Bank.

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



LOAN NUMBER 2967-KAZ

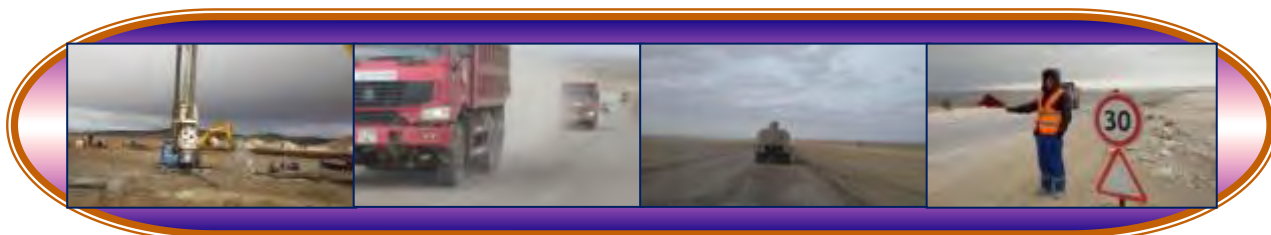
MFF CAREC Transport Corridor 2: INVESTMENT PROGRAM-PROJECT 2

(Mangystau Oblast Road Sections Connecting Shetpe - Aktau)

Bi-annual Environmental Monitoring Report

(Period: January - June 2015)

July 2015



CONSTRUCTION SUPERVISION CONSULTANT

SMEC International Pty Ltd., Australia
In association with Sapa SZ, Kazakhstan





Bi-annual Environmental Monitoring Report

Period: January - June 2015

July 2015

Republic of Kazakhstan: MFF CAREC Transport Corridor-2: INVESTMENT PROGRAM-PROJECT-2

Financed by the Asian Development Bank

Prepared by

SMEC International Pty Ltd., Australia
In association with Sapa SZ, Kazakhstan

For Ministry of Investment and Development, Kazakhstan
Committee for Roads,

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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
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
RK	Republic of Kazakhstan
RoW	Right of Way
SMEC	Snowy Mountain Engineering Corporation
SPS	Safeguard Policy Statement
SSEMP	Site Specific Environmental Management Plan
TOR	Terms of Reference
TS	Technical Specification

PART I: INTRODUCTION

1 PRELIMINARY INFORMATION

1.1 Background

This report is the first Bi-annual Environmental Monitoring Report by the Engineer for the Project. This Bi-annual Environmental Monitoring Report of the project construction supervision contract 1 and 2 (km 632 – km 719 and km 719 – km 802) by the International Environmental Specialist covers the period from January 2015 to June 2015 in compliance with the environmental scope of the construction supervision. The main purpose of this monitoring is to ensure the implementation of environmental mitigation measures during construction through supervision by the Engineer during the construction phase. Environmental issues also are anticipated to be identified in advance for avoidance and to ensure timely completion of the project. This Bi-annual Environmental Monitoring Report is produced as a report to the requirements of the Contract for the provision of Construction Supervision Services to the Ministry of Investment and Development (MID), Committee for Roads of the Republic of Kazakhstan for the CAREC 2 Corridor (Mangistau – Oblast Section) Investment Program Project 2 under the Asian Development Bank, Loan Number 2967- KAZ.

The Asian Development Bank (the “ADB”) has provided its support to the Government of Kazakhstan to contribute to the development of the national road network through the MFF CAREC Transport Corridor 2 (Mangystau Oblast Section) Investment Program, Project 2. The main objective of the Project is to support the country’s inclusive and environmentally sustainable economic growth and poverty reduction by gradual reduction of road transport costs for goods and services as well as improve access, road operational conditions, ease of transit, road safety, and regional cooperation and integration along Kazakhstan’s road network through; Reconstruction of 170km roads of Shetpe – Aktau road of Mangystau Oblast sections in accordance with the ADB’s 3 Strategic Agendas for inclusive growth, regional integration, and environmentally sustainable growth.

As per the EIA report, the project has been classified as category “A” based on the cumulative Environmental Impacts. The Environmental impacts of the project during implementation are assessed by measuring various performance indicators. The collection and collation of the baseline data for various environmental impacts for the project helped in assessing the impacts as per implementation schedule given in the contract. Construction supervision is being undertaken under FIDIC with environmental supervision and monitoring scopes. The Contractor is obligated to obtain regular parameter measurements of air quality, water quality, noise & vibration, the results of which are submitted regularly to the Engineer. Environmental monitoring of the Engineer is done primarily by the International Environmental Specialist with field coordination with local consultant engineers.

As mentioned in the Terms of Reference of the Construction Supervision, the environmental aspects entail environmental monitoring and management of project implementation and assistance in ensuring the implementation of environmental management practices at each stage of the construction. In addition, the specialist will develop an environmental auditing protocol for the construction period, formulate a detailed environment monitoring and

management plan (EMMP), regularly supervise the environmental monitoring, and submit periodic reports based on the monitoring data and laboratory analysis reports.

1.2 Objectives

The purpose of the Bi-annual Environmental Monitoring Report is to provide a summary of the key issues relating to environmental management over the past six months (January 2015 to June 2015). 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 is prepared by SMEC International Pty Ltd. and is intended to inform ADB and any other interested parties of the status of environmental management of the project. The report is summaries; more detailed information is included in the monthly and quarterly report prepared by the Contractors and the Engineer.

The objective of this report is 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 is given in EIA and EMP incorporating all the Environmental concerns of the project. The principle objectives of the project with respect to Environment are:

- 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 bi-annual environmental protection progress reports submitted by Contractor, information and discussions with consultant staffs, contractor representatives and other relevant stakeholders.

1.3 Methodology

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

- Contractors' Monthly and Bi-annual Environmental Protection Reports;
- Contractors' and Consultants Grievance Registers;
- 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 public consultation;
- 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 six months.

1.4 The Project Area

The project involves reconstruction of the road between Shetpe and Aktau and construction of two new bypasses around Shetpe and around Zhetibay. The project is located within Mangystau Oblast bordering Caspian Sea. The end point of this road project is the city of Aktau, 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 will comprise upgrading and reconstruction of a 170 km section of the national highway A-380 between Aktau and Shetpe. Location of the Project road in terms of contracts is shown in Figure 1.1. The project consists of two sub-sections, contracted separately.

▪ **Sub-Section 1: km 632 - km 719 (Shetpe Village – Beki Village – Zhetybai village):**

This sub section includes upgrading of the road from Category III to category II with a total length of 85.44 Km and construction of two Bypasses, Bypass Shetpe village (PK 1+ 60 to PK 72+80) and Zhetibay village(PK 17+60 to PK 796+80) are expected to pass in new alignment. Other parts of this section, projected traffic flow direction coincides with the existing embankment sub-grade with partial deviations from embankment in the areas of rectification and curvature designs (length of sections from 120 up to 920m).

In this sub section project provides construction of bridge 1x18m on PK 33+24, construction of overpass 3x24m on PK 72+30, and construction of transport interchange in one level on PK 92+ 58.

It is also planned to construct Pipe Culverts 54 Nos, ramps and 8 Nos Box Culverts and Cattle Passes (4x2.5 m).

Lightening of the road will be done on the sections PK34+00- PK45+00, PK68-PK109, a total length of 10.6 Km and on sections PK90+60-PK817+60 with a length of 7.5 Km.

▪ **Sub-Section 2: km 719 - km 802 (Zhetybai village – Ashyagar village- Aktau):**

This Sub-Section involves upgrading of 67 km section of the existing road between Zhetibay and Aktau, from Category II to category IB, and repair of 16 km section as Type III.

The length of the project is 83.896 km. The reconstruction project provides:

- PK 0+ 00 to PK 682+96reconstruction of existing road in the parameters I-B technical category with four lanes carriageway and widening the roadway to 27.5m at the top.
- Construction of Interchanges in two levels at the intersection of highways “Aktau-Zhanaozen and Shetpe-Kuryk with the passage of four-lane highways on top (of the overpass 6x24m) across the road "Shetpe - Kuryk" and lightening length of 5.08 km.
- From PK 698+96 to PK 838+96 of the section within urban area, provided the average repair of the road and sidewalks.
- At PK 43+37 Construction of railway overpass(13.5m+2x18m+13.5m) and at PK 376+74 reconstruction of bridge over Arshyagar River (3X18m).
- Construction of 48 nos pipe culverts and 5 nos of cattle passes (4x2.5m).
- Lightening of traffic round about at PK 679+30 with 3.8 km of length

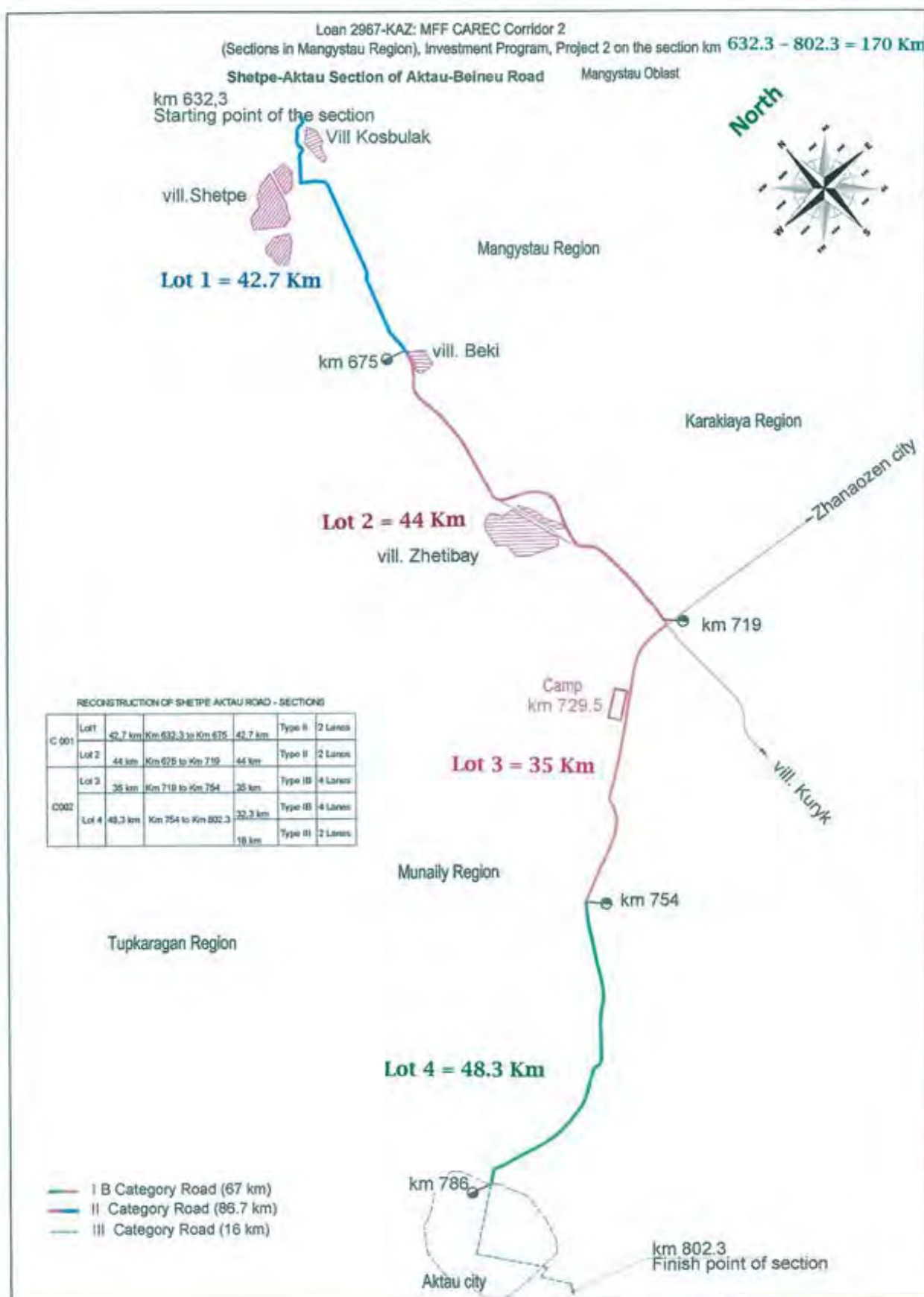


Figure 1.1: Location of the Project Road

1.5 Technical Description of the Road Project

The Scope of works mainly consists of:

- building a new carriageway along the existing one at 67 kilometer road section to increase the road width to Type I B standards (4 lanes) and reconstruction of the pavement of the existing carriageway together with geometric improvements of vertical and horizontal alignment,
- reconstruction of the pavement at 87 km section together with geometric improvements of vertical and horizontal alignment by keeping existing Type II standards (2 lanes),
- rehabilitation of the pavement by milling and overlays at the last 16 km section of the road to Aktau Port.
- 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 areas for momentary stops,
- Improvement of road safety by provision of guardrails, road signs and marking

The project road sections and upgrading standards is given in below

Contract 001	Lot 1	42.7 km	Km 632.3 to Km 675	42.7 km	Type II	2 Lanes
	Lot 2	44 km	Km 675 to Km 719	44 km	Type II	2 Lanes
Contract 002	Lot 3	35 km	Km 719 to Km 754	35 km	Type IB	4 Lanes
	Lot 4	48.3 km	Km 754 to Km 802.3	32.3 km	Type IB	4 Lanes
				16 km	Type III	2 Lanes

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 during winter, less pronounced, as snowfall. Complete snow cover of large areas is usually lasting only for few weeks during winter time (January to March). Thus driving conditions in this road sections are, from climatic point of view, relatively good throughout the entire year. However, during the winter months some locations with steep ascends pose considerable problems for drivers as road surface becomes icy and difficult to manoeuvre.

Within the urban areas of Zhetibay and Shetpe dust is a common problem that results from the soil and climatic conditions of the region. During the EIA preparation, consultations with villagers in Zhetibay 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.

Although geological mapping shows two tectonic lines converging South-East of the town of Shetpe the seismic zoning but expertise quoted by the EIA denominates the entire area as '*seismically inactive*'. The Projects Technical Design experts also believe that seismicity is not a significant concern for this road construction project, stating that the only locations for bridges are far away from the above identified tectonic faults.

Along the entire road corridor only one perennial surface water course can be observed; the Ashyagar Creek (km 755). A bridge, approximately 30 meters in length crosses the river, which dries out during extreme hot summer months. Current plans envisage that the river will not be used as a source of technical water for the Project. Groundwater is generally available only from medium to deep aquifers, which is exploitable at certain locations throughout the Road Corridor. This groundwater is often saline and there are currently no plans to extract ground water for Project use. Technical water will be sourced from piped potable supplies from Aktau and Zhetibay. Tanker trucks will deliver water from the pipelines to the relevant construction sites. Potable water will be provided by five litre bottles of spring/mineral water. Other potable water supplies exist but it is unlikely that they will be used as drinking water. The Contractor is responsible for locating sites for other non-technical water and obtaining permits for extraction.

According to the Archaeological Expertise published in the EIA there are few, rather insignificant archaeological/historical assets located near the Right of Way (RoW). Due to their distance to the road shoulder, none of these items is likely to be damaged or otherwise affected by the foreseen project works.

The Karagie-Karakol State Game Reserve (KKSGR), is a game reserve (IUCN Category 4), located in Karakiyanskiy and Munaylinsky Districts of Mangystau Oblast. The Reserve occupies the whole area of the Karagiye depression, the Aschy River valley, as well as maritime coastal zones south of the city of Aktau. For about 36 km its Northern boundaries run parallel to the Project Road running from Aktau in direction of Zhetibay. It is important to note that the A380 does not enter the KKSGR boundaries at any point, but is within 100 meters of the northern boundary of the KKSGR. Within the KKSGR there are a large number of plant (20) and animal (300) species, of which 4 plant species and 24 animal species are included in the Red Book of Kazakhstan. Most of the rare and endangered animals are large predatory birds and rare shore birds near the Caspian seashore areas, which is not in close proximity to the Project. The existing KKSGR is currently not well recognizable for road users passing by this area. Specific signboards and markings are absent, and at the pass section km 755 the Reserve is in a poor condition as portions of the roadside slopes are littered with rubbish.

1.7 Scope of Works

The present report is the first Bi-annual Environmental Monitoring Report covering the period from January 2015 to June 2015. 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 supervision consultant has to undertake specific environmental safeguard measures during the execution of work.

The following activities are considered for effective Environmental 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
- 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
- Traffic safety and control

The EMMP signifies the environmental action to be undertaken under Mangistau - 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 is almost completed. Contractor provided offices and accommodation for the Engineer on a territory of Zhetybay camp. 4 nos houses provided in Aktau and 20 nos houses on a territory of “Zhetybay” base camp. Out of 24 Nos vehicles, 22 units have been provided by the contractor. The engineer’s facilities like equipment and furniture’s are being supplied with a slow pace. Current average of workforce reached 1,198 employees, the total amount of machinery and equipment at the site is 632 units. The details are available in the consultant monthly report.

Contract 001, km 632,3 – km 719 (Shetpe village – Beki village – Zhetybai village):

Land with a total area of 10 ha reserved for camp mobilization, Asphalt plant, mobile crusher and Crusher plant-2 installation have been completed near Shetpe village. Mobilization of camp “Shetpe” construction and fencing of the territory completed. Asphalt plant No1 was erected. Camp site construction and erection of Asphalt Plant and Crusher Plant were completed on this base camp of Shetpe village. Crusher Plant No1 has been erected earlier.

Contract 002, km 719-km 802, 27 (Zhetybai village – Ashyagar village - Aktau):

Total area of 23,4648 Ha for base camp mobilization Asphalt Plant, Crusher plant and Emulsion plant erection as well as the construction of main water and gas pipelines have been completed. The contractor completed the construction of the planned office and

residential buildings, workshops and warehouses. However, due to shortage of space have begun to erect an additional two dormitories and one office building. Concrete plant has been tested and released about 1600 cubic meters of production. Asphalt plant also has been tested and released production about of 12,000 tones.

In accordance with the requirements of the Technical Specifications, the contractor purchased and delivered to site complete construction laboratory and received the Certificate №15 «on the assessment of the measurements in the laboratory, performing tests on quality control of physical and mechanical properties of raw materials and construction materials for construction and repair of roads". The details description of works executed for the Contract 001 and Contract 002 are given in Table 1.1 and Table 1.2.

Table 1.1: Description of Works Executed for the Contract-001-ADB/CW-2014 by 07 July 2015

No.	Description of works	Total as per Contract	Planned for 2015	Actual as current date	Actual from beginning of year	Achieved (%)	Backlog
1	Earthworks, thousand m3	4 136,38	3 682,650	195 646,63	1 135 202	30,83	
2	Sub-base h-21cm. km	85,44	67,04	6,2	7,0	10,44	23,52
3	Crushed stone Sand Gravel Base course h-15cm , km	85,44	65,34	4,80	4,80	7,35	20,73
4	Porous coarse-grained a/c h-12cm, km	85,44	55,80	2,66	2,66	4,77	22,83
5	Bottom layer of coarse-grained a/c h-10, km	85,44	40,02	1,98	1,98	4,95	17,16
6	Top layer of SMA h-5cm, km	85,44	-	-	-	-	-
7	Bridges and overpasses, units	2/381.285.773	1,51/289.303.445	76.665.413	76.665.413	26,5	
8	Culverts, units	62	40	Dismant. 6. Concrete culverts	Dismant. 6. Concrete culverts		

Table 1.2: Description of Works Executed for the Contract-002-ADB/CW-2014 by 01 July 2015

No.	Description of works	Unit	Total as per Contract	Planned for 2015	Achieved in July 2015	Achieved in 2015	Achieved (%)
1	Top layer of pavement of Crushed stone sand mix -15,H =5 cm	km	83	-		--	---
2	Binder course, Porous coarse-grained asphalt concrete, porous H=10 cm	km	67	21,62	0,00	0,97	4,5
3	Top layer of base course Porous coarse-grained asphalt concrete, highly	km	67	21,72	0,2	1,17	5,4

No.	Description of works	Unit	Total as per Contract	Planned for 2015	Achieved in July 2015	Achieved in 2015	Achieved (%)
	porous H=12 cm						
4	Lower layer of base course Crushed stone sand mix C4 H=20cm	km	67	26,21	0,11	1,49	5,7
5	Subbase of H=20 cm	km	67	42,36	0,6	1,98	4,7
6	Earth bed	Thousand m3	5 219, 888	3 401,020	2,7	2 250,3	66,2 %
7	Culverts	PC.	53	33		2,5	7,6 %
8	Top layer of pavement of Crushed stone sand mix –15,H =5 cm	km	83	-		--	---

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

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

While developing and implementing this MFF CAREC Corridor II (Mangistau Oblast Section) Investment Program, Project 2 road construction project in Mangistau Oblast, the Contractor (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 have the experience or knowledge to adequately evaluate some of the more specialized requirements of the project, or the resources to effectively manage it.

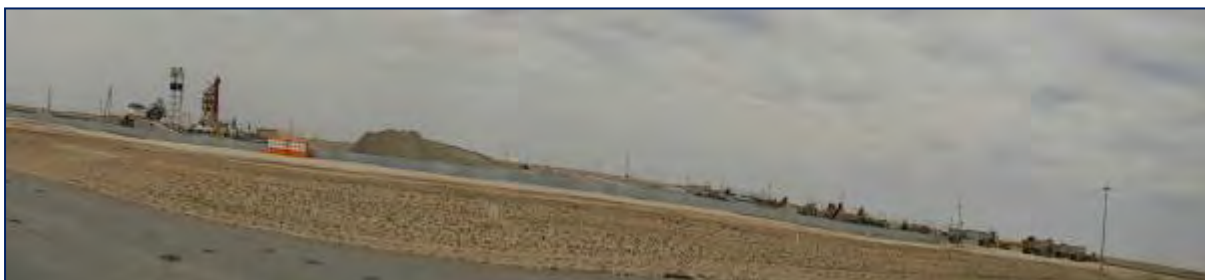
1.10 Construction Supervision Contract (Cengiz Insaat Sanyive Ticaret A.S)

SMEC International Pty Ltd. in association with Sapa SZ LLP (the Consultant/Engineer) has been entrusted by the Employer to provide consultancy services for the contract administration and construction supervision works. The SMEC Consultant is responsible for the Construction Supervision of two Construction Contracts. Other duties include environmental and social monitoring in accordance with ADB requirements.

1.11 Establishing the Construction Camp

The Contractor has established a dedicated construction main camp at Zhetibay (Photograph 1.1) and the area covered 5,600 sqm, to accommodate 544 personnel; satellite camp at Shetpe will cover area of 1,070 sqm, to accommodate 160 personnel. Engineer office and accommodation facilities have located in Zhetibay camp. The contractors' field office, storage facilities and construction camps are not located near by the water bodies (e.g. lakes, ponds, stream, river, etc.). The sites for the construction camps are selected in consultation with the respective authority.

The Contractor has mobilized all the required equipment to site. The camp includes a work shop engineering laboratory and fuel store. A crushing plant, asphalt plant and precast yard are sited close-by. Freshwater is available and the camp has a dedicated sewerage system directed to a septic tank. Septic tank and solid waste are regularly collected for disposal at an approved site. The camp comprises site offices for Contractor and Consultant and accommodation for staff working on the Project. There are mobile connections available at the camp. Provision of 3G broadband is being investigated. In early July 2015, medical facilities are employed fulltime at the camp and have access to an equipped medical competence.



Photograph 1.1: Construction Camp and Consultant Office at Zhetibay (Chainage: Km729.5)

PART II: ENVIRONMENTAL MONITORING

2 ENVIRONMENTAL MONITORING FRAMEWORK

The environmental monitoring framework was based on the construction supervision ToR, Technical specifications, project EIA for Category A and ADB guidelines.

2.1 Methodology for Environmental Monitoring in Construction Supervision

Construction environmental monitoring is a function of supervision, and the essential purpose is to ensure adherence to the EMP. The monitoring is a day to day process, which ensures that departures from the EMP are avoided or quickly rectified, or that any unforeseen impacts are quickly discovered and remedied. Specific actions in the EMP that are to be monitored included in the Monitoring Plan. During construction, environmental monitoring attempts to ensure the protection of landslide, side slopes, and embankment from potential soil erosion, borrow pits restoration, quarry activities, siting of work sites and material storages, siting of batch, concrete and asphalt plants especially close to the settlements and nature reserve, preservation of religiously sensitive locations, graveyards or burials, community relations, and safety provisions.

As stipulated in the Contract for the project, the Contractor will adhere to the requirements of the environmental aspects of the contract document particularly in the General Conditions of Contract (FIDIC) as follows: 4.8: Safety Procedure; 4.18: Protection of Environment; 4.15: Access Route; 4.24: Fossils; and 6.7: Health & Safety.

In addition, detailed requirements are found in the Technical Specifications particularly the following:

Section 106: Protection of Environment

- A. General
- B. Fuel & Chemical Storage
- C. Water Quality
- D. Air Quality
- E. Noise
- F. Earthworks
- G. Preservation of Antiquities
- H. Environmental Enhancement
- I. Special Conditions

Section 113: Diversion and Traffic Control Measures – mainly the B. Traffic Management Plan

The initial obligation of the Contractor is to formulate a project Environmental Management Plan (EMP) based on the findings contained in the January 2013 Environmental Impact Assessment (EIA) Report. The Contractor submitted such document but there was missing information and plan for the project. Hence, the Contractor was asked to submit a detailed site/project specific Environmental Management Plan based on the EIA that was provided,

and conforming to the Contract documents. As the work progresses, the Consultant shall monitor the Contractor's compliance with the Environmental Management Plan and report upon impacts encountered and mitigation measures are employed and make further recommendations as deemed necessary.

In general, as stipulated in the ToR for the Construction Supervision on the environmental aspect the Consultant shall "Carry out the following duties related to environmental mitigation measures during construction (a) to ensure that all the environmental mitigation measures required to be implemented are incorporated in the contract documents; (b) supervise and monitor the implementation of environmental (management)/mitigation plan (EMP); and (c) in case of unexpected environmental impacts, coordinate with the project management consultant (PMC) to recommend necessary measures to the Committee of Roads and ADB for Implementation". Based on this the Environmental specialist shall establish coordinative work with relevant staff of the Consultant and the Contractor to ensure that environmental issues are recognized prior to or discovered during work implementation. The EMP for the project shall be the basis of the monitoring and accordingly, the Contractor has submitted contractor EMP (Contracts 1 and 2) to the Engineer. Coordinative communication channels shall be established according to the following work coordination chart (Figure 2.1):

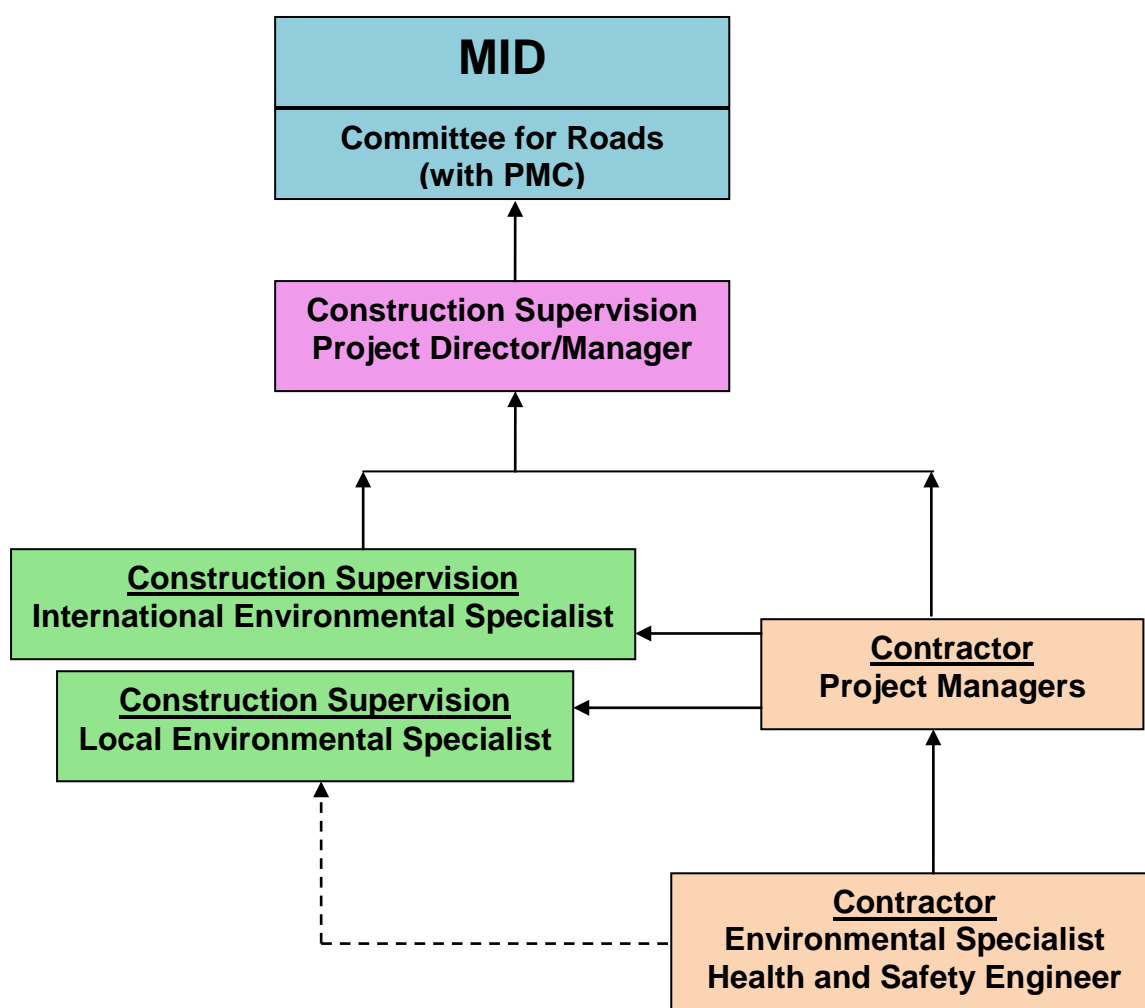


Figure 2.1: Work Coordination Arrangement

Specific tasks shall be undertaken by the International Environmental Specialist as follows:

- Review EIA and EMP and Technical Specification and set up internal monitoring system on the project's environmental issues and project requirements;
- Monitor, control of the compliance with the requirements of the Contract (EIA EMP, TS) stipulations and national environmental legislation;
- Closely monitor project sites against any unexpected environmental impacts;
- Work in close coordination with PMC's Environmental Engineer and coordinate with other relevant parties on environment requirements of the Project;
- Conduct inspections to Contractor's objects and building sites, recording and reporting;
- Advise the Team Leader on environment problems and / or requirements, and recommend mitigation measures and potential risks;
- Prepare report on EMP implementation and Contractor's compliance;
- Participate in the preparation of the proposed letters to Contractor and in preparation of Monthly reports, drafting Engineer's site Instructions when needed;
- Follow up with the Contractor submission of the Environmental Management Plan in English and review its compliance to Technical Specification, EIA and EMP;
- Review the CV of the Candidate proposed by the Contractor for the position of the Environment Engineer and conduct an interview with him in the presence of the Team Leader and provide your comments on his suitability for the position;
- Control the Contractor's work in the vicinity of Prokhlada spring and report any affects and risks on the environment;
- Review the concerns raised by PMC and comment / advise the measures for elimination thereof;
- Inspect the Contractor's documentation with respect to borrow pit and quarry approvals and reinstatement plans, and monitor / control borrow pit excavations' compliance to the conditions given in approvals and reinstatement plans;
- Determine the locations for initial measurements of air and water quality and noise and vibration monitoring and initiate the pre-construction measurements together with Contractor;
- Involve the Engineer's local Environmental Social Development Specialist at every stage of review / monitoring during the assignment and provide him the technical knowhow and support so that he can follow up the issues at the times when the International Environmental Specialist is off site.

The next salient steps will be to operationalize these objectives and tasks to enable an efficient and effective environmental monitoring. Corresponding to delineation of roles and responsibilities, reporting procedure shall be set-up. Coordinative meetings shall be done to be abreast with the fulfillment of requirements of Government of Kazakhstan and ADB.

In addition, the following laws, regulations and standards are also considered and used as guidelines related to road construction activities of the Contractor:

Table 2.1: Relevant Laws, Policies and Regulation on Environmental Protection as per Government of Kazakhstan¹

Name of Legislation	Date and Number of registration
Methodology for Determining Emissions Standards to the Environment	Approved by the Order of the Minister of Environment (MEP), 21 May 2007, No. 158-p".
"Instruction on Conducting Environmental Impact Assessment of Planned Economic Activity when Developing Pre-planning, Planning, Initial project and Project documentation,	Approved by the Order of the Minister of MEP, 28 June 2007, No. 204-p".
The Amendments to the Order of the Minister of Environment Protection of Republic of Kazakhstan on Approval of "Instruction on Conducting Environmental Impact Assessment of Planned Economic Activity when Developing Pre-planning, Planning, Initial project and Project documentation"	Approved by the Order of the Minister of MEP, 20 March 2008, No. 62-p".
Regulations on Conducting State Ecological Expertise.	Approved by the Order of the Minister of MEP, 28 June 2007, No. 207-p".
The Amendments to the Order of the Minister of Environment Protection of Republic of Kazakhstan on Approval of Regulations on Conducting State Ecological Expertise	Approved by the Order of the Minister of MEP, 9 October 2007, No. 296-p".
Rules for Conducting Public Hearings	Approved by the Order of the Minister of MEP, 7 May 2007, No. 135-p".
Instructions for Qualifying Requirements to Licensed Activity on Environmental Design, Regulation and Development of Environmental Impact Assessment	Approved by the Order of the Minister of MEP, 21 October 2003, No. 239-p".
Methodological Guidelines to the Licensed Activity on Environmental Design, Regulation and Development of Environmental Impact Assessment	Approved by the Order of the Minister of MEP, 10 February 2005, No. 51-p".
Final Environmental Supervision Experts Opinion on Definite Types of Licensed Works and Services	Approved by the Order of the Minister of MEP, 1 July 2004, No. 192-p".
Instructions on Negotiation and Permissions to Special Water Use in the Republic of Kazakhstan	Joint order of the Minister of Health of the Republic of Kazakhstan dated 24 November 2004 № 824, Minister of Environment of the Republic of Kazakhstan of 1 December 2004 number 309-p, Acting Chairman of the Committee on Water Resources, Ministry of Agriculture of the Republic of Kazakhstan dated 11 November 2004 number 236-S, Chairman of the Committee of Geology and Mining Ministry of Energy and Mineral Resources of the Republic of Kazakhstan on 2 December 2004 number 161-p. Joined by the Ministry of Justice of the

¹ Environmental Impact Assessment, MFF CAREC Corridor 2 (Mangystau Oblast Sections), Tranche 2

Name of Legislation	Date and Number of registration
	Republic of Kazakhstan 13 December, 2004 N 3263
The Rules for Licensing and Qualification Requirements to Work Implementation and Delivery of Services in the Field of Environmental Protection	Approved by the Order of the Government of Republic of Kazakhstan, MEP, 5 June 2007, No. 457-p".
Environmental Code of the Republic of Kazakhstan	MEP, 9 January 2007, No. 212-p".
The normative base of requiring an environmental impact assessment	Instruction on conducting environmental impact assessment of planned economic activity when developing pre-planning, planning, initial project and project documentation, approved by the Order of the Minister of MEP, 28 June 2007, No. 207-p".
Law of the Republic of Kazakhstan «On Amendments and Additions to Some Legislative Acts of Kazakhstan on Environmental Issues»	MEP, 9 January 2007, No. 213-p".
Law of the Republic of Kazakhstan «On Ratification of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade»	MEP, 20 March 2007, No. 239-p".
Law of the Republic of Kazakhstan «On Ratification of the Stockholm Convention on Persistent Organic Pollutants»	7 June 2007, No. 259-p".
The Concept of Transition to Sustainable Development for 2007–2009 (Action Plan)	The Order of the President of RK, 14 November 2006, No. 216-p".
The Concept of Environmental Security of the Republic of Kazakhstan for 2004–2015	The Order of the President of RK, 3 December 2003, No. 1241

The monitoring program will include regular monitoring of construction activities for their compliance with the environmental requirements as per relevant laws, policies and regulations, standards, specifications and EMP. During construction, environmental monitoring will ensure the protection of side slopes, and embankment from potential soil erosion, borrow pits restoration, quarry activities, sitting of work sites and material storages, sitting of batch, concrete and asphalt plants especially close to the nature reserve, preservation of religiously sensitive locations, community relations, and safety provisions.

2.2 Construction Supervision Consultant (The Engineer) Environmental Monitoring Work Protocol

Under the guidance of the International Environment Specialist, inspectors of the Engineer regularly conduct environmental monitoring started from April 2015 for the project. The International Environmental Specialist has conducted meeting with the contractor representatives several times for details discussion on the environmental requirements. Findings and results of their monitoring activities are incorporated in the consultant monthly report and quarterly environmental monitoring report and also incorporating in the first Bi-annual Environmental Monitoring Report for the Project.

The environmental specialist regularly visit the construction sites and report to their team leader about issues related to the environment and non-compliances of measures as given in EMP. Necessary direction, in case of non-compliances, are being given to the contractor on the site and through the writing about the procedures to resolve the issues or requirements. During site visits of the International Environment Specialist, on-the-spot field inspections to various impact sites such as borrow pit, asphalt plant, quarry areas as well as contractor's campsite along the project road have been conducted. Environmental issues are noted down and presented to the Contractor as part of the consultation process, whereby issues will be resolved. The effectiveness of the mitigation measures is assessed after site implementation to determine if such measures were effective. The Contractor's measures are deemed acceptable with the environmental requirements for this initial stage of the project but there will be more improvements needed for the environmental activities. The contractor committed to take the action for all environmental issues for further improvements.

Pursuant to the construction supervision as per the ToR, that the "environmental specialist will develop an environmental auditing protocol for the construction period, formulate a detailed environment monitoring and management plan (EMMP)", a work-process arrangement was conceptualized to be undertaken by the project engineers as well as the international environmental specialist. The monitoring and management scope can be divided into the following:

- **Field Supervision**

- ✓ **Field visits:** The environmental specialists should be conducting constant field visits to observe and identify any environmental issues that violate the EMP and any prevailing regulations.
- ✓ **Inspection photo documentation:** During field inspections, photos should always be taken of any field situation as part of the documentation.
- ✓ **Inquiry with field people:** Background information should be gathered pertaining to the issues observed and this can be obtained from field workers, inspectors, and the community.
- ✓ **Witnessing Parameter Measurement:** Whenever any field measurements should be done by the Contractor, the environmental specialist (local)/Engineers should always be present to observe the process and to note down observations.

- **Meetings and Discussions**

- ✓ **Consult with TL/Engineers:** The environmental specialist should consult with the Team Leader and engineers on any environmental issues. He should advice TL and Assistance Resident Engineer (ARE) on the physical and legal implications of the situations and consider these items in the drafting "Non-conformance Letters" to the Contractor.
- ✓ **Discuss with Contractor's Environmental Specialist:** Any environmental issues should be discussed with the Contractor's Environmental Specialist in order to determine their commitment in undertaking environmental mitigation measures.

- ✓ **Training:** Part of the effective work of the environmental specialist is to develop a training program of Contractor's staff and consultant staffs in implementing the EMMP. Hence, the training was conducted by the International Environmental Specialist for the consultant staffs at the Zhetibay camp site on 23rd April 2015 and the another training for the contractor staffs was conducted in consultant office at the Zhetibay camp site on 3rd July 2015.

▪ **Document Checking**

- ✓ **EMP / Supplemental Plans & Method Statements:** The environmental specialists should check the documents submitted by the Contractor and comment on their appropriateness and completeness as prescribed in the Technical Specifications and Contract Documents.
- ✓ **Checking Parameter Measurement Results:** The environmental specialist should inspect in detail the results of the parametric Measurements in order to determine any indication of any situation different from normal conditions. When this is discovered, the environmental specialist should alert the Contractor for immediate action. A re-confirmation of the data will serve as secondary check if everything is within the acceptable limits.
- ✓ **Contractor's Report and Monitoring Data:** The environmental specialist should also verify reports submitted by the Contractor' especially on the evaluation of results of the parametric measurement for air, noise, and water quality.
- ✓ **Checking of Legal Documents:** Permits and all legal documents with relevance to environmental items should be thoroughly checked by the environmental specialist for legislative compliance. This pertains to quarry and borrow pit permits, site approval for campsite, asphalt plant, and crusher.

▪ **Report Writing**

- ✓ **Monthly Reports:** Environmental issues should be reported regularly in the monthly reports by the Contractor and to be commented on by the environmental specialist. Results of parametric measurements for air, noise quality and dust should be reported by the Contractor on a monthly basis as mentioned in the environmental monitoring plan. These results should be assessed by the environmental specialist for appropriate mitigation measures. Environmental issues should be reported regularly in the monthly reports by the environmental specialist for the Client and ADB.
- ✓ **Bi-Annual Environmental Monitoring Reports:** As mentioned in the Particular Conditions of Contracts, the Contractor should come up with a bi-annual environmental monitoring report. Upon submission, the environmental specialist should evaluate the environmental report and come up with general comments. As part of the Engineer's reporting obligation a Bi-annual Environmental Monitoring report should be compiled by the environmental specialist and to be submitted to the Client and ADB after every six month of monitoring.

2.3 Contractor's Environmental Monitoring Procedures

The Contractor started monitoring the physical environment at the vicinity of the project road in March 2015. The parameters being monitored are (i) noise and vibration, (ii) water quality, (iii) air quality (iv) soil quality and (v) flora and fauna monitoring. These indicators form the Baseline monitoring parameters for the project road which can be referred to in the course of the construction of the project as well as during its operation. In addition, a number of pertinent sites are also monitored by the Contractor for any impacts of the construction activities such as quarries and borrow areas, bypass roads, bridge sites, contractor camp subcontractors temporary camps, concrete plant, crusher plant, asphalt plant, the villages (along the bypass) and crossing roads. Impacts will be recorded and mitigated in accordance to the EMP. The basic procedures are described below:

- **Air quality:** Air quality is controlled along the whole road construction sections, contractor camps, concrete plant, crusher plant, asphalt plant by obtaining readings in around 27 selected stations. Readings on atmospheric air quality is compliant with standards and do not exceed maximum permissible concentration.
- **Noise and vibration:** Measurement for noise and vibration is performed monthly along the project road construction (Camp, villages, etc.) in around 14 selected stations where active construction and impacts are expected to be felt. The Norms on protection of the environment from noise and vibration are in accordance with the established standards. Monthly readings taken on noise and vibration were not exceeding the norms.
- **Water quality:** There is a River (Asyagar River) that crosses the road construction site. Accordingly, bridge is being constructed as required by the project. Since April 2015, water quality readings were done in this river.
- **Soil quality:** Soil quality test is performed monthly along the whole road construction sections by obtaining readings in around 27 selected stations. Readings on soil quality is compliant with standards and do not exceed maximum permissible concentration.
- **Monitoring of fauna and flora:** Monitoring of fauna and flora is carried out by direct observation. The habitats of rare animals and birds are not disturbed, as the construction progresses along the project section. Flora along the vicinity of the road is largely affected by dust and traffic emissions.

In March, 2015 Contractor submitted Environmental Mitigation Plan (EMP) to Engineer. CSC's Environmental Specialist has given comments on contractor EMP to contractor for revise the EMP and submits to engineer for approval. The EMP identifies the mitigation and compliance monitoring requirements, including specifying how, when, where and by whom, the mitigation and monitoring is to be carried out during construction period. During construction, mitigative measures will focus in assuring that contractor undertake all his work in an environmentally responsible manner, properly disposing of wastes, controlling the use of fuels and lubricants, revegetating any sites cleared during construction, carefully managing the use of water and being aware that construction dust must be managed as it can travel long distance. A staff (Umirbekova Natalya, Contractor Environmental Specialist) was designated in May 2015 as an environmental representative for the project with duties to deal with environmental activities for the project.

In accordance with the EMP, and the accompanying Environmental Monitoring Plan, the Contractor is required to undertake parametric measurements and observations on air quality, water quality, noise and socio-cultural resources. Locations for the measurements were initially identified. Accordingly, the monitoring guidelines were set as shown below:

Table 2.2: Parametric Measurement Guidelines

Sampling Locations	Points Numbers	Determined parameters	Monthly Measurements Periodicity
Chemical Analysis of Air			
Along the road (Km): 645,654,664,674,684,694,704,714,724,734,744,754,764,774,784	15	Inorganic dust, carbon monoxide, nitrogen dioxide, sulfur dioxide	1 sample
On a border of Zhetybay village	2		1 sample
Shetpe camp (657 km), Zhetybay (730 km)	8		1 sample
Sanctuary border 739 km,771 km	2		1 sample
Chemical Analysis of Soil			
Along the road: 645,654,664,674,684,694,704,714,724,734,744,754,764,774,784 km	15	pH, oil, cadmium, lead, zinc	1 sample
On a border of Zhetybay village	2		1 sample
Shetpecamp (657 km), Zhetybay (730 km)	8		1 sample
Sanctuary border 739 km,771 km	2		1 sample
Measurement of Noise, Vibration			
On a border of Shetpe village (km636,645), Zhetybay village (km 707,713)	4	Noise, vibration	1 sample
Shetpecamp (657 km), Zhetybay (730 km)	8		1 sample
Sanctuary border 739 km,771 km	2		1 sample
Chemical Analysis of Surface Water			
Bridge Asyagar River	1	dry residue, nitrates, sulfates, chlorides, petroleum, iron	1 sample

2.4 Contractor's Health and Safety Management and Monitoring

As provided in Clause 105 – Health and Safety of the General Specifications the Contractor has the following responsibilities:

- To ensure that all subcontractors and their personnel participate fully in the actions prescribed in this Clause for the health and safety of workers.
- To take all reasonable precautions to prevent unauthorized entry to the Site and to protect members of the public from any activity under his control.
- To notify the Engineer immediately of any unsafe incidents or accidents which result in death, serious bodily injury or are likely to lead to incapacity to persons for more than three days.
- To provide, and ensure the utilization of, appropriate safety equipment for all Contractors' Personnel.

- To take all measures necessary to safeguard the health, including Sexually Transmitted Infection (STI) and HIV/AIDS, safety and welfare of Contractor's Personnel.
- To establish a Health and Safety Unit, and shall appoint one responsible member of his staff to act full-time as Safety Officer, and he/she shall notify the Engineer of such appointment. The Safety Officer shall organize, and all Contractors' Personnel shall be required to attend, an orientation/safety induction course within their first week on Site.
- To have regular meetings, at least monthly, with local health authorities/facilities.
- To maintain such records and make such reports concerning safety, health, including Sexually Transmitted Infection (STI) and HIV/AIDS, and welfare of persons as the Engineer may from time to time prescribe and as required by the statutory authorities.
- To provide adequate lighting (including sufficient back-up facilities in the event of failure) wherever any work is to be carried out at night to ensure that the Works can be carried out safely.
- To provide an adequate number of latrines and other sanitary arrangements at areas of the Site where work is in progress.
- To ensure that the Works are left in a safe condition, in the event that the Contractor temporarily closes down site operations seasonally or for any other reason.

In addition the following safety issues need to be monitored:

- **Use of PPE (including replacement, according to climatic conditions):** summer and winter personal protective equipment (PPE) has been provided. Chiefs must control and strictly watch the worker's security with certified special clothes and PPE, which includes the usage, and wear-out date of clothes. Violations on PPE non-usage, alcohol and drug intoxication would result to immediate dismissal of worker.
- **Dust and noise exposure:** The additional water-carriers were engaged to reduce the dust in summer months. Prolonged exposure to harmful conditions should be minimized consisting of poor air quality, mechanical vibrations (noise, vibration, ultra-sound and others) and emissions (ionizing, electromagnetic, laser, ultra-violet and others) on work places.
- **Operations of Equipment and trucks:** All equipment of the site should have necessary copies of documents and testing certificates. Working dump trucks should have their vehicle registration certificate and drivers should have driving license. Every day drivers are to be checked on alcohol drinking and blood pressure levels. The Contractor checks technical status of vehicles that transport people and carries out systematic trainings to drivers for Road traffic regulations and safety road.
- **Construction Hazards (heights, electric shocks, etc.):** The subcontractor's chief should be given instructions or orders on safety compliance. Protection to workers should be provided such as for electrical protection, electric tool, gas protection, harnesses and safety belts.
- **Emergency procedures / Coordination with outside Medical Facilities:** During emergency an action plan for first aid and delivery of injured person to Aktau City Hospital is to be operationalized. A medical facility has been arranged in contractor camp site from early June 2015. In case of fire the evacuation action plan is to be

carried out. Telephone numbers of the Emergency department and ambulance service should be readily available.

2.5 Required Environmental Reporting

As mentioned in the technical specification item 106: protection of the environment of the section 100: general requirement document, the Contractor's Environmental Management Plan should provide description and explanation communication procedures between construction personnel and environmental protection including (i) Communication facilities and Routine communication and reporting systems.

It is also mentioned in 106: protection of the environment, that Initial Environmental Baseline Report should be submitted in accordance with Section 106. Based on this Section, a Baseline monitoring program should be presented consisting of Environmental Baseline Survey (EBS) on (i) air quality; (ii) water quality; and (iii) noise. In addition, Environmental activities Reports should be submitted which summarizes weekly updates and compiled for monthly reporting to the Engineer. The contractor will submit the Bi-annual environmental monitoring report to the consultant as per requirements. The Engineer should also be notified promptly of any environmental activities of EMP and effective communication should be established with all Subcontractors. Summaries of these items should be part of the Contractor's Monthly Progress Reports.

As stated in the TOR, the consultant should submit Bi-annual Environmental Monitoring report for the project, which is a compilation of monthly report with appropriate summaries of the issues, activities and measures undertaken within the period. Therefore, this is the first Bi-annual Environmental Monitoring Report for the project. In addition, the consultant local environmental specialist / Engineers will monitor frequently the environmental activities of the contractor as per the EMP and will prepare regularly the monthly environmental monitoring report for the project.

3 PERFORMED ENVIRONMENTAL MONITORING ACTIVITIES

Within the six month period (January - June 2015) the Contractor undertook monthly monitoring of air quality, noise & vibration, water quality and soil quality at specified locations from March to June 2015. The Engineer likewise, as part of his tasks, monitors the environmental aspects of the project as well as reviews the environmental mitigating performance of the Contractor. Within the period, the international environmental specialist of the Engineer (SMEC) visited the site in April and June 2015 as part of Consultant's periodic monitoring. The International environmental specialist communicates with the consultant management (SMEC-Sapa SZ) for mobilizing the local environmental specialist under the direction of the international environmental specialist's performed environmental audit for the project. There were several meetings with the contractor representatives for mobilizing the contractor environmental specialist and finally, the contractor mobilize the environmental specialist to work with the consultant engineers in May 2015. Joint inspection was done by the specialists (International Environmental Specialist and Contractor Environmental Specialist) with the environment and health & safety staff of the Contractor. Construction sites, material sites, construction camp, and plants were also inspected.

From January to June 2015, the international environmentalist was mobilized to the site in April 2015 and June 2015 to undertake audit into the sites and training for the Contractor's and consultant's staff. The results of the monthly monitoring were incorporated in the Environmental Chapter of the monthly report of the Engineer. Correspondingly, the first quarterly Environmental Monitoring Report was drafted and submitted to the Employer and the ADB in April 2015 and this is the first Bi-annual environmental monitoring report for the Employer and the ADB.

During the last 6 months, monitoring works provided and measured monthly on the basis of monitoring schedule of revised EMP. The Contractor is obligated to perform the necessary measures to mitigate environmental issues as part of his implementation activities. In addition, instrumental measurements are to be done in accordance with agreed schedule and locations in compliance with the EIA/EMP particularly the Environmental Monitoring Plan. The parameters being monitored are (i) air quality, (ii) noise and vibration and (iii) soil quality and (iv) surface water quality. All the monitoring works was carried out on contract to render services from renowned environmental laboratory of "Aktobe Plant of Chromium Compound" JSC (Accreditation certificate № KZ.I.05.0916 dd 15.09.2010 valid until 15.09.2015) for along the project road.

3.1 Compliance status with Environmental Management and Monitoring Plans

The project management consultant (PMC) through its professional will closely monitor the implementation of environmental management and monitoring plan (EMMP) for all the lots through meetings with the environmental specialist of the supervision consultants and by physical verification at the construction sites. For the effective management, implementation of the EMMP, the supervision consultants have designated their existing site staff for environmental coordination. Contractor for the respective contract have designated environmental representatives for the sound implementation of EMP.

The supervision consultants submitted quarterly environmental monitoring report to the PMC that includes information on implementation of EMMP. The information shared in this Bi-annual environmental monitoring report includes environmental monitoring status at construction sites, measures for workers safety at construction site and camp site, and control measures being adopted etc. Implementation of EMMP during the reporting period was found to be satisfactory and needs to be strengthened in the areas such as monitoring of environmental quality, debris disposal, safety arrangements and usage of personal protective equipments by the workers.

3.2 Environmental Monitoring Procedures of the Contractor

The Contractor started monitoring the physical environment at the vicinity of the project road in March 2015. The parameters being monitored is air quality and soil quality from March 2015 and noise & vibration and surface water quality from April 2015 due to winter season. These indicators from the baseline monitoring parameters of the project road can be referred to in the course of the construction of the project as well as during its operation. However, in April 2015, the international environmental specialist advised the Contractor to measure at locations where impacts to people are more appreciable. The basic procedures are described below:

Air quality: Air quality is controlled at relevant sites and along the road construction sections by obtaining readings monthly from March 2015 at the different locations as shown in the Table 3.1.

Noise and vibration: Measurements of noise and vibration has started from April 2015 at the different locations as shown in Table 3.2.

Water quality: Surface water quality testing has started from April 2015 at the different locations as shown in Table 3.3.

Soil quality: Soil quality is controlled at relevant sites and along the road construction sections by obtaining readings monthly from March 2015 at the different locations as shown in the Table 3.4.

Monitoring of fauna and flora: Monitoring of fauna and flora has carried out by contractor environmental specialist, so that the habitats of rare animals and birds will not be disturbed during project construction along the project road.

In addition, a number of pertinent sites also are monitored by the Contractor for any impacts of the construction activities. Such impacts has been recorded and mitigated in accordance to the EMP. Such sites are as follows:

- Quarries and Borrow areas: These areas are located far from populated places and do not pose any impact. The contractor environmental specialist will monitor regularly with records for the monthly reports.
- Bypass Roads: Bypass road monitoring is carried out constantly and frequent watering is being done to minimize dust production. In April 2015 to improve watering activities, the Contractor advised water truck owners to report their watering activities.
- Contractor Camp & Subcontractors temporary camps: The conditions of these camps inspected regularly.
- Concrete plant, crusher plant, asphalt plant: Concrete and crusher plants have inspected twice revealing that noise and vibration are within acceptable limits.
- The villages (along the bypass): Some villages are located along the bypass through which vehicles transports construction materials 24 hours a day and thus aggravating the dusty conditions. Dust mitigation will be constantly carried out. It is important to note that the receptors such as schools, administrative buildings and hospitals are far from the bypass roads.

3.3 Environmental Monitoring Activities of the Contractor

The Contractor, “Cengiz Insaat Sanayi ve Ticaret A.S.”, mobilized their environmental staff in May 2015 and health & safety staff in March 2015 for the supervision of construction activities. More active monitoring in the form obtaining parameter readings on air quality, noise and vibration, soil quality, water quality and observations on flora and fauna started from March 2015. Monthly parameter readings and observation with summary report were compiled. In the previous period, the Contractor (Cengiz Insaat Sanayi ve Ticaret A.S.) had performed instrumental monitoring as prescribed in the EMP and Section 100 - General Requirements of Technical Specification. For this period the Contractor did the following measurements:

- Air Quality Measurements – March 2015 to June 2015
- Soil Quality Measurement – March 2015 to June 2015
- Noise Measurements – April 2015 to June 2015
- Water Quality Measurements – April 2015 to May 2015

Monthly monitoring data has been collected each month from March through June 2015 for:

- Air quality at twenty seven sites (Along the road (Km): 645,654,664,674,684,694,704,714,724,734,744,754,764,774,784; On a border of Zhetybay village; Shetpe camp (657 km), Zhetybay (730 km); Sanctuary border 739 km,771 km)
- Noise and vibration at fourteen sites in key locations along or close to the road alignment (On a border of Shetpe village, km636,645; Zhetybay village, km 707,713; Shetpe camp (657 km); Zhetybay (730 km); Sanctuary border 739 km,771 km); and
- Surface water quality in one site at Bridge Asyagar River; and
- Soil quality at twenty seven sites (Along the road (Km): 645,654,664,674,684,694,704,714,724,734,744,754,764,774,784; On a border of Zhetybay village; Shetpe camp (657 km), Zhetybay (730 km); Sanctuary border 739 km,771 km).

All the monitoring works was carried out based on contract to render services from renowned environmental laboratory of “Aktobe Plant of Chromium Compound” JSC (Accreditation certificate № KZ.I.05.0916 dd 15.09.2010 valid until 15.09.2015). The method of analysis and duration of monitoring activities for the air quality, soil quality, water quality and noise & vibration are not available in the contractor monthly and semi-annual environmental protection report. Therefore, the international environmental specialist had several meetings with the contractor representatives and contractor environmental specialist for these issues and accordingly, the consultant has given an official letter to the contractor in July 2015 for further action. The contractor had committed to improve the environmental protection report as per consultant comments and suggestions.

During the previous months, the Contractor (Cengiz Insaat Sanayi ve Ticaret A.S) undertook monthly parameter readings and observation with compiled a semi-annual environmental protection report (Annexure F) and submitted to the engineer on 30 June 2015. The results of the previous monitoring activities are shown below:

Air Quality Analysis

Measurements were done monthly at 27 sampling stations (Photograph 3.1) along the project road, villages, and camp sites. The results show that air quality is below the limit (MPC - Maximum Permissible Concentration) as observed in the Table 3.1, indicating that the project is not impacting the air quality of the immediate vicinity. Summary of the Table 3.1 presents, a comparative analysis of: the measurement results for the reporting months from March to June 2015 and maximum permissible concentrations of pollutants. The results confirm that there have not been any measured extremes during the monitoring period. The results of monitoring show that the content of contaminants does not exceed MPC in accordance with ecological requirements of Republic of Kazakhstan. It is noted that emission concentrations will vary in accordance with meteorological conditions, (wind speed and

direction and relative humidity), number and mechanical condition of construction machinery and volume, vehicle type, travel direction and mechanical condition of passing traffic.

Although the concentrations are within the limit, but the contractors has to continue the same work and increase frequency of the road watering in order to minimize dust generation from the road traffic along the road sections which are not paved by asphalt.



Photograph 3.1: Air Quality Monitoring at Chainage Km 664 and Km 674

Table 3.1: Air Quality Measurement

Sampling Locations	Sampling Date	The concentration of harmful substances, mg/m ³			
		Dust	Oxide Carbon	Nitrogen dioxide	Sulfur dioxide
Maximum Permissible Concentration		0,5	5	0,2	0.5
AK-8 (645 km)	04-05.03.2015	0,31	1,97	0	0
	21-22.04.2015	0,28	1,94	0	0
	25-26.05.2015	0,28	1,94	0	0
	18-19.06.2015	0,4	2,82	0	0,0057
AK-9 (654 km)	04-05.03.2015	0,26	1,8	0	0
	21-22.04.2015	0,31	1,77	0	0
	25-26.05.2015	0,26	1,84	0	0
	18-19.06.2015	0,45	2,11	0	0
AK-10 (657 km, Shetpe camp)	04-05.03.2015	0,24	1,62	0	0,0011
	21-22.04.2015	0,27	1,84	0	0,0054
	25-26.05.2015	0,23	1,78	0	0,00063
	18-19.06.2015	0,38	0,98	0	0,0011
AK-11 (657 km, Shetpe camp)	04-05.03.2015	0,29	1,78	0	0,00044
	21-22.04.2015	0,33	1,36	0	0,00036
	25-26.05.2015	0,3	1,81	0	0,00047
	18-19.06.2015	0,41	1,36	0	0,00022
AK-12 (657 km, Shetpe camp)	04-05.03.2015	0,25	1,98	0	0,00028
	21-22.04.2015	0,27	2,17	0	0,00042
	25-26.05.2015	0,24	2,06	0	0,00038
	18-19.06.2015	0,23	1,52	0	0,0082

Sampling Locations	Sampling Date	The concentration of harmful substances, mg/m ³			
		Dust	Oxide Carbon	Nitrogen dioxide	Sulfur dioxide
Maximum Permissible Concentration		0,5	5	0,2	0.5
AK-13 (657 km, Shetpe camp)	04-05.03.2015	0,27	1,58	0	0
	21-22.04.2015	0,23	1,77	0	0
	25-26.05.2015	0,28	1,64	0	0
	18-19.06.2015	0,27	1,85	0	0
AK-14 (664 km)	04-05.03.2015	0,24	2,13	0	0,00025
	21-22.04.2015	0,34	2,04	0	0,00033
	25-26.05.2015	0,29	2,21	0	0,00029
	18-19.06.2015	0,39	1,98	0	0,00013
AK-15 (674 km)	04-05.03.2015	0,26	2,3	0	0,00058
	21-22.04.2015	0,27	2,23	0	0,00051
	25-26.05.2015	0,3	2,38	0	0,00063
	18-19.06.2015	0,41	1,94	0	0,00073
AK-16 (684 km)	04-05.03.2015	0,29	2,22	0	0,00023
	21-22.04.2015	0,31	2,47	0	0,00017
	25-26.05.2015	0,28	2,38	0	0,00026
	18-19.06.2015	0,43	2,52	0	0,0003
AK-17 (694 km)	04-05.03.2015	0,33	2	0	0,00034
	21-22.04.2015	0,3	2,36	0	0,00041
	25-26.05.2015	0,32	2,25	0	0,00038
	18-19.06.2015	0,4	2,9	0	0,00038
AK-18 (704 km)	04-05.03.2015	0,24	1,94	0	0
	21-22.04.2015	0,27	1,68	0	0,00068
	25-26.05.2015	0,23	1,97	0	0,00078
	18-19.06.2015	0,31	4,26	0	0
AK-19 (707 km, entrance to Zhetybay village)	04-05.03.2015	0,27	2,2	0	0,00084
	21-22.04.2015	0,36	2,13	0	0,00081
	25-26.05.2015	0,28	2,27	0	0,00087
	18-19.06.2015	0,37	4,32	0	0,00028
AK-20 (713 km, entrance to Zhetybay village)	04-05.03.2015	0,25	2,34	0	0,00042
	21-22.04.2015	0,28	2,23	0	0,00055
	25-26.05.2015	0,27	2,39	0	0,00049
	18-19.06.2015	0,4	4,93	0	0,00022
AK-21 (714 km)	04-05.03.2015	0,28	2,43	0	0,00038
	21-22.04.2015	0,32	2,51	0	0,00035
	25-26.05.2015	0,3	2,48	0	0,00041

Sampling Locations	Sampling Date	The concentration of harmful substances, mg/m ³			
		Dust	Oxide Carbon	Nitrogen dioxide	Sulfur dioxide
Maximum Permissible Concentration		0,5	5	0,2	0.5
	18-19.06.2015	0,43	2,32	0	0
AK-22 (724 km)	04-05.03.2015	0,31	2,4	0	0,00071
	21-22.04.2015	0,35	2,66	0	0,00069
	25-26.05.2015	0,3	2,54	0	0,00076
	18-19.06.2015	0,39	2,97	0	0,00019
AK-23 (730 km, Zhetybay camp)	04-05.03.2015	0,26	2,47	0	0,00028
	21-22.04.2015	0,36	2,32	0	0,00033
	25-26.05.2015	0,31	2,54	0	0,0003
	18-19.06.2015	0,33	2,47	0	0,0023
AK-24 (730 km, Zhetybay camp)	04-05.03.2015	0,3	2,42	0	0,00038
	21-22.04.2015	0,24	2,09	0	0,00049
	25-26.05.2015	0,29	2,51	0	0,00043
	18-19.06.2015	0,27	1,71	0	0,0051
AK-25 (730 km, Zhetybay camp)	04-05.03.2015	0,27	2,72	0	0
	21-22.04.2015	0,3	2,37	0	0
	25-26.05.2015	0,26	2,81	0	0
	18-19.06.2015	0,28	1,92	0	0,0026
AK-26 (730 km, Zhetybay camp)	04-05.03.2015	0,31	2,52	0	0,00042
	21-22.04.2015	0,28	2,66	0	0,00042
	25-26.05.2015	0,25	2,59	0	0,00051
	18-19.06.2015	0,23	1,87	0	0,0057
AK-27 (734 km)	04-05.03.2015	0,34	2,43	0	0,00031
	21-22.04.2015	0,31	2,38	0	0,00037
	25-26.05.2015	0,33	2,46	0	0,00034
	18-19.06.2015	0,42	2,84	0	0,00024
AK-28 (739 km, sanctuary border)	04-05.03.2015	0,25	2,33	0	0,00057
	21-22.04.2015	0,3	2,51	0	0,00051
	25-26.05.2015	0,23	2,48	0	0,00063
	18-19.06.2015	0,31	2,1	0	0
AK-29 (744 km)	04-05.03.2015	0,26	2,15	0,000007	0,00038
	21-22.04.2015	0,26	1,97	0,000009	0,00052
	25-26.05.2015	0,28	2,22	0,000006	0,00047
	18-19.06.2015	0,39	1,57	0	0
AK-30 (754 km)	04-05.03.2015	0,29	2,85	0,000042	0,00012
	21-22.04.2015	0,28	2,81	0,000054	0,00037

Sampling Locations	Sampling Date	The concentration of harmful substances, mg/m ³			
		Dust	Oxide Carbon	Nitrogen dioxide	Sulfur dioxide
Maximum Permissible Concentration		0,5	5	0,2	0.5
	25-26.05.2015	0,27	2,93	0,000047	0,00044
	18-19.06.2015	0,43	1,96	0	0
AK-31 (764 km)	04-05.03.2015	0,25	2,37	0	0,00012
	21-22.04.2015	0,34	2,13	0	0,00021
	25-26.05.2015	0,29	2,54	0	0,00018
	18-19.06.2015	0,4	1,34	0	0,00012
AK-32 (771 km, sanctuary border)	04-05.03.2015	0,33	2,51	0,000049	0,00064
	21-22.04.2015	0,33	2,78	0,000037	0,00055
	25-26.05.2015	0,3	2,66	0,000044	0,00068
	18-19.06.2015	0,36	2,09	0	0,00042
AK-33 (774 km)	04-05.03.2015	0,25	2,3	0	0,00037
	21-22.04.2015	0,3	2,17	0	0
	25-26.05.2015	0,27	2,37	0	0,00041
	18-19.06.2015	0,42	2,37	0	0,00047
AK-34 (784 km)	04-05.03.2015	0,25	2,5	0	0,00054
	21-22.04.2015	0,29	2,82	0	0,00062
	25-26.05.2015	0,31	2,68	0	0,00059
	18-19.06.2015	0,37	1,88	0	0,00013

Source: Contractor Semi-annual Environmental Protection Report, See Annexure F

Noise and Vibration Level Measurement

Regarding noise and vibration, the contractor is obliged to undertake monthly noise measurement and vibration monitoring along the project road. Accordingly, Noise and vibration testing has been carried out at fourteen locations (Photograph 3.2) along or close to the road alignment at sensitive locations within the project road.

Noise level measurements were below the established level of 80 decibels. The highest registered noise level was 74 dBA in AK-8 (645 km, exit from Shetpe village); AK-13 (657 km, Shetpe camp); AK-28 (739 km, sanctuary border) which can be due to the construction activities. Noise measured at the sites is below the limit which indicates that noise had been effectively controlled by the Contractor. The Contractor is hereby instructed to minimize any noise producing equipment and machinery and to maintain them properly to bring down the level of noise. Nevertheless, no complaint was lodged regarding noise. However, the contractor was requested that future monitoring includes a photo record of the position of the noise / vibration monitor for the contractor environmental protection report.



Photograph 3.2: Noise and Vibration Measurement at Chainage Km 645

Table 3.2: Noise and Vibration Level Measurement

Sampling Locations	Sampling Date	Noise, dBA	Vibration, dB
Maximum concentration limits		80	100
AK-2 (636 km, entrance to Shetpe village)	21-22.04.2015	68	60
	25-26.05.2015	64	58
	18-19.06.2015	70	82
AK-8 (645 km, exit from Shetpe village)	21-22.04.2015	54	58
	25-26.05.2015	58	58
	18-19.06.2015	74	85
AK-10 (657 km, Shetpe camp)	21-22.04.2015	63	65
	25-26.05.2015	60	62
	18-19.06.2015	70	72
AK-11 (657 km, Shetpe camp)	21-22.04.2015	68	62
	25-26.05.2015	63	60
	18-19.06.2015	68	70
AK-12 (657 km, Shetpe camp)	21-22.04.2015	70	64
	25-26.05.2015	64	60
	18-19.06.2015	72	68
AK-13 (657 km, Shetpe camp)	21-22.04.2015	62	60
	25-26.05.2015	60	58
	18-19.06.2015	74	76
AK-19 (707 km, entrance to Zhetybay village)	21-22.04.2015	70	68
	25-26.05.2015	66	65
	18-19.06.2015	68	78

Sampling Locations	Sampling Date	Noise, dBA	Vibration, dB
Maximum concentration limits		80	100
AK-20 (713 km, exit from Zhetybay village)	21-22.04.2015	68	66
	25-26.05.2015	65	68
	18-19.06.2015	70	80
AK-23 (730 km, Zhetybay camp)	21-22.04.2015	58	60
	25-26.05.2015	61	62
	18-19.06.2015	70	70
AK-24 (730 km, Zhetybay camp)	21-22.04.2015	64	68
	25-26.05.2015	60	62
	18-19.06.2015	64	68
AK-25 (730 km, Zhetybay camp)	21-22.04.2015	72	70
	25-26.05.2015	68	64
	18-19.06.2015	68	66
AK-26 (730 km, Zhetybay camp)	21-22.04.2015	68	64
	25-26.05.2015	65	67
	18-19.06.2015	66	68
AK-28 (739 km, sanctuary border)	21-22.04.2015	60	54
	25-26.05.2015	62	58
	18-19.06.2015	74	80
AK-32 (771 km, sanctuary border)	21-22.04.2015	58	52
	25-26.05.2015	64	55
	18-19.06.2015	70	76

Source: Contractor Semi-annual Environmental Protection Report, See Annexure F

Water Quality Monitoring

In the project road alignment, there is a one water body, the Aschyagar River at Km755. Water quality, in terms of Dry residue, Nitrates, Sulfates, Chloride, Petroleum products and Total Iron are tested in April and May 2015 at one location to detect environmental impacts from the road construction activities. The water quality was not done in June 2015 since the River is dry. Measurements results for water quality are generally acceptable with the six (06) parameters for the sample from the water sampling station at the Aschyagar River. The results are below the ACL (Allowable Concentration Level) values indicating that the project is not impacting the water quality of the immediate vicinity

Table 3.3: Water Quality Monitoring Result

Sampling Location	Characteristics /Parameters	ACL by ND, (ml/m3)	Actual Concentration ml/m3	
			April (22.04.2015)	May (26.05.2015)
Aschyagar river at	Dry residue, mg/dm ³	-	700	674
	Nitrates, mg/dm ³	40	3,68	3,20

Sampling Location	Characteristics /Parameters	ACL by ND, (ml/m3)	Actual Concentration ml/m3	
			April (22.04.2015)	May (26.05.2015)
755 km	Sulfates, mg/dm ³	100	87,24	84,77
	Chloride, mg/dm ³	300	184,76	167,3
	Petroleum products, mg/dm ³	0,05	0,038	0,03
	Total iron, mg/dm ³	1	0,069	0,055

Source: Contractor Semi-annual Environmental Protection Report, See Annexure F

Soil Quality Monitoring

Soil quality test were done monthly at 27 sampling stations (Photograph 3.3) along the project road, villages, and camp sites. The results show that soil quality is below the limit (MCL - Maximum Concentration Limits) as observed in the Table 3.4, indicating that the project is not impacting the soil quality of the immediate vicinity. Summary of the Table 3.4 presents, a comparative analysis of: the measurement results for the reporting months from March to June 2015 and maximum concentrations limits of soil quality. The results confirm that there have not been any measured extremes during the monitoring period. The results of monitoring show that the content of contaminants does not exceed MCL in accordance with ecological requirements of Republic of Kazakhstan. Although the concentrations are within the limit, but the contractors has to continue the same work in order to check soil quality regularly.



Photograph 3.3: Soil Sample Collection at Chainage Km 664 and Km 674

Table 3.4: Soil Quality Data

Sampling Locations	Sampling Date	The Concentration of Harmful Substances				
		pH	Petroleum products, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
Maximum Concentration Limits		-	-	-	32	-
AK-8 (645 km)	04-05.03.2015	8,9	0,005	0,1	8,66	17,48
	21-22.04.2015	8,8	0,003	0,14	9,23	14,89
	25-26.05.2015	8,7	0,004	0,11	9,09	16,81
	18-19.06.2015	8,4	0,008	0,09	6,98	16,88
AK-9 (654 km)	04-05.03.2015	8,2	0,005	0,12	9,24	18,01
	21-22.04.2015	8,4	0,004	0,17	9,8	16,31

Sampling Locations	Sampling Date	The Concentration of Harmful Substances				
		pH	Petroleum products, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
Maximum Concentration Limits		-	-	-	32	-
	25-26.05.2015	8,4	0,003	0,15	7,56	17,01
	18-19.06.2015	8,4	0,003	0,18	7,87	20,33
AK-10 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,006	0,31	9,47	19,3
	21-22.04.2015	8,1	0,008	0,34	8,57	18,9
	25-26.05.2015	8,2	0,008	0,29	9	18,56
	18-19.06.2015	8	0,009	0,18	7,26	21,02
AK-11 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,009	0,18	7,49	16,72
	21-22.04.2015	8,2	0,004	0,12	8,19	18,91
	25-26.05.2015	8,1	0,006	0,15	7,97	15,2
	18-19.06.2015	8,6	0,008	0,21	10,64	19,47
AK-12 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,007	0,16	8,11	15,01
	21-22.04.2015	8,2	0,008	0,21	8,05	12,77
	25-26.05.2015	8,1	0,007	0,23	9,01	13,55
	18-19.06.2015	8,4	0,012	0,19	6,97	18,39
AK-13 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,006	0,2	7,09	19,82
	21-22.04.2015	8,4	0,005	0,31	8	17,92
	25-26.05.2015	8,4	0,005	0,22	6,14	16,66
	18-19.06.2015	8	0,009	0,15	7,63	20,75
AK-14 (664 km)	04-05.03.2015	8,1	0,049	0,24	12,98	17
	21-22.04.2015	8,1	0,041	0,29	13,11	18,07
	25-26.05.2015	8,2	0,035	0,18	12,01	16,89
	18-19.06.2015	8,4	0,014	0,22	11,26	20,35
AK-15 (674 km)	04-05.03.2015	8,2	0,052	0,13	7,79	16,67
	21-22.04.2015	8,4	0,048	0,093	7,12	15,11
	25-26.05.2015	8,3	0,045	0,1	8,05	16,99
	18-19.06.2015	8,6	0,038	0,054	9,08	19,16
AK-16 (684 km)	04-05.03.2015	8,2	0,017	0,3	9,24	12,66
	21-22.04.2015	8,1	0,011	0,41	9,02	13,01
	25-26.05.2015	8,2	0,012	0,26	10,04	11,6
	18-19.06.2015	8,5	0,012	0,073	7,98	20,72
AK-17 (694 km)	04-05.03.2015	8,7	0,006	0,12	9,62	18,66
	21-22.04.2015	8,6	0,004	0,18	10,22	19,07
	25-26.05.2015	8,6	0,005	0,14	8,45	17,02
	18-19.06.2015	8,2	0,015	0,15	12,17	16,5
AK-18 (704 km)	04-05.03.2015	8,9	0,003	0,18	7,54	19,4

Sampling Locations	Sampling Date	The Concentration of Harmful Substances				
		pH	Petroleum products, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
Maximum Concentration Limits		-	-	-	32	-
	21-22.04.2015	8,8	0,005	0,23	6,87	20,11
	25-26.05.2015	8,9	0,003	0,21	7,55	19,78
	18-19.06.2015	8,7	0,008	0,16	10,02	20,3
AK-19 (707 km, entrance to Zhetybay village)	04-05.03.2015	8,1	0,032	0,21	11,55	19,42
	21-22.04.2015	8,1	0,03	0,17	10,08	17,87
	25-26.05.2015	8,2	0,024	0,19	10,96	18,03
	18-19.06.2015	8,5	0,014	0,095	8,14	20,44
AK-20 (713 km, entrance to Zhetybay village)	04-05.03.2015	8,2	0,012	0,19	9,89	14,63
	21-22.04.2015	8,3	0,013	0,22	9,92	16,03
	25-26.05.2015	8,3	0,01	0,17	8,88	15,13
	18-19.06.2015	8,5	0,008	0,18	6,19	18,53
AK-21 (714 km)	04-05.03.2015	8,3	0,048	0,52	28,97	16,97
	21-22.04.2015	8,4	0,032	0,5	26,11	16
	25-26.05.2015	8,3	0,038	0,62	29,05	17,42
	18-19.06.2015	8,4	0,012	0,35	16,89	18,17
AK-22 (724 km)	04-05.03.2015	7,9	0,006	0,2	10,23	11,54
	21-22.04.2015	8	0,004	0,018	10,3	12,02
	25-26.05.2015	8	0,004	0,15	8,57	9,99
	18-19.06.2015	7,9	0,008	0,13	7,81	14,08
AK-23 (730 km, Zhetybay camp)	04-05.03.2015	8,2	0,011	0,08	21,45	13,7
	21-22.04.2015	8,2	0,009	0,07	20,59	10,21
	25-26.05.2015	8,2	0,01	0,06	22,01	14,16
	18-19.06.2015	8,3	0,008	0,13	16,64	19,49
AK-24 (730 km, Zhetybay camp)	04-05.03.2015	8,1	0,006	0,25	7,13	15,42
	21-22.04.2015	8	0,009	0,31	8,2	16,02
	25-26.05.2015	8	0,007	0,29	8,03	13,11
	18-19.06.2015	8,3	0,002	0,16	7,39	19,61
AK-25 (730 km, Zhetybay camp)	04-05.03.2015	8,4	0,004	0,22	8,4	17,82
	21-22.04.2015	8,5	0,002	0,14	6,42	16,52
	25-26.05.2015	8,4	0,003	0,11	6,01	17,01
	18-19.06.2015	8,6	0,004	0,16	6,31	19,6
AK-26 (730 km, Zhetybay camp)	04-05.03.2015	8,2	0,005	0,19	7,85	19,61
	21-22.04.2015	8,2	0,005	0,28	8,11	17,38
	25-26.05.2015	8,3	0,004	0,2	7,58	19,17
	18-19.06.2015	8,1	0,008	0,14	5,71	19,94

Sampling Locations	Sampling Date	The Concentration of Harmful Substances				
		pH	Petroleum products, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
Maximum Concentration Limits		-	-	-	32	-
AK-27 (734 km)	04-05.03.2015	8,1	0,015	0,28	12,77	17,31
	21-22.04.2015	8,2	0,01	0,31	10,91	15,45
	25-26.05.2015	8	0,012	0,26	11,22	14,98
	18-19.06.2015	8,4	0,023	0,15	8,94	18,19
AK-28 (739 km, sanctuary border)	04-05.03.2015	8,1	0,013	0,49	29,03	18,06
	21-22.04.2015	8,1	0,01	0,5	28,3	19,26
	25-26.05.2015	8	0,014	0,34	25,51	18
	18-19.06.2015	7,9	0,021	0,25	18,98	17,87
AK-29 (744 km)	04-05.03.2015	8,3	0,029	0,12	10,49	15
	21-22.04.2015	8,2	0,02	0,14	8,93	16,11
	25-26.05.2015	8,3	0,019	0,09	9,06	15,97
	18-19.06.2015	8	0,04	0,12	8,47	18,15
AK-30 (754 km)	04-05.03.2015	8	0,008	0,11	14,61	19,48
	21-22.04.2015	8,1	0,006	0,09	12,04	16,02
	25-26.05.2015	8,2	0,004	0,07	12,51	17,12
	18-19.06.2015	8	0,009	0,15	10,94	20,82
AK-31 (764 km)	04-05.03.2015	8,1	0,004	0,3	20,53	18,51
	21-22.04.2015	8,2	0,003	0,27	19,37	19
	25-26.05.2015	8,2	0,005	0,31	18,01	18,12
	18-19.06.2015	8,1	0,011	0,19	14,22	17,48
AK-32 (771 km, sanctuary border)	04-05.03.2015	7,9	0,011	0,32	9,96	20
	21-22.04.2015	7,8	0,009	0,25	7,26	18,77
	25-26.05.2015	7,9	0,01	0,3	7,33	17,84
	18-19.06.2015	8,1	0,005	0,19	7,37	19,56
AK-33 (774 km)	04-05.03.2015	8,1	0,006	0,3	7,89	17,97
	21-22.04.2015	8	0,005	0,38	8,09	16,01
	25-26.05.2015	8,1	0,01	0,27	7,32	15,66
	18-19.06.2015	8,3	0,017	0,2	9,66	19,93
AK-34 (784 km)	04-05.03.2015	8,4	0,005	0,19	7,75	16,91
	21-22.04.2015	8,4	0,006	0,29	8,05	14,01
	25-26.05.2015	8,3	0,006	0,26	7,84	17,15
	18-19.06.2015	8,6	0,009	0,18	6,71	18,02

Source: Contractor Semi-annual Environmental Protection Report, See Annexure F

3.4 Environmental Audit of the Engineer

Environmental Monitoring is among the major tasks of the construction supervision team. Likewise, under the construction contract, the Contractor is obligated to ensure that construction has no or minimal adverse impact to the environment and the communities. The Consultants and the Contractor should have a close collaborative coordination in performing environmental monitoring of activities to be effective in the minimization and avoidance of impacts.

The CSC Environmental Specialist (International) undertook inspection intermittently at the project site in April 2015 & June 2015 and came up with a number of observable situations where the Contractor can improve in providing added environmental mitigation measures and precautionary measures to improve safety at the workplace. In addition, these identified issues were presented to the Contractor concerned staffs (Ms. Umirbekova Natalya, Ms. Kabdolva, and Mr. Ali Baydar). The output of the environmental inspection of the international environmental specialist is included in the Table below entitled “Observed Issues during the Environmental Inspections” Table 4.1.

The International Environmental Specialist of the Engineer conducted audit on the required documents from the Contractor. During the reporting period, the International Environmental Specialist forwarded consultant comments on Environmental Management Plan, monthly environmental protection report and semi-annual environmental protection report to the contractor for the modification which were submitted by the contractor. The international specialist also requested to the contractor for submitting the additional management plans (Borrow Pit Management & Re-instatement Plan; Campsite/s Management Plan; Solid Waste Management Plan; Hazardous Waste Management Plan; Dust Management Plan; Soil Management Plan; Water Quality Management Plan; and Noise Management Plan) for the project and those were submitted by contractor in June 2015.

It is a requirement of the project EIA that a Site Specific Environmental Management Plan (SSEMP) with separate management plan are produced by the Contractor to provide a guidance document for staff on the site of their requirements and responsibilities. This document has been prepared by the Contractor. The SSEMP is the primary environmental document for the implementation phase of the Project that is supported by other environmental plans identified in the EIA and indicated in the above list which has been submitted to engineer in June 2015.

The bases of contractor formulation of the Supplemental Plan are the EIA document (with focus on the EMP), the Technical Specifications, and prevailing Kazakhstan laws, norms and regulations. These supplemental plans shall serve as guides in the Contractor’s overall execution of works in the environmental aspects as well as in the environmental self-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 have been 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 in regard to 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 Contractor is responsible for implementation of EMMP during construction works and Construction Supervision Consultant (CSC) is primarily responsible for supervision of monitoring of the implementation of the EMMP. The CR engaged PMC as an external monitoring consultant’ to monitor implementation and supervision of EMMP. As such, the PMC-ADB, CSC monitors and measures 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 Progress Report and quarterly environmental monitoring report. The International Environmental Specialist went to assess various sites along the Project Road as well as other locations that might pose some environmental concerns in the vicinity of the road such as Contractor’s campsite, asphalt and crushing plant, equipment maintenance sites, etc. During the inspection, a number of environmental and safety issues were observed and noted. These issues were subsequently brought to the attention of the personnel concerned on the CSC side as well as discussed with the

Contractor's side. The issues observed were generally concerning with the active borrow pit/quarry operations and rehabilitation, potential contamination in proposed material plants, noise and dust generation at soil hauling areas, and contractor's work camp housekeeping. Following CSC' direction and advice, the Contractors should implement these corrective actions and follow up on these actions to ensure their effectiveness.

Site Specific Environmental Management Plan: It is a requirement of the project EIA that a Site Specific Environmental Management Plan (SSEMP) is produced by the Contractor to provide a guidance document for staff on the site of their requirements and responsibilities. The Site Specific EMP document has been prepared by the Contractor. The SSEMP is the primary environmental document for the implementation phase of the Project that is supported by other environmental plans identified in the EIA and indicated in Figure 4.1.

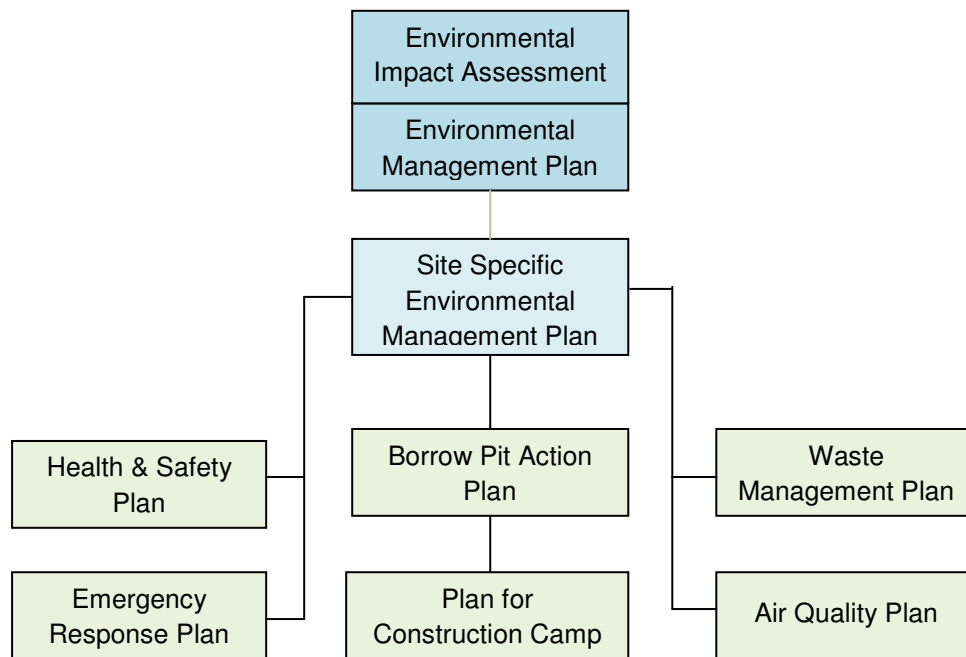


Figure 4.1: The SSEMP and its supporting documents

4.3 Observed Environmental Impacts and Mitigation Measures

During the periodic field mobilization and inspection of the International Environmental Specialists in April 2015, and June 2015 as part of the Construction Supervision Consultant Team, the work scope undertaken in coordination with Contractor (Cengiz Insaat Sanayi ve Ticaret A.S) for the project road. The observed environmental issues were noted and discussed with the Contractor's representatives for clarification within the framework of the EIA, Contractual provisions and technical specifications. Photos were taken on a number of them and shown in Annexure A. 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 area, access roads, bridges and culverts, canals, and Contractor's work camp.
- Detailed inspection was done on the environmental and safety issues set-up at flyover site (Chaiange: Km635.8)

- Detailed Discussion with the contractor representatives on status of the required Contractor's Environmental Management Plan (EMP) monthly progress reports, bi-annual environmental monitoring reports and required additional management plan.

Environmental monitoring will be continuing with the deployment of local environmental specialist, whose main duties is to oversee the impacts generated and monitor the measures being implemented. It is observed that there was no serious environmental impact in the project area according to site investigation in month of April, June and July 2015. Presented below are the environmental, health and safety issues observed at the vicinity of project worksites during the monitoring of the CSC personnel, field reconnaissance of the CS International Environmental Consultant (Table 4.1).

Table 4.1: Observed Issues during the Environmental Inspections

Description of Environmental Issues	Description of Proposed Measures
Dust pollution is observed in some limited base repair area. Water spray truck was use to minimize the impact.	To mitigate dust during constructions spray water. It is suggested that contractor environmental specialist should plan road watering where necessary to avoid dust pollution to community people.



Photograph 4.1: Excessive dust at the worksites from CENGIZ trucks at Cha: Km678.2



Photograph 4.2: Dust control by spray truck watering at Cha: Km689

Description of Environmental Issues	Description of Proposed Measures
<p><u>Wearing of protective clothing and safety gear and safety shoes</u></p> <p>Some workers are equipped with helmet, reflective clothing, cone for warning traffic and flagman to give sign to road users. But some workers are not using safety measures during work implementation at Flyover Construction Site in April 2015: (1) Workers were not wearing helmets & Retro Reflective Cloth (Photograph 4.1).</p>	<p>Necessary Response from the Contractor: (i) the Contractor should instruct every worker at the site to wear the prescribed helmets, Retro Reflective Cloth and work boots; (ii) the Contractor should report compliance as soon as possible.</p> <p>It was suggested that safety shoes must be used during working hour. The Contractor safety officer shall ensure the workers have appropriate protective clothing.</p> <p>It was suggested that safety policy should be reinforced in all construction sites.</p>
	
<p>Photograph 4.3: Workers were not wearing helmets & Retro Reflective Cloth at Cha: Km635.8</p>	
<p><u>Equipment: Mobilization of equipment could have air and noise pollution impacts in nearby settlement</u></p> <p>Since construction works is going on which needs careful control to avoid dust pollution especially at this windy season.</p> <p>Contractor keeps low speed when moving heavy vehicle/equipment during road maintenance.</p>	<p>Up to now there is no complaining from local people during consultations at Beki Village, Zhetybai Village and Shetpe</p> <p>It is at acceptable level of noise during the construction according to discussion with local peoples in Beki and Zhetybai Villages and Shetpe Akimat office.</p>
<p><u>Air and noise pollution for any nearby settlements</u></p> <p>From the consultation meeting with local</p>	<p>Air quality is at acceptable level for daily livelihood as per air quality data (march to June 2015). The noise and vibration measurement was within the local</p>

Description of Environmental Issues	Description of Proposed Measures
<p>authority, however, it was suggested that watering the road before cleaning or blowing the road should be carefully as it is very much disturb to local people especially close to the villages.</p>	<p>standard limit as per noise and vibration data from April to June 2015.</p>
<p>The Contractor has supplied new construction plant and equipment for the Project. It appears to be well maintained and adverse impact from inefficient engine operation is not anticipated and has not been identified during inspections.</p>	<p>Contractor will maintain and service construction equipment to keep it in proper technical condition to control emissions. Such equipment (including controlling equipment) is subject to regular inspections by Engineers. Such inspections shall be registered in the Log Book as part of the monitoring activity.</p>
	
<p>Photograph 4.4: Crusher Plant at Zhetibay Camp (Chainage: Km 729.5)</p>	
<p>Possible pollution of waterways or ground water by bituminous products or solvents used in resurfacing of pavement</p>	<p>Since there is possibility of oil spillages during the construction work, it is recommended that all equipment and machineries must be free of oil, solvent and bituminous material leaking along the construction road section</p>
<p>Contractor using traffic control measures to limit disruption to traffic and ensure safety of traffic</p>	<p>Road Safety Engineer given instruction to Contractor for strengthening of Traffic</p>

Description of Environmental Issues	Description of Proposed Measures
and pedestrians.	Management & Safety
<p><u>Possible impact of road user safety</u></p> <p>Safety first is introducing to all contractors. Flagman is used for traffic management and traffic control schemes are submitted to Road Safety Engineer for approval.</p> <p>Similarly, safety accidents with workers are monitored and none have been reported during the reporting period.</p>	<p>The Contractor should instruct his subcontractors & workers that PPE should be worn at all times at the work place to minimize accident and health hazards.</p> <p>Road accidents have been monitored. There was no accidents report to the project during the reporting period.</p>



Photograph 4.5: Site Rehabilitation Activities with safety Flags at Cha: Km758.5

<p><u>Pollution caused by domestic sewage and solid waste</u></p> <p>Environmental safeguard checklist was distributed for the purpose of checking during work implementation and tries to mitigate if there is any environmental issue.</p> <p>Flash toilets are using with septic tank (in engineer office) or soak away sewerage system in labor campsite.</p>	<p>It is observed that there is no waste water pollution till now which is caused by the road construction.</p>
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Description of Environmental Issues	Description of Proposed Measures
 <p>Photograph 4.6: Flush Toilets for the Engineers & Contractor Office at Zhetibay Camp</p>	
<p><u>Reinstatement Plan needed for borrows pits</u>-The project uses a number of borrow pits for road embankment. Excavation without plan would lead to difficulty in reinstating the sites. (Photograph 4.7)</p>	<p>The Contractor should formulate and submit to the Engineer a Reinstatement Plan for all borrow pits. Implementation of the plan shall be prior to demobilization.</p>
	
<p>Photograph 4.7: Developing Borrow pit for embankment</p>	
<p>Disposal of excavated material from shoulder and scarified materials. During site visit</p>	<p>Excavated materials were piled on road side for later on collection to disposal site.</p>

Description of Environmental Issues	Description of Proposed Measures
excavated materials was not transported out of road sides.	It is suggested that all excavated material should transport out of the road shoulder after completion of work.
<u>Trucks without cover</u> – A number of dump trucks of the Contractor are without cover and containment barrier. This can be hazardous as these trucks run in local roads as well. (Photograph 4.8)	The Contractor should inspect all dump trucks are equipped with cover and containment barriers to avoid any accidents along the road and to prevent any materials dropping from the trucks.



Photograph 4.8: Trucks without covers at Chainage: Km757.3

<u>First aid kits/Medical facilities</u> Medical facilities with a doctor and ambulance has established at camp site in Zhetibay.	In April 2015, it was strongly recommended that medical facilities should be in camp site and the contractor agreed to arrange first aid facilities with emergency medical facilities. Accordingly, the medical facilities have mobilized in the camp site.
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Photograph 4.9: Trucks without covers at Chainage: Km757.3

Description of Environmental Issues	Description of Proposed Measures
<p><u>Additional Plans required for the EMP</u>-The following detailed management plan should be submitted to the consultant:</p> <ul style="list-style-type: none"> ▪ Borrow Pit Management & Re-instatement Plan ▪ Campsite/s Management Plan ▪ Solid Waste Management Plan ▪ Hazardous Waste Management Plan ▪ Soil Management Plan ▪ Water Quality Management Plan ▪ Dust Management Plan ▪ Noise Management Plan 	<p>The contractor has submitted the additional management plans to the engineer in June 2015.</p>

4.4 Site Inspection and Audits

Periodic audits of the work camps and construction sites have been conducted during the construction period (January to June 2015) and have resulted in improved conditions at the camps and sites. Camps and sites will be regularly monitored throughout the construction season and particular focus will be given to works along the project alignment.

According to the observations during the site inspections by International Environmental Specialist further improvements were done at the sites within this period. Joint inspections of the environmental specialist with the Contractor, Joint inspections with Road Safety Engineers, and frequently meetings have helped to sort out some of the problems at the site. The following Table 4.2 presents the summary of site visits in April 2015, June 2015 and July 2015.

Table 4.2: Summary of the Number and Type of Site Visits

Date	Contract		Remarks
	Contract 1 (Shetpe and Zhetibay)	Contract 2 (Zhetibay and Aktau)	
13.04.2015		@	Meeting with Contractor and Site Inspection
15.04.2015	@	@	Meeting with Contractor and Site Inspection
16.04.2015	@	@	Site Inspection and Review of documents
17.04.2015		@	Meeting with Contractor
20.04.2015	@		Meeting with ADB Environmental Team and Site Visit
21.04.2015	@	@	Site visit and Consultations with Local peoples at Beki Village
23.04.2015	@	@	Training program for Consultants Staffs, Site Visit and Meeting with Contractor

Date	Contract		Remarks
	Contract 1 (Shetpe and Zhetibay)	Contract 2 (Zhetibay and Aktau)	
27.04.2015	@	@	Site Visit and meeting with Contractor
28.04.2015	@	@	Site Visit and consultation with Local Peoples at Zhetibay
24.06.2015	@		Site Inspection and Review of documents
24.06.2015	@	@	Meeting with Contractor
26.06.2015	@	@	Site Inspection with Contractor Representative and meeting with contractor
30.06.2015	@	@	Meeting with Contractor
02.07.2015	@		Training program for Consultants Staffs, Site Visit and Meeting with Contractor
03.07.2015	@	@	Training program for Contractor Environmental Representatives and relevant staffs
07.07.2015	@	@	Site visit and Consultations with Local peoples at Shetpe Village
09.07.2015	@	@	Site visit and monitoring & supervision for environmental sampling on air quality, soil sampling, noise and vibration measurement
10.07.2015	@	@	Site visit and monitoring & supervision for environmental sampling on air quality, soil sampling, noise and vibration measurement

@ Indicates Number Cases

Sources: Compiled

ADB Visits: The ADB Safeguards team visited the site on 20th April 2015 for details discussion on environmental activities. The ADB environmental consultants (Mr. Jeffrey Bowyer, Environmental Safeguards Consultant & Mr. Bakhtiyar Ibrayev, Environmental Specialist) presented a PowerPoint presentation for the environmental protection. They made a training program on April 20, 2015 among the relevant personnel of Engineers and Contractors in PMC office at Aktau. These were helpful in clarifying issues and facilitating the implementation of needed measures.

4.5 Consultations and Complains

The International Environmental Specialist conducted two focus group discussions (FGD) and stakeholder consultations with local communities and Akimats to keep them informed about construction progress and upcoming activities. Construction works are located in rural areas that have limited access to electronic media such as the internet. Local communities were informed at meetings with consultants' staff and by local authorities (village Akimat) who were briefed directly by International Environmental Specialist.

During implementation of the Project, there might be several issues related to environmental hazards and disputes on entitlement processes may occur due to the Project activities. For example, intensive schedule of construction activities; inappropriate timing of construction vehicle flow; waste; noise and air pollution from construction activities; ecological disturbances; cultural conflicts between migrant workers, are some of the environmental issues that are likely to arise from the Project activities. A Grievance Redress Mechanism (GRM) should be set up for the Project to deal with both the environmental and social issues of the Project.

The first Community meeting (FGD) was held at Beki village on 21 April 2015 from 3.00pm to 5.30pm and was attended by the Engineers International Environmental Specialist & Road Safety Engineer along with participation of village people. The attendance list with comments is shown in Annexure B. The key comments received during the FGD were:

- Regular water spray should be arranged by the contractor if there is dust pollution during the project activities.
- Construction of bypass road for heavy axel vehicle to safe their children, people & cattle from the probable risk of road accident.
- Installation of two traffic signs for cattle passes before and after the vicinity of the village with speed limit as cattle are lazy.
- One pedestrian cross sign should be installed in adjacent of the village with taxi parking bay, wash & rest room facility for village people and guest.



Photograph 4.10: FGD and Stakeholder Consultation at Zhetibay and Shetpe

The second Community meeting (FGD) was held in Zhetibay village on 28 April 2015 (Photograph 4.10) from 9.00am to 11.00am and was attended by the Engineers International Environmental Specialist & Road Safety Engineer along with participation of Akimat. The attendance list with comments / suggestion is shown in Annexure B. The key comments received during the FGD were:

- Most of the participants who were interviewed in the meeting welcome the road reconstruction project as this is expected to improve the connectivity.
- The local people also mentioned that the environmental impact due to the road construction is minor and short term. However, some mitigative measures should be taken during construction of the road, such as water spray to reduce dust pollution, and working hour should be only in day time and particularly if it will near the village area.

- Some of them mentioned that water should be sprayed 3-4 times in a day to reduce the dust pollution and the project will provide a water browser for the Akimat office for water spray after the project construction.
- Local people will be benefited economically due to more employment opportunities.
- Increased traffic may cause air and noise pollution.
- They also informed that the villagers will be benefited from the bypass road construction since all the traffic will go through bypass road and traffic will be less in Zhetibay Village road.
- The people were mentioned that there will be no safety problems since the project road constructing the bypass road for the Zhetibay Village.

The third stakeholder meeting was held at Shetpe on 7th July 2015 (Photograph 4.10) from 3.30pm to 4.30pm and was attended by the Engineers International Environmental Specialist along with participants in Shetpe Akimat office. The attendance list with comments / suggestion is shown in Annexure B.

4.6 Training and Meetings

The International Environmental Specialist is to develop a program for hands on training of Consultant's and Contractor's staff in implementing the EMMP. Hence, the International Environmental Specialist organized a training workshop entitled "Implementation of Environmental Management Plan" at the Consultants office in Zhetibay on 23rd April 2015 for consultant staffs but unfortunately, the international specialist was not able to arrange training for the contractor staffs in April 2015 since contractor environmental specialist was not mobilize. Therefore, the training program for the contractor staff has been organized on 3rd July 2015 for contractor staffs. The main purpose of the training is environmental inspections to dealing with environmental compliance monitoring and reporting to be conducted with the assistance of environmental specialist. The training was helpful in clarifying issues and facilitating the implementation of needed measures. A photograph of the training session is provided in below (Photograph 4.11 and Photograph 4.12) and the attendance list & PowerPoint presentation slides are given in Annexure C and Annexure E.



Photograph 4.11: Training program for Consultant Staffs at Zhetibay Camp Site



Photograph 4.12: Training program for Contractor Staffs at Zhetibay Camp Site

Several meetings were held with the participation of the Contractor, Engineer and ADB representatives in April 2015, June 2015 and July 2015. These meetings were basically focused on the initial activities of the Contractor for the EMP implementation and further action (Photograph 4.13).

Monthly meetings between the Contractor's Project management staff and the Consultant are held to discuss the Project, including environmental issues, road and other safety issues and camp cleanliness. There is positive responsiveness to the concerns raised at meetings resulting in improved environmental performance. The Consultant will continue to audit construction sites and camps to ensure that issues are resolved in a timely and appropriate manner.



Photograph 4.13: Meeting with Contractor & Consultants Engineers at Zhetibay Camp Site

4.7 Notices and Letters

During the previous six-month period, the CS Consultant had been actively monitored the Contractor's performance in the environmental aspects. Issues were identified and communicated formally to the Contractor in the form of official letters. A listing of such letters on the environmental aspects and their status is shown below:

Table 4.3: Letters on Environmental Issues

Letter No.	Dated	From	To	Subjects
5017016/CR/0022	07/02/2015	SMEC-Sapa SZ	Cengiz Insaat	Health and safety officers
5017016/CR/0034	16/02/2015	SMEC-Sapa SZ	Cengiz Insaat	Health and Safety -medical facilities
5017016/CR/0065	09/03/2015	SMEC-Sapa SZ	Cengiz Insaat	Health and safety
5017016/CR/0068	09/03/2015	SMEC-Sapa SZ	Cengiz Insaat	Health and Safety - Protective Clothing
AKT-CGZ-SS-2015-67	16/03/2015	Cengiz Insaat	SMEC-Sapa SZ	Environmental Management Plan
AKT-CGZ-SS-2015-64	17/03/2015	Cengiz Insaat	SMEC-Sapa SZ	Health and Safety Management Plan
5017016/CR/0098	25/03/2015	SMEC-Sapa SZ	Cengiz Insaat	Health and safety
5017016/CR/0099	25/03/2015	SMEC-Sapa SZ	Cengiz Insaat	Environmental Management Plan
AKT-CGZ-SS-2015-74	27/03/2015	SMEC-Sapa SZ	Cengiz Insaat	Environmental Management Plan
5017016/CT/0111	22/04/2015	SMEC-Sapa SZ	Cengiz Insaat	Comments on EMP
5017016/CR/0118	30/04/2015	SMEC-Sapa SZ	Cengiz Insaat	Mobilization of Contractor Environment Specialist
5017016/CR/0119	30/04/2015	SMEC-Sapa SZ	Cengiz Insaat	Submission of Additional Plans for EMP
AKT-CGZ-CL-2015-96	30/04/2015	SMEC-Sapa SZ	Cengiz Insaat	Health and Safety Management Plan
5017016/CT/0122	05/05/2015	SMEC-Sapa SZ	PMC	Submission of Quarterly Environmental Monitoring Report, April 2015
AKT-CGZ-SS-2015-166	30/05/2015	Cengiz Insaat	SMEC-Sapa SZ	Delegation of Environmental Specialist
AKT-CGZ-SS-2015-178	04/06/2015	Cengiz Insaat	SMEC-Sapa SZ	Environment Protection Report for May 2015
AKT-CGZ-SS-2015-202	16/06/2015	Cengiz Insaat	SMEC-Sapa SZ	Contract 1 and contract 2-Submittal of Environmental Management Plans
5017016/CR/0222	30/06/2015	SMEC-Sapa SZ	Cengiz Insaat	Bi-annual Environmental Monitoring Report
AKT-CGZ-SS-2015-225	30/06/2015	Cengiz Insaat	SMEC-Sapa SZ	Environment Protection Report for June 2015
AKT-CGZ-SS-2015-226	30/06/2015	Cengiz Insaat	SMEC-Sapa SZ	Semi-Annual Environmental Protection Report (6 months report)
5017016/CR/0225	01/07/2016	SMEC-Sapa SZ	Cengiz Insaat	Training Programme on Environmental Safeguard issues

4.8 Corrective Action Plans

Within January–June 2015 environmental monitoring was performed on the road under construction contract of SMEC International Pty Ltd., for the Mangystau Oblast Sections Connecting Shetpe-Aktau Road. This yielded a number of observable issues which the Contractor had to mitigate. In a number of occasions, the Contractor was able to mitigate some of the issues discovered at the sites. This report also presents recommended mitigation measures which can be implemented by the Contractor to mitigate the observed situation and should be inspected by CSC Inspectors. The issues encountered in this periodic inspection were in the aspect of site safety, asphalt plant arrangement, and management dust management, hindrance on normal traffic and oil contamination. Work related environmental, health and safety concerns were raised during the period.

Most of the issues encountered in this periodic inspection were in the aspect of Flyover construction, safety issues, environmental documentary issues, and dust pollution issues. The measures to mitigate impacts were recommended accordingly and discussed within this report. Intensive inspection was undertaken by the International Environmental Specialist in April 2015, June 2015 and the result was presented and discussed in a training programme and meeting at the Engineer's office (Zhetibay). The Descriptions of Proposed Measures included in Table 4.1. Observed Issues during the Environmental Inspections has to be complied with by the Contractor in the monthly environmental protection report. The CSC inspectors will include these items in their scope of regular supervision of the site. The issues identified above need to be responded by the Contractor in a timely manner. Some of the issues are easy to resolve and few were indeed corrected promptly by the Contractor. In addition, a format for the Procedure on Environmental Inspection Monitoring was provided by the International Environmental Specialist earlier to Contractor environmental specialist as a guide to facilitate regular EHS inspections and monitoring.

In April 2015 and June 2015, CSC mobilized the International Environmental Specialist to undertake environmental inspection and audit as outlined in the TOR and preparation of first quarterly environmental monitoring report (February to April 2015) and first Bi-annual environmental monitoring report (January to June 2015) for the construction supervision. The entire field engagement was in coordination with the PMC Officials, Contractor's and Local Road Safety Engineer, and the Project Engineer's. The activities carried out by the International Environmental Specialist are summarized below:

- Discussion with Team Leader on assignments responsibilities and expectations.
- Attended meeting with ADB representatives, PMC officials, Engineers and Contractor's representatives.
- Obtain monthly/quarterly/bi-annual environmental progress reports and other pertinent documents on EHS.
- Review monthly environmental parameter measurements, and EHS records maintained by Contractor.
- Meeting with Contractor's Representatives regarding Contractor's Environmental specialist Mobilization, environmental monitoring procedure and monthly and Bi-annual environmental monitoring reports.
- Meeting with consultant engineers regarding the Rehabilitation works for quarry, borrow pit areas and blasting operation performed by the Contractor.
- Initiate environmental inspection and audits in Contract 1 and Contract 2 area of the project (with road safety engineers).

- Meeting with Team Leader along with consultant engineers to discuss contractor's environment monitoring reports.
- Follow up inspections to document actions being implemented to address environmental issues identified.

In addition, the contractor's EMP was also to be revised. Guidance was already provided by the International Environmental Specialist and the Contractor's Environmental staff has initiated the revision. Also the Contractor's monthly environmental reports require technical discussions for more clarity in presenting how the issues were resolved by the Contractor. The international specialist has given comments and suggestions to the contractor for further improvements.

4.9 Conclusions and Recommendations

4.9.1 Conclusions

This first Bi-annual Environmental Monitoring Report (January to June 2015) is produced as a report to the requirements of the Contract for the provision of Construction Supervision Services to the Ministry of Investment and Development (MID), Committee for Roads of the Republic of Kazakhstan for the CAREC 2 Corridor (Mangistau – Oblast Section) Investment Program Project 2 under the Asian Development Bank, Loan Number 2967- KAZ. This report is being developed by the International Environmental Specialist of CSC based on the feedback from and in consultation with Supervision Engineers, review of pertinent environmental documents (EIA and EMP of the project, monthly/quarterly/Bi-annual reports prepared by the contractors); site visits, incorporating the results of the required sampling, laboratory analysis and measurements.

During this current monitoring period, a number of environmental and safety issues were observed by the monitoring team and brought to the attention of the Contractor for corrective measures. An inspection audit was done by the Engineer's International Environmental Specialist in April 2015 and June 2015, which became the basis for the writing of the first Bi-annual Environmental Monitoring Report for the Employer (CR, MID)) and Financier (ADB). The environmental issues observed within the period are generally concerning with the active borrow pit/quarry operations and rehabilitation, dust generation in crushing plant, soil contamination due to oil spills, Contractor's campsite septic tank aspects, general safety, monitoring program, etc. A consistent follow through inspection is necessary in order to improve the environmental performance of the project to the satisfaction of the CR (Employer) and ADB (Financier). During this period, ADB environmental consultant conducts a PowerPoint presentation for the environmental protection during construction period. He made a training program on April 20, 2015 among the relevant personnel of Engineers and Contractors. Training and capacity building was performed by the International Environmental Specialist to the Contractor's staff and Engineer's staffs through a number of discussion meetings, PowerPoint presentation, joint inspections, development of monitoring checklists, guidelines etc. These were helpful in clarifying issues and facilitating the implementation of needed measures.

During the reporting period from January to June 2015, the contractor has conducted monitoring of ambient air, soil, noise and water samples during the month of March, April, May and June 2015. The monitoring results of all the parameters are within the standard of Republic of Kazakhstan.

During the environmental monitoring the followings were identified:

- No serious environmental issues were identified at the early construction stage. The construction works are on early stages of progress. Accommodation, office facilities are ready in compliance with environmental requirements.
- Contractor is taking necessary steps in implementation of EMP requirements. Required permits from local authorities are being obtained.
- Monitoring activities and checklists as indicated in EMP implemented and conducted regularly as required.
- Training of Engineer's technical staff and Contractor's staffs on dealing with environmental compliance monitoring and reporting has to be conducted with the assistance of Team Leader.
- Grievance Redress Mechanism elaborated by the Contractor on the project site level and nominated contact people have to be designated.

In addition, a checklist for the Procedure on Environmental Inspection Monitoring was provided by the International Environmental Specialist to consultant engineers as a guide to facilitate regular environmental inspections and monitoring (Annexure D).

The next second Bi-annual Environmental Monitoring Report will be submitted to CR, MID and ADB in January 2016.

4.9.2 Recommendations

The several visit to the project sites by the International Environmental Specialist identified a number of potential environmental issues. These issues were discussed with the Contractor who promptly remedied several of the identified items. However, some issues remain outstanding, and should be corrected by the Contractor within the next reporting period. In addition, it is noted that some issues, such as waste management, application of PPE, storage of hazardous materials, will require continuous monitoring to ensure the requirements of the Contractors EMP (and its supplemental plans) are maintained. The monitoring should also focus on construction activities such as blasting/rock excavation, soil excavation, embankment filling and compaction, unsuitable excavation, removal and back filling, sub-base, base course and pavement works, slope protection, and drainage to minimize negative impacts on the environment.

The Contractor is also obliged to complete and submit environmental checklists (daily monitoring checklist) and monthly reports, bi-annual environmental monitoring report and to date the contractor has submitted monthly reports of April, May and June 2015 and Bi-annual environmental monitoring report (January to June 2015). The Contractor has been reminded that the checklists and reports are a contractual obligation and that these reports / checklists should be completed on a daily basis and submits regularly monthly report and Bi-annual Environmental Monitoring Report to the Engineer for review.

ANNEXURES

Annexure A: Environmental Monitoring Photos



Photograph 1: Workers were not wearing helmets & Retro Reflective Cloth at Chainage: Km 635.8 of Lot 1 (Contract - 1)



Photograph 2: Developing Borrow pit for embankment at Lot 3 (Contract - 2)



**Photograph 3: Air emission during compacting the embankment layer by layer at
Chainage: Km 757.2 of Lot 3 (Contract - 1)**



Photograph 4: Traffic Control Diversion at Chainage of 697 Km of Lot 2 (Contract - 1)



Photograph 5: Inspection of construction site with safety professionals at Chainage km 743 of Lot-3 (Contract 1)



Photograph 6: Dusts generated by Contractor haul trucks at Chainage: Km 757.4 of Lot 2 (Contract - 1)



Photograph 7: Dusts generated by Contractor haul trucks at Chainage: Km 678.2 of Lot 2 (Contract - 1)



Photograph 8: Wild Animal in ECA area at Chainage Km 745 of Lot 3 (Contract 2)



Photograph 9: Concrete Mixing Plant at Zhetibay Camp (Chainage: Km 729.5)



Photograph 10: Stone crushing plant at Zhetibay Camp (Chainage: Km 729.5)



Photograph 11: Road shoulder and diversion track rehabilitation works in progress with Signs diverting traffic at Chainage of Km 697 of Lot 2 (Contract - 1)



Photograph 12: Site Rehabilitation Activities at Chainage: 757.2 of Lot 3 (Contract 2)



Photograph 13: Preparation of foundation frame with PPE for Bridge at PK 72



Photograph 14: PK 600-602 Embankment fill of slope benching with water spry



Photograph 15: Construction of asphalt concrete at PK 715+00



Photograph 16: Construction of asphalt at PK 749+00

Annexure B: Attendance Lists for FGDs / Stakeholder Consultation at Beki, Zhetibay & Shetpe

Attendance List with FGD comments at Beki Village

Construction of CAREC-2 Road, Mangystau Oblast Section Project 2 (Loan 2967-KAZ) from Shetpe to Aktau: Km 632.3 – 802.3 (Lot 1-4)

Attendance of community consultation/FGDs on Road Safety Management & Environmental Issues

Venue	Primary School, Beki Village				
Date	21.04.2015				
Time	3:00pm - 5:30pm				
Sl No.	Name of Participants	Organization/ Company	Position	Signature	Remarks
1.	Абжанова. А.	Мектеп	Мұрағат	[Signature]	
2.	Караева. С.	Мектеп	Мұрағат	[Signature]	
3.	Халиева. Н.	Мектеп	Мұрағат	[Signature]	
4.	Маматова. А.	Мектеп	Мұрағат	[Signature]	
5.	Маматова. А.	Мектеп	Мұрағат	[Signature]	
6.	A.K.M. SHAHIDULLAH SMEC	SMEC	Road Safety	[Signature]	
7.	Mr. Shafiq Rahman	SMEC	Environment & Social	[Signature]	

- Төрийменшік жерінің жол қауіпсіздігі
- 1) Стратегиялық маңызы бар жолдың қауіпсіздігі
 - 2) Сигнальдік жүйемен сәйкестендірілген жолдың қауіпсіздігі
 - 3) Оңтүстік жолдың қауіпсіздігі
 - 4) Жолдың қауіпсіздігі

Facilitated by Тобашев А. А.
21.04.2015.

Conducted by AKM SHAHID
ULLAH &
SHAFIQ RAHMAN
21.04.2015

Attendance List with FGD comments at Zhetibay

Construction of CAREC-2 Road, Mangystau Oblast Section Project 2 (Loan 2967-KAZ) from Shetpe to Aktau: Km 632.3 – 802.3 (Lot 1-4)

Attendance of community consultation/FGDs on Road Safety Management & Environmental Issues

Venue		LOCAL GOVERNMENT, ZHETIBAY VILLAGE			
Date		28 APRIL 2015			
Time		9:00 am - 11:00 am			
Sl No.	Name of Participants	Organization/ Company	Position	Signature	Remarks
1	Исламова Р.Н.	Село Жетібай	2-й секретарь		
2	Сыров Т.О.	Жетібай	поселенный		
3	Жетібай	Жетібай	исполнитель		
4	Жетібай	акимат	вед. специалист		
5	Жетібай	акимат	делопроиз.		
6	Жетібай	акимат	исполнитель		
7	Жетібай	акимат	хатун		
8	Жетібай	акимат	поселенный		
9	Жетібай	акимат	поселенный		
10	AKM SHAHED	SMEC	ROAD SAFETY ENGR		
11	MD. SHAFIUR RAH	SMEC	Environmental specialist (Irrig.)		
12	Tobazheva A.N.	SMEC	Office		

- Комментарии жителей
1. Общественная дорога – дорога должна быть удобна для жителей для стирки белья и мытья посуды.
 2. У нас есть имеется одна автомашинка надо заказать машину для полива регулярно.
 3. Регулярно надо поливать водой чтобы предотвратить полев и заросли.
 4. Дорожка должна иметь одну обездвиженную дорогу от Жетібай.
 5. Все машины заправки и другие от каменного в округности. Для этих компаний нужно использовать новейшие технологии для качества масла.
-
- MD. SHAFIUR RAH
AKM SHAHED

Attendance List with stakeholder comments at Zhetibay

Construction of CAREC-2 Road, Mangystau Oblast Section Project 2 (Loan 2967-KAZ) from Shetpe to Aktau: Km 632.3 – 802.3 (Lot 1-4)

Focus Group Discussion

Venue: Shetpe

Date: 7th July 2015

Attendance List of community consultation/FGDs on environmental issues

SL.	Name of Participants	Organization	Position	Signature	Remarks
1	Мухамбетов. И.	Аккиты Шетпе	Аккиты		
2	Мухомедов С.	Аккиты Шетпе	Аккиты		
3	Сейтенова И.	Аккиты Шетпе	Сейтенова		
4	Отелгенков. Г.	Аккиты Шетпе, 2. С. С. С. С. С.	Аккиты		
5	U.D. SHAFIYEV RANUKIN	SMEC	Environmental Specialist		
6	Tobasheva A.N.	SMEC-Sara	Translator		

Аккиты села Шетпе господин Мухтар и сотрудники Аккиты приветливо встретили нас. Они более подробно узнали, что сотрудники дорожного проекта 2, Шетпе-Актай пришли, чтобы поговорить с аккитами.

Он сказал, что село Шетпе село Шетпе так естественно знать, что дорога будет в хорошем состоянии в ближайшем будущем, так что жителям Шетпе могут ездить в Актай без каких-либо проблем.

Учитывая вопросы к окружающей среде, мы решили, что подрядчик делает ежемесячный тест и измерение качества отбора проб для грунта, воздуха, шума, вибрации и воды, так как, это действительно хорошо для окружающей среды, чтобы делать регулярный мониторинг.

Поэтому мы говорили, мы обязательно проконсультируем специалиста Подрядчика, если выявятся какие-либо негативные последствия для жителей поселка Шетпе в ходе дорожного строительства, то специалист Подрядчик может позаботиться об этом.

Annexure C: Attendance List for Consultant and Contractor Staffs on Training Program & Meeting

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2

Training Program on Implementation of Environmental Management Plan

Venue: Construction Camp at Zhetibay

Date: 23rd April 2015

Attendance List

SL	Name	Designation	Mobile No. & Email	Signature
1	Nurlan Seitov	So. HRE	87010275240 nurlan.seitov@mail.ru	
2	Kim Yuriy		87010275240 KIM YURIY@BANK	
3	AKM SHAHIDULLAH	ROAD SAFETY ENG-INDIA	477732 47 72950	
4	Бермиев А.	инж. по мостам	87010275256 bermiev.593@mail.ru	
5	Граздас А.	инженер	87010275257 grazdas@mail.ru	
6	Гузиев А.	инж. по мостам	87010275249	
7	Джангиров А.	инженер	7010275248	
8	Султанов Г.М.	инж. по мостам	8701417048	
9	Токтаганов С.А.	инженер	87010281041	
10	Шушубаев А.	инж. по мостам	87010283401	
11	Бермиев А.	инж. по мостам	87010281917	
12	Шушубаев А.	инж. по мостам	87010281957	
13	Шакирбаев Жуманжол	инженер по мостам	87010281946 shakirbayev12@mail.ru	
14	Бермиев А.	инж. по мостам	+77012228455	
15	Шушубаев А.	инж. по мостам	87452124067	
16	Бермиев А.	инженер	77782327853	
17	Модина А.	инж. по мостам	87748799192	
18	MD. SHAFIQUE FARHAN	Environmental Specialist (Internship)	+77010281956	

Training Program on Implementation of Environmental Management Plan

**Training Program
on
Implementation of Environmental Management Plan**

Venue: Construction Camp at Zhetibay

Date: 3rd June 2015

Attendance List

SL.	Name	Designation	Mobile No. & Email	Signature
1	Qarabekov	OT, TB u BD		
2	Figamirbaev T	OT, TB u BD		
3	Imurbaev	OT, TB u BD		
4	Boymola A	OT, TB u BD		
5	Ali Baydar	OT, TB u BD	87010283400 ali.baydar@yandex.kz	
6	Shokmurodov A	OT, TB u BD		
7	MD. SHAFIUR RAHMAN	Environmental Specialist (International)	Shahman28@gmail.com	

Weekly Meeting on Environmental & Safety Issues

Venue: Construction Camp at Zhetibay

Date: 27th April 2015

Attendance List

SL.	Name	Designation and Organization	Mobile No. & Email	Signature
1	MD. SHAFIUR RAHMAN	International Environmental Specialist & SMES	+77010281956 shahman28@gmail.com	
2	Kim Yuriy	Road Safety Engineer	+77010275250	
3	Sapoz SZ	Inspector	+77010275251	
4	Sapoz SZ	Inspector ARE	+77010292445	
5	Sapoz SZ	ARE	+77010281957	
6	Toktaubayev S	Inspector	+77010271948	
7	Seitov Nurlan	ARE	+77010275246	
8	Gorodetskiy Victor	Inspector Lot 2	+77010292445	
9	Barisova Diana	Translator Tech office	+770102915010	
10	Ali Baydar	Technical office Baydar	+77010283400	
11	AKM SHAHID ULLAH	ROAD SAFETY ENGR	+77782329254 esulab-01@yandex.kz	
12	Ulan Baydar	LS / SI	+77010275250	

Annexure D: Environmental Monitoring Checklist

Site Walkover Checklist		
Date of Walkover:	Engineer's Representative	Engineer's Reference Number
Time: to	Contractor Representative	Contractor Reference Number
Weather Conditions:		
Work in progress:		
Environmental Problems	Possible Causes	Proposed Mitigations
Environmental Audit carried out by:		Representative of contractor:

No.	Environmental Protection Measures	Implemented		Functioning		Comments
		Yes	No	Yes	No	
Contractor's Camp						
1	Septic tanks installed and emptied according to approved procedures					
2	All waste water is directed to septic tanks or technical water tanks					
3	All hazardous liquids stored in the designated area on an impervious base with runoff collection					
4	Solid hazardous materials stored at the designated secure area at the workshops					
5	Sit run-off collected in the drainage system and disposed of by the third party contractor					
6	All vehicles entering and leaving the construction camp are subject to controls, and pass through a wheel washer					
7	Local communities and organizations informed of the construction schedule and any noisy activities on a regular basis via workshops and other liaison activities.					
8	Open storage containers provided with cover nets or similar					
9	All open burning is prohibited					
10	Adequate firefighting equipment <ul style="list-style-type: none">▪ Buckets of sand & Spades▪ Foam Extinguishers▪ Fire blanket in kitchen area					
11	Public access is prohibited using fencing and security					
12	All staff provided with personal protective equipment's (PPE)					
13	Smoking prohibited except in smoking rooms					
14	Adequate traffic signs and warning notices provided on site and dangerous areas					

No.	Environmental Protection Measures	Implemented		Functioning		Comments
		Yes	No	Yes	No	
15	Potable water provided to all staff obtained from commercial and licensed sources.					
16	All worker's uniforms are laundered on a daily basis					
17	All employees are provided with three meals per day					
18	Hygienic canteen facility at camp sites					
19	Emergency medical facilities and first aid box at camp site and work sites					
20	All employees under the control of the Camp doctor and provide appropriate services and monthly health checks					
21	All areas are clean and tidy, with no litter or waste present except in designated areas					
22	Provision of recreational facilities at camp sites					
23	Children below 15 employment for works					
Plant Area						
1	The bitumen and chemical storage area is located away from any watercourse and the base and bund walls are impermeable and sufficient capacity to contain 110% of the volume of tanks					
2	Liquid waste from the Asphalt plant is stored in the designated tank and emptied by specialized suction vehicles of ≤MTTSTH≥ of Liman					
3	Bitumen is stored in the designated area and bended in concrete to a volume of 110%					
4	Solid waste from Asphalt plant is stored in the designated area and disposed of in accordance to approved procedures					
5	The plant area is graveled for reduction of dust emission					

No.	Environmental Protection Measures	Implemented		Functioning		Comments
		Yes	No	Yes	No	
6	The plant area is watered for reduction of dust emission					
7	No plant may discharge effluent water to any watercourse; impervious concrete basins will be constructed for receiving such waters					
8	All staffs at Asphalt, Concrete and Crusher Plant are supplied with dust masks and ear defenders					
9	All staffs at Asphalt, Concrete and Crusher Plants are wearing their dust masks and ear defenders.					
10	All sands and aggregate for concrete and asphalt batching kept damp or covered					
11	The Asphalt, Concrete and Crushing plants are provided with adequate firefighting equipment					
12	Plant or equipment causing high vibration levels are of appropriate design, well maintained and correctly operated					
13	Fencing is erected to protect the river / canal					
Fuel Station						
1	Oil filling and refueling will be strictly controlled and is permitted only at the fuel filling station and workshops area					
2	Fuel tanks storage area is bunded and impervious bottom and roof is closed					
3	Fuel station provided with adequate firefighting equipment checked weekly					
4	Fuel station provided with safety ribbon and warning signs					
5	Fuel station provided with wastebasket					
Contractor's Workshop and Car Wash						
1	Liquid hazardous materials stored in the designated secure area at the workshops					

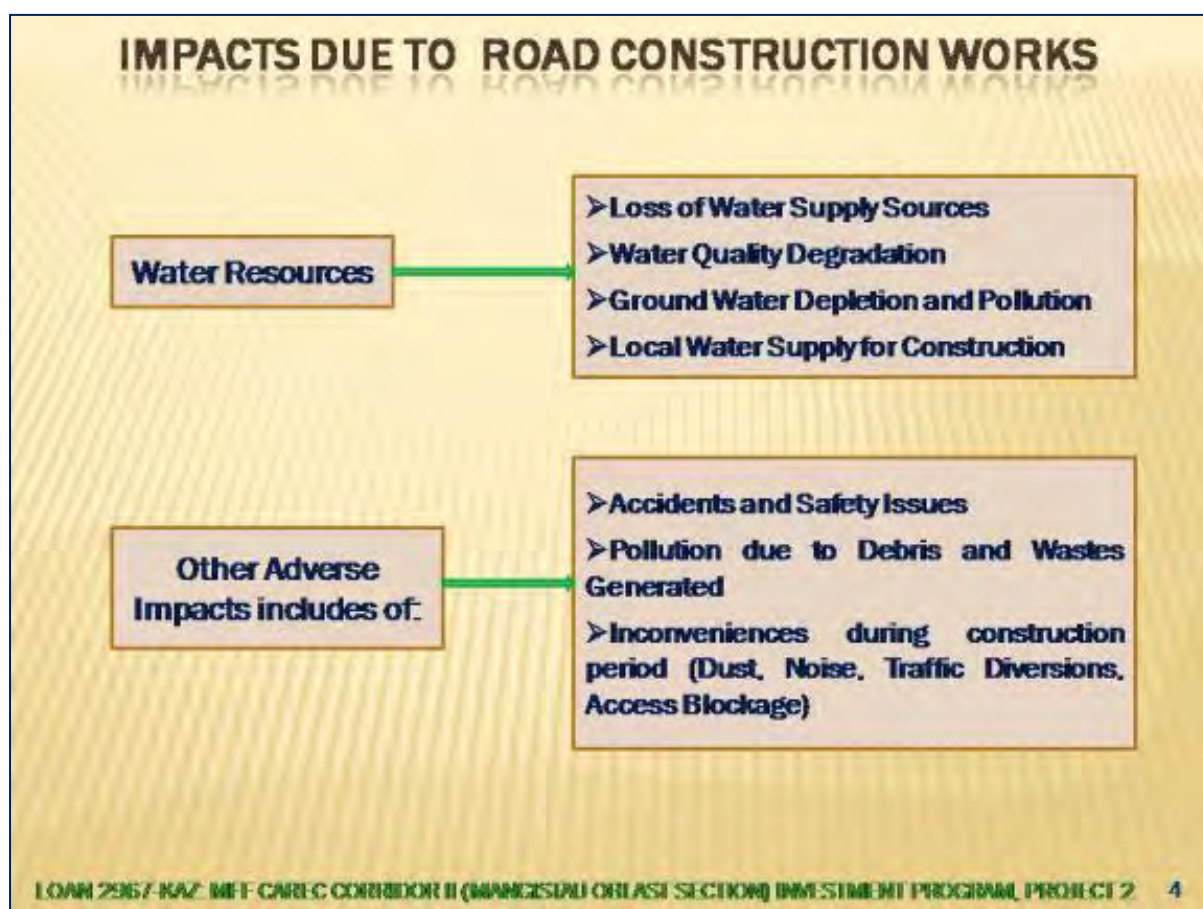
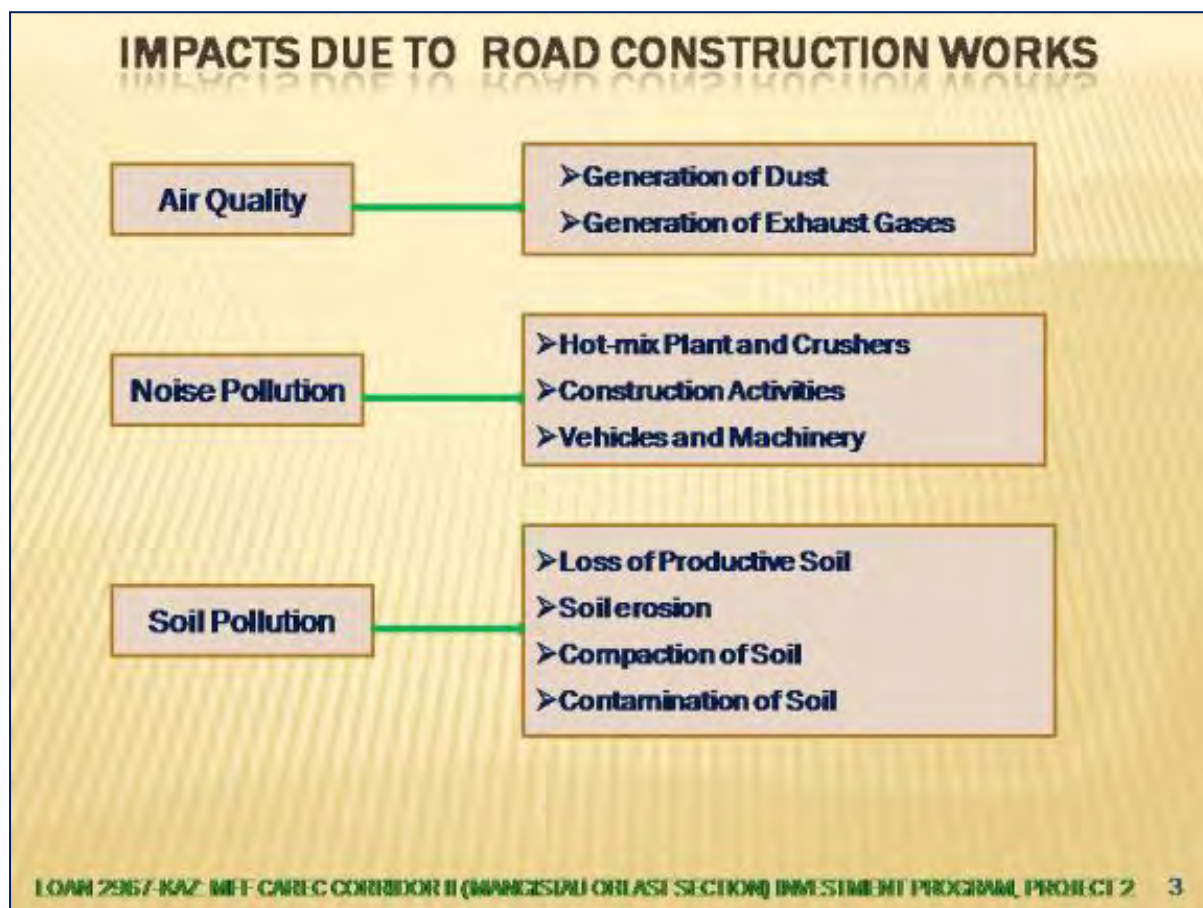
No.	Environmental Protection Measures	Implemented		Functioning		Comments
		Yes	No	Yes	No	
2	Solid hazardous materials stored in the designated secure area at the workshops					
3	Containers for waste oils and hydraulic fluids provided					
4	Used oil collected in used oil tank bunded in concrete to a volume of 110% and emptied according to approved procedures					
5	Workshop provided with drainage					
6	Every vehicle inspected and maintained on a regular basis					
7	All construction vehicles meet Euro standards and fitted with modern noise suppression equipment					
8	Silencing equipment of all vehicles maintained and checked accordance with approved procedures					
9	All workers of workshop provided with adequate welding equipment and PPE					
10	All technical water is collected in concrete tank and emptied according to approved procedures					
Project Road						
1	All roads impacted by construction activities watered by sprinkler trucks					
2	The project road is provided with flags at appropriate places for passage of cattle, sheep and other animals					
3	Culvert and bridge construction areas provided with safety ribbons and warning signs					
4	Fencing and access control installed at all work sites where practicable					
5	The storage of waste of any kind as well as parking machinery or vehicles is not permitted within a distance of 100m of any stream (including					

No.	Environmental Protection Measures	Implemented		Functioning		Comments
		Yes	No	Yes	No	
	drainage or irrigation facilities)					
6	Adequate traffic signs and warning notices provided on site and dangerous areas					
7	Construction vehicle and plants maintained properly to reduce emissions					
8	Noise control measures at sensitive sites					
Borrow Areas						
1	Temporary drainage provided at borrow pits and quarries					
2	Within 200m of the nearest habitation construction work is stopped between 22.00 and 6.00 hours					
3	Aggregates only obtained from approved borrow areas					
4	Aggregate extraction is not taking place within 100m of a river or watercourse					
5	Stockpiles do not exceed 3m in height					
6	All vehicles with an open load-carrying area used for transporting potentially dust producing material properly fitting side and tail boards					
7	During construction all noise volume restricted to the national standards					
8	Materials having the potential to produce dust is not loaded to a level higher than the side and tail boards and covered with clean tarpaulin					
9	All vehicles, machinery, and plant meet Euro standards for exhaust emissions					
10	All temporary acquired land is rehabilitated					
11	All spilled materials and contaminated earth collected and disposed accordance with approved procedures					

No.	Environmental Protection Measures	Implemented		Functioning		Comments
		Yes	No	Yes	No	
12	During the delivery and handling of materials provided effected water sprays					
13	Any adjacent areas disturbed due to spoil restored to its original state					
14	River banks protected from materials deposited or temporary contractor stockpiles					
15	Nuisances or disturbance arising from the execution of the works controlled to tolerable level according to standards					
16	Access roads to quarry, borrow pits, stock pile areas and traffic operations maintained to approved standards					
17	Discharging and diverting water, avoiding flooding or damaging other works or service causing erosion					
Flora and Fauna						
1	Trees and bushes outside the construction width but within the road reserve generally preserved from damages					
2	No ancient trees cut down or impacted by the construction or operation					
3	Cutting down has not taken place without the prior approval of the relevant local authorities					
4	Trees or shrubs only felled or removed if they impinge directly on the permanent works or necessary temporary works					
5	Construction avoided on bridge sites during spawning seasons (indicate yes or no to construction activities on going, providing date)					
6	Construction on rivers only take place during period of low flow to minimize pollution					

Annexure E: PowerPoint Slides in the EMP Training





ENVIRONMENTAL MANAGEMENT PLAN (EMP)

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 5

What Actually is EMP????

**“Environmental
Management Plan is a
Tool”**

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 6

Purpose of EMP.....

- Minimize Negative Impacts
- Enhance Positive Impacts
- Helps in bringing in Environment friendly construction management
- Reduce Problems and Delays during implementation
- Improve Over-all Project Quality

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 7

Aspects Covered

- Water
- Air
- Soil
- Noise
- Damage to Flora and Fauna
- Disruption to Users
- Traffic Control and Safety
- Construction Materials
- Worker's Accident Risks
- Workers' Health Risks including Hygiene
- Enhancement of natural and man-made features

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 8

Disposal of Debris from Road Surface

- Contractor will identified pre-designated disposal site for disposal of waste or subject to approval of Environmental Representative.
- Responsibility of contractor to arrange – transportation, maintenance, dismantling and debris clearing or as directed by Environmental Representative.

Other Construction Waste Disposal

- Contractor will prepare a detail "Comprehensive Solid Waste Disposal Plan" with approval of Environmental Consultant
- Joint inspection of all disposal site by Environment Representative and Contractor prior to approval.
- Unsuitable materials not to disposed off near: water course, agriculture land, natural habitat, etc.
- All disposal site will be certified by Environmental Consultant prior to handing over.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 9

Accessibility

- Contractor will provide safe and convenient passage for vehicles, pedestrians and livestock, if necessary, temporary connecting road.
- Contractor will also ensure, existing accesses are not blocked without providing adequate provisions.

Planning for Traffic Diversions and Detours (alternative route)

- Temporary diversions constructed after approval of the Engineer and Environmental Representative.
- Specific safety measures for: pedestrian and workers working at night
- Sprinkling of water three/four times a day to keep Diversion/Detours are dust free
- Traffic control plans shall contain: a) details of diversions, b) traffic safety arrangements c) safety measures for night time traffic; and, d) transportation of hazardous materials.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 10

Transporting Construction Materials and Haul Road Management

- Contractor will maintain all roads used for transporting construction materials, equipment and machinery.
- Compact haul roads. Provide a layer of coarse aggregate on top and roll it to prevent generation of dust.
- Sprinkle water on the haul roads at regular interval decided by the Environmental Consultant.

Disruption to Other Users of Water

- Contractor at its cost will arrange adequate supply for the whole construction period.
- Precaution to minimize the wastage of water in the construction process/operation

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 11

Drainage

- Contractor will take necessary measures to prevent the blockage of water flow.
- Contractor will take all required measures to prevent temporary or permanent water diversion of the site or any adjacent area.

Slope Protection and Control of Soil Erosion

- Contractor will take slope protection measures to control soil erosion on the basis of site conditions.
- Turfing works will be taken up as soon as possible provided the season is favorable.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 12

Water Pollution from Construction Wastes

- Contractor will take measures to prevent the wastewater generated during construction from entering into water bodies.
- Waste arising from the project is to be disposed off in the manner that is acceptable to the National Environmental Law.

Water Pollution from Fuel and Lubricants

- Parking location, fuel/lubricants storage sites, vehicle, machinery and equipment maintenance and refueling sites - at least 100 m from water bodies.
- Location and lay-out plans of such sites will be submitted by the Contractor prior to their establishment for approval from Environmental Representative.
- Spillage of fuels and lubricants does not contaminate the groundwater
- Oil interceptors will be provided for vehicle parking, wash down and refueling areas.
- All spills and collected petroleum products will be disposed off in accordance with National Environmental Law and MOTC.
- Environmental Representative will certify that all arrangements comply with the guidelines of National Environmental Law or any other relevant laws.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 13

Dust Pollution

- Precaution to reduce the level of dust by sprinkling of water, encapsulation of dust source and by erection of screen/barriers.
- Plants located at least 1 km in the downwind direction from the nearest human settlement if any.
- Provide necessary certificates for all crushers used in construction conform to relevant dust emission control legislation.

Emission from Construction Vehicles, Equipment and Machineries

- Contractor will ensure that all vehicles, equipment and machinery (pollution emission levels) comply with requirements of national environmental law and ADB safeguard policy.
- Contractor will submit validity certificates for all vehicles / equipment/ machinery used for the project.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 14

Noise Pollution: Noise from Vehicles, Plants and Equipments

- Contractor will ensure that all vehicles, equipment and machinery (pollution emission levels) comply with requirements of national environmental law.
- Contractor will submit validity certificates for all vehicles/ equipment /machinery used for the project.

- Plants and equipment used in construction shall strictly conform to the National environmental law/ADB noise standards.
- Vehicles and equipment used in construction will be fitted with exhaust silencers.
- Limits of noise emission for construction equipment shall not exceed 75 dB.
- No Construction activity near (100 m) sensitive areas between 9.00 pm to 6.00 am.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 15

Personal Safety Measures for Labour

- Contractor will provide labour with: Protective footwear, protective goggles, Earplugs, Luminous jacket, hard hats and hand gloves.
- International Labor Organization (ILO) Convention No. 62 as far as those are applicable to this contract.
- Contractor will not employ any person below the age of 14 years for any work.

Traffic and Road Safety

- Contractor will take all necessary measures like barricading, including signs, markings, flags, lights and flagmen as proposed in the Traffic Control Plan/Drawings.
- Contractor will ensure that all signs, barricades, pavement markings are provided as per the specifications.
- Before taking up construction on any section, a Traffic Management Plan will be devised and implemented to the satisfaction of the Environmental Representative / Road Safety Engineer

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 16

First Aid

- A readily available first aid unit including adequate supply of sterilized dressing materials and appliances as per the Safety Measures Rules in every work section.
- Suitable transport at all times to take injured or sick person(s) to the nearest hospital.

Accommodation

- The location, layout and basic facility provision of each labour camp will be submitted to Engineer and MOTC and construction commence after written approval of the Environmental Representative.
- Will maintain living accommodation and ancillary facilities in functional and hygienic manner and as approved by the Engineer.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 17

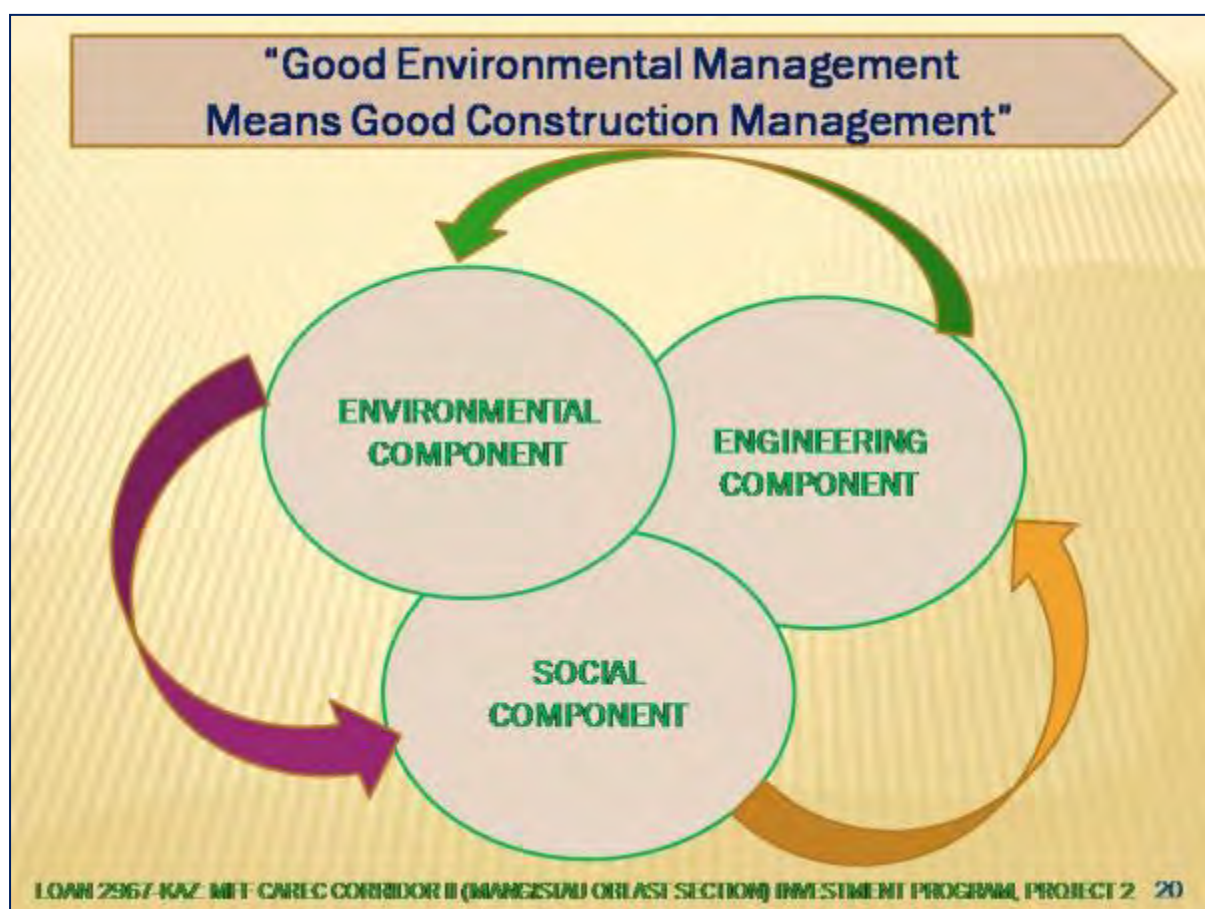
Portable Water

- In all Labour accommodation, uncontaminated water is available for drinking, cooking and washing.
- Water storage tank at least 1m above the surrounding ground level.
- Well within 25m proximity to toilet will be disinfected before water is used for Drinking.

Sanitation and Sewerage System

- Sewage system for the camp are designed, built and operated in such a fashion that no health hazards occurs.
- All toilets are to be cleaned and kept in a strict sanitary condition.

LOAN 2967-KAZ: MFF CAREC CORRIDOR II (MANGISTAU OBLAST SECTION) INVESTMENT PROGRAM, PROJECT 2 18



**Annexure F: Contractor Semi-annual Environmental Protection
Report (January to June 2015)**



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

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

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

**ENVIRONMENT PROTECTION REPORT
FOR THE FIRST HALF OF 2015**

**Section km 632,3 – km802«Shetpe-Aktau»
of the road «Aktau - Beineu»**

Prepared by: Andrey Ivlev

June 2015

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Project Description

Road «Beyneu-Aktau» it is part of a corridor linking Russia and Central Asia, and the shortest route connecting Russia and Eastern Europe with Central Asian countries. This road is the road of national significance and of great importance in ensuring the local and regional, and especially the interstate transport of goods and passengers, providing transport links of the Republic of Kazakhstan and the Russian Federation.

Road «Beyneu-Aktau» it is also the only highway in the country, which connects the regions with seaport.

This project is a reconstruction of the road in two sections:

1 section km 632,3 – km 719 (Shetpe – Beki – Zhetybay):

The length of designed section of the road reconstruction **km 632,3 – km 719 (Shetpe – Beki – Zhetybay)** is 85,9km. Sections «Bypass of Shetpe (PK1+60÷72+80)» and «Bypass of Zhetybay (PK717+60÷796+80)» go in a new direction. On other sections the projected direction coincides with the existing embankment of the roadbed with partial descent from embankment in the sections of rectification and breakdown curves (sections length from 120 to 920 m).

Bridge construction planned by the scheme of 1x18m, on PK33+24, Overpass construction by the scheme of 3x24, on PK72+30, and traffic circle construction on PK92+58.

Also planned the construction of 54pcs. of round tubes on a road and exits and 8pcs. of rectangular tubes and animal underpass (4x2,5)m.

Road lightning with a total length of 10,6 km arranged in the sections PK34+00-PK45+00, PK68-PK109, and with a total length of 7,5 km in the section PK790+60 - PK817+60.

2 section km 719 – km 802,27 (Zhetybay – Ashyagar – Aktau):

The length of the projected section of the route is 83.9 km. The reconstruction project provides:

- from km719 to km786 reconstruction of the existing road by the parameters of technical category I-b with four-lane road way, dividing strip and widening of the roadway up to 27,5 m on top.

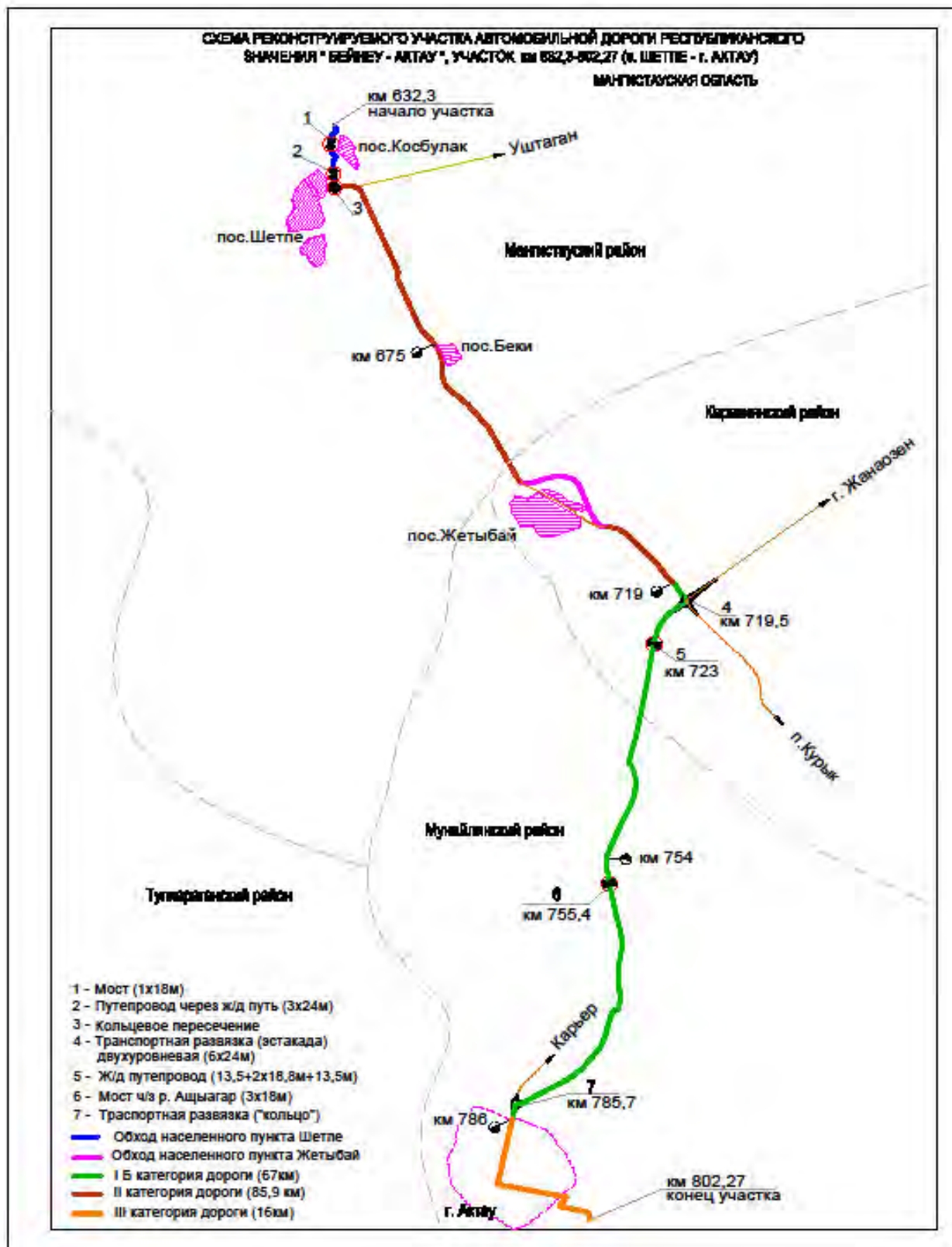
- construction of transport junction in two levels at the intersection of highways «Aktau – Zhana Ozen» and «Shetpe - Kuryk» on km 720 with the passage of four-lane road on top (on a ramp of 6x24m) via highway « Shetpe - Kuryk » and lightning with a length of 5,08 km.

- from km786 to km802,27 in the section, passing within the urban areas, arranged medium repair the roadway and sidewalks.

- on km723 reconstruction of railroad overpass and on km755+393 reconstruction of the bridge via Ashyagar river (3x18m).

- construction of 48pcs. of round tubes on a road and exits and 5pcs. animal underpass (4x2,5)m.

- lightning of traffic circle on km785,7 with a net length of 3,8km.



2. Environment management plan performance report

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.

This report is compiled based on the results of the first half 2015.

Before works starting, the Contractor has been developed and submitted for approval the Environmental Management Plan for the sections: 632,3-719 (85.9 km), section "Shetpe-Aktau" of road "Aktau-Beineu", 719-802 (83 km), section "Shetpe-Aktau" of road "Aktau-Beineu." Later, according to the letter of the Engineer were composed additional plans: Quarries management and restoration plan, Management Plan for the construction site section, Solid Waste Management Plan, Management Plan for fuels and chemicals, Management plan of measures to prevent dust, Soil Management Plan, Water quality plan, Management Plan to minimize noise.

2.1 Land resources

Land sections with total area of 10-hectare for camp arrangement and asphalt-concrete plant and crusher plant installation close to Shetpe village are finalized.

Approvals for the temporary land allocation for the storage site of materials, soil and aggregate quarries, for a temporary bypass arrangement in the area of reconstruction km632,3-km802, temporary bypass roads for the possibility of communications relocation, entrance to the soil and aggregate quarries, as well as to the camp now received from Mangistau, Karakiya and Munaily Districts Akimats and other competent bodies. Also received the Manghystau region Akimat and other competent authorities approval for 10hectare for land allocation for camp construction and asphalt and crusher plants installation. The decision of Manghystau region Akim received and the contract for 10hectare land renting concluded.

Temporary bypass road arranged. The arrangement of roads carried out in such a way that minimized the impact on the surrounding communities, including schools and hospitals.

Received decisions for the temporary land allocation for the asphalt plant site and communications arrangement (gas line, water line, electric line) for Zhetybay camp from Karakiya region Akimat, and the contract for land renting concluded. Land for laying communications executed, negotiated the project of electricity, gas and water for "Zhetybay" camp by area of 16hectare. Received decisions of Karakiya region Akim, and contracts for 23,4648hectare land sections renting are concluded.

To reduce the impact on the land resources the following events perform by Contractor:

- Topsoil removed from all road sections, where it is stipulated,
- Technological cycle of work is obeying,
- Subgrade slopes strengthening performing in order to prevent erosion,
- Equipment refueling is carried out in designated areas,
- In order to avoid getting oil on the soil cover, parking, repair and maintenance of equipment are carried out in the construction camp repair area near Zhetybay village,
- carried out separate collection and storage of waste,
- soil cover monitoring is performing.
- roads water sprinkling is performed in works performed places to reduce the formation of dust,
- equipment traffic is carried out on existing roads.

2.2 Soil quarries:

On a road section km632,3 – km719 following soil quarries planned to develop: №9 km702+754, area of 48,98hectare; № 10 km698+093, area of 24,12hectare; № 11 km691+273, area of 8,73hectare; № 12 km682+923, area of 25,04hectare; № 13 km673+207, area of 7,19hectare; № 14 km666+112, area of 7,17hectare; № 15 km658+261, area of 25,86hectare; № 16 km651+505, area of 24,48hectare; № 19 km638+00, area of 8,52hectare; № 20 km632+700, area of 5,52hectare; № 21 km691+71, area of 14,89hectare; № 22 km634+600, area of 2,51hectare; № 23 km635+00, area of 2,61hectare; № 24 km637+200, area of 2,68hectare; № 27 km682+170, area of 5,83hectare; № 28 km682+540, area of 12,2hectare.

On a road section km719 - km802 following soil quarries planned to develop: № 1 km781+760, area of 36,45hectare; № 2 km773+160, area of 79,61hectare; № 3 km764+930, area of 20,74 hectare; № 4 km756+200, area of 25,16 hectare; № 5 km749+100, area of 25,79 hectare; № 6 km739+710, area of 33,85 hectare; № 7 km731+230, area of 28,24 hectare; № 8 km724+735, area of 8,70 hectare; № 17 km750+410, area of 24,6 hectare; № 18 km773+00, area of 69,63 hectare; № 25 km748+500, area of 2,54 hectare; № 26 km770+765, area of 2,56 hectare.

The contract with the Company "Manghystau Geology" to conduct geological exploration on the estimated reserves of soil for the construction of the road "Shetpe-Zhetybay-Aktau" and prepare for the development with an execution period - 5 months. Completed work on geodetic breakdown of access roads to quarries.

Executive survey of 21 soil quarries and 7 SGM quarries with break down by area is finished. The project of survey and assessment work with the approval of reserves by 28 quarries received and approved by the competent authorities. In the Interregional Department "Zapkaznedra" of Committee for Geology and Subsoil Use in Aktobe received Cartogram, and approved the coordinates and obtained geological allotment of 28 quarries. All agreed projects are directed to the Interregional Department "Zapkaznedra" Committee for Geology and Subsoil Use in Aktobe for approval mountain reserves.

Permission for soil quarries and SGM quarries reserves survey obtained by Manghystau region Akim.

West-Kazakhstan Interregional Department of Geology and Subsoil Use approved the "project for prospecting and evaluation operations on sites №№1-28 of soil rocks (sandy loam, loam, sand), suitable for the reconstruction of the road Aktau-Beineu in a segment Aktau-Shetpe in the Manghystau region ".

2.3 Aerial environment

During construction work, given that the main sources of air pollution are construction machinery and vehicles, most of the measures to reduce air pollution associated with their operation

The following measures to reduce emissions of pollutants are taken by Contractor:

- during the earthworks dedusting is carried out by water pouring (distribution) by water trucks, tanks equipped with switchgears. Dedusting carried out on the bypass roads, and roads to the construction site,
- delivery of soil and mixes prepared in mixing plants, to the work site by specialized vehicles or fitted trucks with tightly closed sides and covered with an awning, preventing the weathering and losing of transported material,
- using serviceable equipment with the selection of the type of fuel, type of engine and its mode of operation and load,
- Technological cycle of work is obeying,
- loading and unloading of dusty materials (cement, etc.) is mechanized, hand work with these materials are allowed as an exception in taking appropriate action against sputtering (protection from wind, losses, etc.).
- speed limit signs are installed,

- atmospheric air is being monitored under the Agreement with accredited laboratory,
- maintenance and repair of road-building equipment and vehicles is organized in a special area of the construction camp,
- transport traffic is carried out on the existing and temporary hard surfaced bypass roads, which reduces the impact of ongoing work on the composition of atmospheric air,
- equipment refueling is carried out in designated areas,
- under adverse weather conditions, the work stopped or reduced.

2.4 Noise and vibration

While performing work under reconstruction of the section road is carried out the impact of physical factors as noise and vibration. The sources of exposure are: operation of a crusher, asphalt and concrete mixing plants, as well as machinery and vehicles.

Contractor performs the following activities to reduce the impact of noise and vibration:

- use of facilities, equipment and machinery with the noise of the appropriate sanitary standards,
- limited operating time of heavy equipment,
- construction sites where are placed crushers, asphalt and concrete facilities are located at a significant (more than 3 km) distance from the settlements,
- not allowed the operation of the equipment and plant idling,
- to reduce the crushing plants are used the rubber gaskets, as sound insulation material used rubber-sponge - service equipment staff use personal protective equipment, such as (headphones) type.
- road construction machinery equipped with protective covers.

During the period of work vibration may occur from process equipment, so for its reduction provided:

- the establishment of flexible connections, elastic pads and springs;
- reducing time spent in conditions of vibration;
- the use of personal protective equipment.

To monitor the level of exposure control measurements are made of noise and vibration at the entrance and exit in the Shetpe and Zhetybay village in camps Shetpe (657 km) and Zhetybay (707 km), on the borders of the reserve.

2.5 Aquatic environment

In the area of work, there is one body of water, the river Aschyagar to 755 km. The bridge 30 m long crosses a river that dries up during the hot period of the year. In April, there was the passage of floodwaters, to monitor the level of exposure water samples were taken.

Except of specified section of the road on km755, the rest of the section of work is characterized by a complete lack of surface water. Temporary streams occur only during heavy rains or snowmelt abundant. There are no permanent streams.

Hydrogeologically section refers to the construction of the road area with deep groundwater level. Groundwater in the area of road reconstruction lie at a depth of 8-10 m.

Thus, the plan does not provide for the use of surface and groundwater as a source of industrial water for the project. For technical purposes the water from the water main, for which signed a contract with "KazTransGas" JSC.

In June 2015, due to the hot weather the riverbed went dry.

Despite the lack of surface water and groundwater, the Contractor performs the following events:

- exercises control over the technical condition of vehicles, excluding the leakage of fuel and lubricants;

- concrete for concrete and reinforced concrete structures accepted for sulfate-resisting portland cement;
- corrosion protection of metal structures;
- production processes excluded in operation any drains on the relief of technological platforms with a firm covering, which can be contaminated with oil and other chemicals;

2.6 Impact of Karagiye –Karakol State Natural (zoological) wildlife sanctuary

From 739 km to 772 km of existing road laid in the area Karagiye -Karakol State Natural (zoological) sanctuary of republican significance.

Seen from the road section carrying out control over implementation of the following requirements:

- ramps and platforms for short breaks are provided in place of the existing facilities
- the installation of information and road signs
- reduction of the period of construction works in the territory.
- removal of construction sites and equipment placement outside the sanctuary
- implementation of measures for dust suppression,
- waste collection takes place outside the sanctuary.

2.7 Production wastes

Work on the road section is accompanied by the formation of various types of waste, temporary storage of which, transportation, or disposal of waste could be potential sources of contamination in the various components of the environment.

During the reconstruction of the road "Beineu-Aktau" 632-802,27 km (Shetpe - Aktau), possible the formation of the following types of waste:

- Asphalt concrete breakage
- Oily rags
- Welding electrode stubs
- Used containers from the paint and varnish materials
- Metal Scrap
- Construction waste
- Solid domestic waste

When operating the crusher, asphalt and concrete plants, possible the formation of the following types of waste:

- Oily rags
- Solid domestic waste

Asphalt concrete breakage - This type of waste refers to the green list of wastes generated during the milling of the old roadway. Asphalt concrete breakage reused at own enterprise for arranging temporary bypass roads.

Used containers from the paint and varnish materials- This type of waste applies to amber list of waste AD070, formed during painting work.

Oily rags- It is formed by the elimination of the straits, owing wipe the soiled surface vehicles, machinery parts and other repair work. This type of waste applies to amber list of waste AS030, flammable, solid, insoluble in water.

Construction waste - (remnants of concrete, shuttering, fragments reinforced concrete products, the remains of cables and wires, insulators, etc.) are formed in the course of construction and installation works related to green list waste GG170. Solid, not flammable.

Metal Scrap (inert waste remaining in the construction, maintenance and installation of equipment - metal shavings, metal pieces, defective parts identified in the process of renovation and not subject to recovery, cutting pipes, valves, etc.) - Solid, not flammable, the green list waste GA090.

Welding electrode stubs – inert waste, remaining during welding - solid, not flammable, green list waste GA090.

Solid domestic waste (household waste, packaging materials, and others.) - this type of waste refers to green list waste GO060, non-hazardous.

Waste production and consumption must be collected, stored, are neutralized, transported to the disposal site or disposal.

All waste is immediately stored in designated areas in metal containers. Containers are installed on special reinforced concrete floors and closed with metal lids.

All production and consumption waste exported to specialized companies for further processing, recycling or disposal.

Waste passports coordinated with the Department of Ecology of Mangistau region.

2.8 Flora and fauna

The area of the road section is located in the desert area. Flora has a clearly expressed desert character.

On the territory, there are no places of localization of seasonal animal species.

Revegetation will begin after the cessation of construction work directly related to the impact on vegetation.

In order to minimize the impact during the performance of work on the road section with the employees of contractors and subcontractors hold conversations with an explanation of the following requirements:

- strict ban on the feeding of wild animals by personnel, as well as proper storage of wastes, which are bait for wild animals;
- the vehicular traffic only by established transport scheme, with reasonable limit of alarm sounds;
- preventing uncontrolled discharge of fuel and lubricants to the ground;
- the maximum possible reduction in noise factor to environmental fauna;

In addition, when carrying out a visual inspection of the production site draws attention to detect oily spots.

2.9 Changing of surface drainage during construction

When working on the construction site of the road can cause the following changes in riverbed, contamination of soil, water.

To exclude changes in surface drainage Contractor shall perform the following activities:

- deletion and movement of culvert takes place during the dry months,

- promptly remove construction materials from the channels,
- during the work does not create artificial barriers,
- to prevent large debris from entering into the mainstream during the demolition of channels,
- exercises to strengthen embankments.

2.10 Storage of Fuel and chemical matters

In carrying out inspections of the plan of environmental management ecologist of the Contractor paid special attention to the storage of fuel and chemicals. The audit found that:

Storage of lubricants produced in sealed containers having fencing and fire equipment.

Refueling of road construction machinery performed by tanker "on wheels".

Repair work, maintenance of machinery is carried out in the repair area at a construction site near the Zhetybay village.

During the test of road sections and construction sites, spills of fuel and oil is not revealed.

Contractor employees and subcontractors are informed that in case of spillage of oil, a strait place filled with sand, collected in special containers and transported in the designated areas. All-purpose machines must be equipped with a container with sand, pallets, shovel.

2.11 Camps, crusher, concrete and asphalt plant location.

Shift camp, in which there are asphalt and concrete plants are located on the 73 km of the road section "Aktau-Zhetybay" and refers to the administrative area of Karakiya district of Manghystau region. Distance to the nearest town - the Zhetybay village and Munaishy village - about 12 km.

Production area, in which a mobile asphalt and concrete plant placed, located at a distance of 100 meters to the north of the road. The site, with a total area of 11 hectares, allocated by the decision №226 dd 09.30.2014 of Karakiya district Akimat.

The site area, in which there are asphalt and crushing plants is approximately 200 m to the west of the road, on the highway of Shetpe station – Zhetybay village. The distance from the site to the nearest residential area – Shetpe station is 15 km, the distance to the Zhetybay village - 62 km. The site is relatively flat terrain with a slight slope terrain, the excess portion of one side over the other is 4 meters. Total slope terrain from the southeast to the northwest. The plot is covered with semi-desert vegetation. Production area that hosts a mobile asphalt and crushing plants 10 hectares.

Section km 632-719

With «Caspian HES Consulting» LLP signed a contract for the development and approval in the authorized state bodies of the project "Reconstruction of the road" Beineu - Aktau ", 632-719 km (Shetpe -Zhetybay). Adjustment of the construction of the mobile asphalt and crushing plants", with the section "Environmental Protection ".

Obtained sanitary-epidemiological conclusion # 39 dd 06/03/2015 issued by the Department of Consumer Protection of Manghystau region. Obtained conclusion of the state ecological expertise # 04-08/1376 dd 23.04.2015 issued by the Office of Natural Resources and Environmental Control of Manghystau region. Received permission to emissions into the environment. Received permission for emissions into the environment.

Developed a plan of environmental management for the period of implementation of the project on reconstruction.

Public hearings on the working project "Reconstruction of the road" Beineu - Aktau", 632-719 km (Shetpe - Zhetybay) were conducted. Adjustment in part of the construction of the mobile asphalt and crushing plants».

Completed the mobilization works on the construction of the working town "Shetpe" and fencing of the territory.

According to the signed sub contractual agreement performed works on electrical supply of "Shetpe" camp: reconstruction of power substations and 10 kV overhead line built, executed internal wiring and connected all internal communications.

Obtain technical conditions for gas supply "Shetpe" camp and conducted the design and construction of the supply and internal gas line.

In order to ensure the camp with portable water concluded the contract for water consumption with "MangystauZhylu su" SCE.

Signed a contract with LLP "Temirzholsu-Mangystau» № CGZ/2-1/2015 dated 01.06.2015 for pumping and removal of fecal waste.

The contract with LLP "Akat Munay" for the development of the Shetpe camp working project is concluded. Currently, working project is being agreed in state bodies of Manghystau region.

Section km 719-802

With «Caspian HES Consulting» LLP signed a contract for the development and approval in the authorized state bodies of the project "Reconstruction of the road" Beineu - Aktau ",719-802 km (Zhetybay-Aktau). Adjustment of the construction of the mobile asphalt and crushing plants”, with the section" Environmental Protection ".

Obtained sanitary-epidemiological conclusion # 10 dd 02/02/2015 issued by the Department of Consumer Protection of Manghystau region. Obtained conclusion of the state ecological expertise # 04-08/535 dd 27.02.2015 issued by the Office of Natural Resources and Environmental Control of Manghystau region. Received permission to emissions into the environment.

Developed a plan of environmental management for the period of implementation of the project on reconstruction.

Public hearings on the working project "Reconstruction of the road "Beineu - Aktau",719-802 km (Zhetybay-Aktau) were conducted. Adjustment in part of the construction of the mobile asphalt and concrete plants».

Signed a contract with IE Takisheva ДЖ/усл/3 dated 20.05. 2015 for pumping and removal of fecal waste.

The contract with LLP "Akat Munay" for the development of the Zhetybay camp working project is concluded. Currently, working project is being agreed in state bodies of Manghystau region.

To reduce the impact on the environment by the Contractor performed the following events:

- control over compliance with production schedules of production;

- excluded the work of equipment in forced mode;

- It supervises the work control and measuring equipment and control systems of technological devices;

- when changing the technological regime, leading to an increase in emissions of pollutants into the atmosphere operation of the plant is terminated.
- capturing dust in the exhaust from the drying apparatus and the mixing unit of the air-gas mixture in the baghouse
- use of collected dust by applying its by elevator to a "hot" tank.

Contractor employees are informed of the need to comply with the following requirements

1. when working with asphalt:

- Avoid any contact of asphalt with water and dust,
- not to shed asphalt and solvents on the ground, ditches or ponds. Promptly remove and dispose of spills,
- not to burn the waste with hot asphalt,
- use protective equipment when performing manual work with asphalt,
- not to work with asphalt in winter, rainy or stormy weather,
- trucks, dump trucks must be equipped with canopy.

2. when working with concrete:

- Avoid any of the concrete work during the windy, cold or hot weather,
- implement measures for dust suppression,
- fresh concrete surface cover with film to prevent moisture loss
- use protective equipment when working with additives.

2.12 Social media and public relations

During the reporting period, complaints and suggestions from interested parties have not been received.

When conducting inspections on the road section in the reporting month attention was drawn to the following requirements:

- Ensuring optimal operation of vehicles and road construction machinery
- implementation of the regular road dedusting
- to ensure the safety of residents of settlements the installation traffic signs regulating the speed and direction of vehicles in the areas of works.
- the visual-information boards, which specifies the name of the organization, leading the work, the location of the office and contact numbers.

2.13 Natural, historical and agriculture monuments

Natural and architectural monuments have been not found. However, employees of contractors and subcontractors are informed that if the performance of work to be found on any findings should be reported to the Regional Department of Cultural Heritage and the construction work must stop until until a relevant conclusion. To move environmental graves / memorial signs in memory of those killed in car accidents is necessary to obtain permission from the local executive bodies.

3. . The results of environmental monitoring at the reconstruction of the section "Shetpe-Aktau"(632-802 km) of road " Aktau-Beineu " for the first half of 2015

Based on contract to render services specialists of environment laboratory of "Aktobe plant of chromium compounds" JSC in the first half of 2015 conducted laboratory analyzes in the reconstruction of the section "Shetpe-Aktau" (632-802) km of the road "Aktau-Beineu". Further studies were carried out on a monthly basis. 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 to a large extent 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 conducted in accordance with the normative acts.

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

Organization and carrying out air monitoring

1. GOST 17.2.3.01-86 "The Nature Conservancy. Atmosphere. Rules of air quality of human settlements".
2. Guidelines for the Control of atmospheric pollution. RD 52.04.186-89, Moscow, 1991.
3. Health regulations "Sanitary-epidemiological requirements to air quality in urban and rural areas, soils and their safety content areas of urban and rural settlements, the conditions of work with sources of

physical factors affecting human," approved by the Decree of the Government of the Republic of Kazakhstan dated 25 January 2012 № 168.

Organization and carrying out monitoring of surface waters.

The selection of surface samples was conducted in the period of meltwater, in June sampling was not made, due to the fact that the Aschyagar river bed went dry.

The objects of environmental research and analysis are:

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

The list of parameters monitored in environmental monitoring

№ п/п	Name of the controlled parameter
Chemical analysis of air	
1	Inorganic dust
2	Carbon monoxide
3	Nitrogen dioxide
4	Sulfur dioxide
Chemical analysis of soil	
1	pH
2	Zinc
3	Petroleum products
4	Cadmium
5	Plumbum
Measurement of noise, vibration	
1	Noise
2	Vibration
Chemical analysis of water surface	
1	dry residue
2	nitrates
3	sulphates
4	chlorides
5	Petroleum products
6	iron

Information about the methods used to monitor the environment

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."

Sampling and analysis of the laboratory of Environmental Protection of "AZHS" JSC has accreditation certificate № KZ.I.05.0916 on 15.09.2010 valid until 15.09.2015.

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 sampling points are determined by the Customer.

Field work 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.

3. 2. General information about environment.

According to the program of environmental monitoring at the reconstruction of reconstruction of the section "Shetpe-Aktau" (632-802) km of the road "Aktau-Beineu" and a written application from the Customer defined in terms of sampling and measurement locations, which were held in the first half of of 2015.

Sampling locations in the first half of 2015

Sampling locations	Points numbers	Determined parameters	Monthly measurements periodicity
1	2	3	4
Chemical analysis of air			
Along the road: 645,654,664,674,684,694,704,714,724,734,744,754,764,774,784 km	15	inorganic dust, carbon monoxide, nitrogen dioxide, sulfur dioxide	1 sample
On a border of Zhetybay village	2		1 sample
Shetpe camp (657 km), Zhetybay (730 km)	8		1 sample
Sanctuary border 739 km,771 km	2		1 sample
Chemical analysis of soil			
Along the road: 645,654,664,674,684,694,704,714,724,734,744,754,764,774,784 km	15	pH, oil, cadmium, lead, zinc	1 sample
On a border of Zhetybay village	2		1 sample
Shetpe camp (657 km), Zhetybay (730 km)	8		1 sample
Sanctuary border 739 km,771 km	2		1 sample
Measurement of noise, vibration			
On a border of Shetpe village (km636,645), Zhetybay village (km 707,713)	4	Noise, vibration	1 sample
Shetpe camp (657 km), Zhetybay (730 km)	8		1 sample
Sanctuary border 739 km,771 km	2		1 sample
Chemical analysis of surface water			
Bridge Asyagar river	1	dry residue, nitrates, sulfates, chlorides, petroleum, iron	1 sample

3.3. Information about laboratory

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

Information about the laboratory are given in the table below:

№ п/п	Name of the accredited testing laboratory	Number and duration of test laboratory accreditation certificate	Field testing laboratory accreditation
1	2	3	4
1	Laboratory Environment "Aktobe plant of chromium compounds" JSC	Accreditation certificate № KZ.I.05.0916 dd 15.09.2010 valid until 15.09.2015	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. Surface water: dry residue, nitrates, sulfates, chlorides, petroleum, iron

3.4 Environment monitoring results

Air quality monitoring

In March 2015, conducted baseline measurements of samples of air and soil (Minutes № 3 dd March 13, 2015). Sampling and analysis of the laboratory of environmental protection "Aktobe plant of chromium compounds" JSC (accreditation № KZ.I.05.0916 dd September 15, 2010). Measurement results in the first half of 2015 are shown below in tabular form.

The results of measurements of the concentration of pollutants substances in the air in the first half of 2015

Characteristics of sampling points		The concentration of harmful substances, mg/m ³			
description	Sampling date	Dust	Oxide carbon	Nitrogen dioxide	Sulfur dioxide
		Maximum concentration limits			
		0,5	5	0,2	-
AK-8 (645 km)	04-05.03.2015	0,31	1,97	0	0
	21-22.04.2015	0,28	1,94	0	0
	25-26.05.2015	0,28	1,94	0	0
	18-19.06.2015	0,4	2,82	0	0,0057
	<i>Среднее за I полугодие</i>	0,32	2,23	0	0,0019

AK-9 (654 km)	04-05.03.2015	0,26	1,8	0	0
	21-22.04.2015	0,31	1,77	0	0
	25-26.05.2015	0,26	1,84	0	0
	18-19.06.2015	0,45	2,11	0	0
	<i>Average for the 1st half</i>	0,34	1,91	0	0
AK-10 (657 km, Shetpe camp)	04-05.03.2015	0,24	1,62	0	0,0011
	21-22.04.2015	0,27	1,84	0	0,0054
	25-26.05.2015	0,23	1,78	0	0,00063
	18-19.06.2015	0,38	0,98	0	0,0011
	<i>Average for the 1st half</i>	0,29	1,53	0	0,00238
AK-11 (657 km, Shetpe camp)	04-05.03.2015	0,29	1,78	0	0,00044
	21-22.04.2015	0,33	1,36	0	0,00036
	25-26.05.2015	0,3	1,81	0	0,00047
	18-19.06.2015	0,41	1,36	0	0,00022
	<i>Average for the 1st half</i>	0,35	1,51	0	0,00035
AK-12 (657 km, Shetpe camp)	04-05.03.2015	0,25	1,98	0	0,00028
	21-22.04.2015	0,27	2,17	0	0,00042
	25-26.05.2015	0,24	2,06	0	0,00038
	18-19.06.2015	0,23	1,52	0	0,0082
	<i>Average for the 1st half</i>	0,25	1,92	0	0,003
AK-13 (657 km, Shetpe camp)	04-05.03.2015	0,27	1,58	0	0
	21-22.04.2015	0,23	1,77	0	0
	25-26.05.2015	0,28	1,64	0	0
	18-19.06.2015	0,27	1,85	0	0
	<i>Average for the 1st half</i>	0,26	1,75	0	0
AK-14 (664 km)	04-05.03.2015	0,24	2,13	0	0,00025
	21-22.04.2015	0,34	2,04	0	0,00033
	25-26.05.2015	0,29	2,21	0	0,00029
	18-19.06.2015	0,39	1,98	0	0,00013
	<i>Average for the 1st half</i>	0,34	2,08	0	0,00025
AK-15 (674 km)	04-05.03.2015	0,26	2,3	0	0,00058
	21-22.04.2015	0,27	2,23	0	0,00051
	25-26.05.2015	0,3	2,38	0	0,00063
	18-19.06.2015	0,41	1,94	0	0,00073
	<i>Average for the 1st half</i>	0,33	2,18	0	0,00062
AK-16 (684 km)	04-05.03.2015	0,29	2,22	0	0,00023
	21-22.04.2015	0,31	2,47	0	0,00017
	25-26.05.2015	0,28	2,38	0	0,00026
	18-19.06.2015	0,43	2,52	0	0,0003
	<i>Average for the 1st half</i>	0,34	2,46	0	0,00024
AK-17 (694 km)	04-05.03.2015	0,33	2	0	0,00034
	21-22.04.2015	0,3	2,36	0	0,00041
	25-26.05.2015	0,32	2,25	0	0,00038
	18-19.06.2015	0,4	2,9	0	0,00038
	<i>Average for the 1st half</i>	0,34	2,50	0	0,00039
AK-18 (704 km)	04-05.03.2015	0,24	1,94	0	0
	21-22.04.2015	0,27	1,68	0	0,00068
	25-26.05.2015	0,23	1,97	0	0,00078
	18-19.06.2015	0,31	4,26	0	0

	<i>Average for the 1st half</i>	0,27	2,64	0	0,00049
AK-19 (707 km, entrance to Zhetybay village)	04-05.03.2015	0,27	2,2	0	0,00084
	21-22.04.2015	0,36	2,13	0	0,00081
	25-26.05.2015	0,28	2,27	0	0,00087
	18-19.06.2015	0,37	4,32	0	0,00028
	<i>Average for the 1st half</i>	0,34	2,91	0	0,00065
AK-20 (713 km, entrance to Zhetybay village)	04-05.03.2015	0,25	2,34	0	0,00042
	21-22.04.2015	0,28	2,23	0	0,00055
	25-26.05.2015	0,27	2,39	0	0,00049
	18-19.06.2015	0,4	4,93	0	0,00022
	<i>Average for the 1st half</i>	0,32	3,18	0	0,00042
AK-21 (714 km)	04-05.03.2015	0,28	2,43	0	0,00038
	21-22.04.2015	0,32	2,51	0	0,00035
	25-26.05.2015	0,3	2,48	0	0,00041
	18-19.06.2015	0,43	2,32	0	0
	<i>Average for the 1st half</i>	0,35	2,44	0	0,00025
AK-22 (724 km)	04-05.03.2015	0,31	2,4	0	0,00071
	21-22.04.2015	0,35	2,66	0	0,00069
	25-26.05.2015	0,3	2,54	0	0,00076
	18-19.06.2015	0,39	2,97	0	0,00019
	<i>Average for the 1st half</i>	0,35	2,72	0	0,00055
AK-23 (730 km, Zhetybay camp)	04-05.03.2015	0,26	2,47	0	0,00028
	21-22.04.2015	0,36	2,32	0	0,00033
	25-26.05.2015	0,31	2,54	0	0,0003
	18-19.06.2015	0,33	2,47	0	0,0023
	<i>Average for the 1st half</i>	0,33	2,44	0	0,00098
AK-24 (730 km, Zhetybay camp)	04-05.03.2015	0,3	2,42	0	0,00038
	21-22.04.2015	0,24	2,09	0	0,00049
	25-26.05.2015	0,29	2,51	0	0,00043
	18-19.06.2015	0,27	1,71	0	0,0051
	<i>Average for the 1st half</i>	0,27	2,10	0	0,00201
AK-25 (730 km, Zhetybay camp)	04-05.03.2015	0,27	2,72	0	0
	21-22.04.2015	0,3	2,37	0	0
	25-26.05.2015	0,26	2,81	0	0
	18-19.06.2015	0,28	1,92	0	0,0026
	<i>Average for the 1st half</i>	0,28	2,37	0	0,00087
AK-26 (730 km, Zhetybay camp)	04-05.03.2015	0,31	2,52	0	0,00042
	21-22.04.2015	0,28	2,66	0	0,00042
	25-26.05.2015	0,25	2,59	0	0,00051
	18-19.06.2015	0,23	1,87	0	0,0057
	<i>Average for the 1st half</i>	0,25	2,37	0	0,00221
AK-27 (734 km)	04-05.03.2015	0,34	2,43	0	0,00031
	21-22.04.2015	0,31	2,38	0	0,00037
	25-26.05.2015	0,33	2,46	0	0,00034
	18-19.06.2015	0,42	2,84	0	0,00024
	<i>Average for the 1st half</i>	0,35	2,56	0	0,00032
AK-28 (739 km, sanctuary border)	04-05.03.2015	0,25	2,33	0	0,00057
	21-22.04.2015	0,3	2,51	0	0,00051
	25-26.05.2015	0,23	2,48	0	0,00063

	18-19.06.2015	0,31	2,1	0	0
	<i>Average for the 1st half</i>	0,28	2,36	0	0,00038
AK-29 (744 km)	04-05.03.2015	0,26	2,15	0,000007	0,00038
	21-22.04.2015	0,26	1,97	0,000009	0,00052
	25-26.05.2015	0,28	2,22	0,000006	0,00047
	18-19.06.2015	0,39	1,57	0	0
	<i>Average for the 1st half</i>	0,31	1,92	0,000005	0,00033
AK-30 (754 km)	04-05.03.2015	0,29	2,85	0,000042	0,00012
	21-22.04.2015	0,28	2,81	0,000054	0,00037
	25-26.05.2015	0,27	2,93	0,000047	0,00044
	18-19.06.2015	0,43	1,96	0	0
	<i>Average for the 1st half</i>	0,33	2,57	0,000034	0,00027
AK-31 (764 km)	04-05.03.2015	0,25	2,37	0	0,00012
	21-22.04.2015	0,34	2,13	0	0,00021
	25-26.05.2015	0,29	2,54	0	0,00018
	18-19.06.2015	0,4	1,34	0	0,00012
	<i>Average for the 1st half</i>	0,34	2,00	0	0,00017
AK-32 (771 km, sanctuary border)	04-05.03.2015	0,33	2,51	0,000049	0,00064
	21-22.04.2015	0,33	2,78	0,000037	0,00055
	25-26.05.2015	0,3	2,66	0,000044	0,00068
	18-19.06.2015	0,36	2,09	0	0,00042
	<i>Average for the 1st half</i>	0,33	2,51	0,000027	0,00055
AK-33 (774 km)	04-05.03.2015	0,25	2,3	0	0,00037
	21-22.04.2015	0,3	2,17	0	0
	25-26.05.2015	0,27	2,37	0	0,00041
	18-19.06.2015	0,42	2,37	0	0,00047
	<i>Average for the 1st half</i>	0,33	2,30	0	0,00029
AK-34 (784 km)	04-05.03.2015	0,25	2,5	0	0,00054
	21-22.04.2015	0,29	2,82	0	0,00062
	25-26.05.2015	0,31	2,68	0	0,00059
	18-19.06.2015	0,37	1,88	0	0,00013
	<i>Average for the 1st half</i>	0,32	2,46	0	0,00045

Soil quality monitoring.

In March 2015, conducted baseline measurements of soil samples (Minutes № 4 dd 03.13.2015). Sampling and analysis of the laboratory of environmental protection "Aktobe plant of chromium compounds" JSC (accreditation № KZ.I.05.0916 dd September 15, 2010).

Results of analyzes of soil in the first half of 2015

Characteristics of sampling points		The concentration of harmful substances				
description	Sampling date	pH	Petroleum products, mg/g	Cadmium, mg/kg	Plumbum, mg/kg	Zinc, mg/kg
		Maximum concentration limits				
		-	-	-	32	-
AK-8 (645 km)	04-05.03.2015	8,9	0,005	0,1	8,66	17,48
	21-22.04.2015	8,8	0,003	0,14	9,23	14,89

	25-26.05.2015	8,7	0,004	0,11	9,09	16,81
	18-19.06.2015	8,4	0,008	0,09	6,98	16,88
	<i>Average for the 1st half</i>	8,63	0,005	0,11	8,43	16,19
AK-9 (654 km)	04-05.03.2015	8,2	0,005	0,12	9,24	18,01
	21-22.04.2015	8,4	0,004	0,17	9,8	16,31
	25-26.05.2015	8,4	0,003	0,15	7,56	17,01
	18-19.06.2015	8,4	0,003	0,18	7,87	20,33
	<i>Average for the 1st half</i>	8,40	0,003	0,17	8,41	17,88
AK-10 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,006	0,31	9,47	19,3
	21-22.04.2015	8,1	0,008	0,34	8,57	18,9
	25-26.05.2015	8,2	0,008	0,29	9	18,56
	18-19.06.2015	8	0,009	0,18	7,26	21,02
	<i>Average for the 1st half</i>	8,10	0,008	0,27	8,28	19,49
AK-11 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,009	0,18	7,49	16,72
	21-22.04.2015	8,2	0,004	0,12	8,19	18,91
	25-26.05.2015	8,1	0,006	0,15	7,97	15,2
	18-19.06.2015	8,6	0,008	0,21	10,64	19,47
	<i>Average for the 1st half</i>	8,30	0,006	0,16	8,93	17,86
AK-12 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,007	0,16	8,11	15,01
	21-22.04.2015	8,2	0,008	0,21	8,05	12,77
	25-26.05.2015	8,1	0,007	0,23	9,01	13,55
	18-19.06.2015	8,4	0,012	0,19	6,97	18,39
	<i>Average for the 1st half</i>	8,23	0,009	0,21	8,01	14,90
AK-13 (657 km, Shetpe camp)	04-05.03.2015	8,2	0,006	0,2	7,09	19,82
	21-22.04.2015	8,4	0,005	0,31	8	17,92
	25-26.05.2015	8,4	0,005	0,22	6,14	16,66
	18-19.06.2015	8	0,009	0,15	7,63	20,75
	<i>Average for the 1st half</i>	8,27	0,006	0,23	7,26	18,44
AK-14 (664 km)	04-05.03.2015	8,1	0,049	0,24	12,98	17
	21-22.04.2015	8,1	0,041	0,29	13,11	18,07
	25-26.05.2015	8,2	0,035	0,18	12,01	16,89
	18-19.06.2015	8,4	0,014	0,22	11,26	20,35
	<i>Average for the 1st half</i>	8,23	0,030	0,23	12,13	18,44
AK-15 (674 km)	04-05.03.2015	8,2	0,052	0,13	7,79	16,67
	21-22.04.2015	8,4	0,048	0,093	7,12	15,11
	25-26.05.2015	8,3	0,045	0,1	8,05	16,99
	18-19.06.2015	8,6	0,038	0,054	9,08	19,16
	<i>Average for the 1st half</i>	8,43	0,044	0,08	8,08	17,09
AK-16 (684 km)	04-05.03.2015	8,2	0,017	0,3	9,24	12,66
	21-22.04.2015	8,1	0,011	0,41	9,02	13,01
	25-26.05.2015	8,2	0,012	0,26	10,04	11,6
	18-19.06.2015	8,5	0,012	0,073	7,98	20,72

	<i>Average for the 1st half</i>	8,27	0,012	0,25	9,01	15,11
AK-17 (694 km)	04-05.03.2015	8,7	0,006	0,12	9,62	18,66
	21-22.04.2015	8,6	0,004	0,18	10,22	19,07
	25-26.05.2015	8,6	0,005	0,14	8,45	17,02
	18-19.06.2015	8,2	0,015	0,15	12,17	16,5
	<i>Average for the 1st half</i>	8,47	0,008	0,16	10,28	17,53
AK-18 (704 km)	04-05.03.2015	8,9	0,003	0,18	7,54	19,4
	21-22.04.2015	8,8	0,005	0,23	6,87	20,11
	25-26.05.2015	8,9	0,003	0,21	7,55	19,78
	18-19.06.2015	8,7	0,008	0,16	10,02	20,3
	<i>Average for the 1st half</i>	8,80	0,005	0,20	8,15	20,06
AK-19 (707 km, entrance to Zhetybay village)	04-05.03.2015	8,1	0,032	0,21	11,55	19,42
	21-22.04.2015	8,1	0,03	0,17	10,08	17,87
	25-26.05.2015	8,2	0,024	0,19	10,96	18,03
	18-19.06.2015	8,5	0,014	0,095	8,14	20,44
	<i>Average for the 1st half</i>	8,27	0,023	0,15	9,73	18,78
AK-20 (713 km, entrance to Zhetybay village)	04-05.03.2015	8,2	0,012	0,19	9,89	14,63
	21-22.04.2015	8,3	0,013	0,22	9,92	16,03
	25-26.05.2015	8,3	0,01	0,17	8,88	15,13
	18-19.06.2015	8,5	0,008	0,18	6,19	18,53
	<i>Average for the 1st half</i>	8,37	0,010	0,19	8,33	16,56
AK-21 (714 km)	04-05.03.2015	8,3	0,048	0,52	28,97	16,97
	21-22.04.2015	8,4	0,032	0,5	26,11	16
	25-26.05.2015	8,3	0,038	0,62	29,05	17,42
	18-19.06.2015	8,4	0,012	0,35	16,89	18,17
	<i>Average for the 1st half</i>	8,37	0,027	0,49	24,02	17,20
AK-22 (724 km)	04-05.03.2015	7,9	0,006	0,2	10,23	11,54
	21-22.04.2015	8	0,004	0,018	10,3	12,02
	25-26.05.2015	8	0,004	0,15	8,57	9,99
	18-19.06.2015	7,9	0,008	0,13	7,81	14,08
	<i>Average for the 1st half</i>	7,97	0,005	0,10	8,89	12,03
AK-23 (730 km, Zhetybay camp)	04-05.03.2015	8,2	0,011	0,08	21,45	13,7
	21-22.04.2015	8,2	0,009	0,07	20,59	10,21
	25-26.05.2015	8,2	0,01	0,06	22,01	14,16
	18-19.06.2015	8,3	0,008	0,13	16,64	19,49
	<i>Average for the 1st half</i>	8,23	0,009	0,09	19,75	14,62
AK-24 (730 km, Zhetybay camp)	04-05.03.2015	8,1	0,006	0,25	7,13	15,42
	21-22.04.2015	8	0,009	0,31	8,2	16,02
	25-26.05.2015	8	0,007	0,29	8,03	13,11
	18-19.06.2015	8,3	0,002	0,16	7,39	19,61
	<i>Average for the 1st half</i>	8,10	0,006	0,25	7,87	16,25

AK-25 (730 km, Zhetybay camp)	04-05.03.2015	8,4	0,004	0,22	8,4	17,82
	21-22.04.2015	8,5	0,002	0,14	6,42	16,52
	25-26.05.2015	8,4	0,003	0,11	6,01	17,01
	18-19.06.2015	8,6	0,004	0,16	6,31	19,6
	<i>Average for the 1st half</i>	8,50	0,003	0,14	6,25	17,71
AK-26 (730 km, Zhetybay camp)	04-05.03.2015	8,2	0,005	0,19	7,85	19,61
	21-22.04.2015	8,2	0,005	0,28	8,11	17,38
	25-26.05.2015	8,3	0,004	0,2	7,58	19,17
	18-19.06.2015	8,1	0,008	0,14	5,71	19,94
	<i>Average for the 1st half</i>	8,20	0,006	0,21	7,13	18,83
AK-27 (734 km)	04-05.03.2015	8,1	0,015	0,28	12,77	17,31
	21-22.04.2015	8,2	0,01	0,31	10,91	15,45
	25-26.05.2015	8	0,012	0,26	11,22	14,98
	18-19.06.2015	8,4	0,023	0,15	8,94	18,19
	<i>Average for the 1st half</i>	8,20	0,015	0,24	10,36	16,21
AK-28 (739 km, sanctuary border)	04-05.03.2015	8,1	0,013	0,49	29,03	18,06
	21-22.04.2015	8,1	0,01	0,5	28,3	19,26
	25-26.05.2015	8	0,014	0,34	25,51	18
	18-19.06.2015	7,9	0,021	0,25	18,98	17,87
	<i>Average for the 1st half</i>	8,00	0,015	0,36	24,26	18,38
AK-29 (744 km)	04-05.03.2015	8,3	0,029	0,12	10,49	15
	21-22.04.2015	8,2	0,02	0,14	8,93	16,11
	25-26.05.2015	8,3	0,019	0,09	9,06	15,97
	18-19.06.2015	8	0,04	0,12	8,47	18,15
	<i>Average for the 1st half</i>	8,17	0,026	0,12	8,82	16,74
AK-30 (754 km)	04-05.03.2015	8	0,008	0,11	14,61	19,48
	21-22.04.2015	8,1	0,006	0,09	12,04	16,02
	25-26.05.2015	8,2	0,004	0,07	12,51	17,12
	18-19.06.2015	8	0,009	0,15	10,94	20,82
	<i>Average for the 1st half</i>	8,10	0,006	0,10	11,83	17,99
AK-31 (764 km)	04-05.03.2015	8,1	0,004	0,3	20,53	18,51
	21-22.04.2015	8,2	0,003	0,27	19,37	19
	25-26.05.2015	8,2	0,005	0,31	18,01	18,12
	18-19.06.2015	8,1	0,011	0,19	14,22	17,48
	<i>Average for the 1st half</i>	8,17	0,006	0,26	17,20	18,20
AK-32 (771 km, sanctuary border)	04-05.03.2015	7,9	0,011	0,32	9,96	20
	21-22.04.2015	7,8	0,009	0,25	7,26	18,77
	25-26.05.2015	7,9	0,01	0,3	7,33	17,84
	18-19.06.2015	8,1	0,005	0,19	7,37	19,56
	<i>Average for the 1st half</i>	7,93	0,008	0,25	7,32	18,72
AK-33 (774 km)	04-05.03.2015	8,1	0,006	0,3	7,89	17,97
	21-22.04.2015	8	0,005	0,38	8,09	16,01

AK-34 (784 km)	25-26.05.2015	8,1	0,01	0,27	7,32	15,66
	18-19.06.2015	8,3	0,017	0,2	9,66	19,93
	<i>Average for the 1st half</i>	8,13	0,011	0,28	8,36	17,20
	04-05.03.2015	8,4	0,005	0,19	7,75	16,91
	21-22.04.2015	8,4	0,006	0,29	8,05	14,01
	25-26.05.2015	8,3	0,006	0,26	7,84	17,15
	18-19.06.2015	8,6	0,009	0,18	6,71	18,02
	<i>Average for the 1st half</i>	8,43	0,007	0,24	7,53	16,39

Noise and vibration

To control the levels of impact are carried out control measurements of noise and vibration (protocol № 44 dd 22.06.2015) at the entrance and exit in the Shetpe and Zhetybay village in camps Shetpe (657 km) and Zhetybay (707 km), on the borders of the sanctuary.

The results of measurements of noise and vibration in the 1st half

Characteristics of sampling points		Actual	
description	Sampling date	Noise, dBA	Vibration, dB
		Maximum concentration limits	
		80	100
AK-2 (636 km, entrance to Shetpe village)	21-22.04.2015	68	60
	25-26.05.2015	64	58
	18-19.06.2015	70	82
AK-8 (645 km, exit from Shetpe village)	21-22.04.2015	54	58
	25-26.05.2015	58	58
	18-19.06.2015	74	85
AK-10 (657 km, Shetpe camp)	21-22.04.2015	63	65
	25-26.05.2015	60	62
	18-19.06.2015	70	72
AK-11 (657 km, Shetpe camp)	21-22.04.2015	68	62
	25-26.05.2015	63	60
	18-19.06.2015	68	70
AK-12 (657 km, Shetpe camp)	21-22.04.2015	70	64
	25-26.05.2015	64	60
	18-19.06.2015	72	68
AK-13 (657 km, Shetpe camp)	21-22.04.2015	62	60
	25-26.05.2015	60	58
	18-19.06.2015	74	76
AK-19 (707 km, entrance to Zhetybay village)	21-22.04.2015	70	68
	25-26.05.2015	66	65

	18-19.06.2015	68	78
AK-20 (713 km, exit from Zhetybay village)	21-22.04.2015	68	66
	25-26.05.2015	65	68
	18-19.06.2015	70	80
AK-23 (730 km, Zhetybay camp)	21-22.04.2015	58	60
	25-26.05.2015	61	62
	18-19.06.2015	70	70
AK-24 (730 km, Zhetybay camp)	21-22.04.2015	64	68
	25-26.05.2015	60	62
	18-19.06.2015	64	68
AK-25 (730 km, Zhetybay camp)	21-22.04.2015	72	70
	25-26.05.2015	68	64
	18-19.06.2015	68	66
AK-26 (730 km, Zhetybay camp)	21-22.04.2015	68	64
	25-26.05.2015	65	67
	18-19.06.2015	66	68
AK-28 (739 km, sanctuary border)	21-22.04.2015	60	54
	25-26.05.2015	62	58
	18-19.06.2015	74	80
AK-32 (771 km, sanctuary border)	21-22.04.2015	58	52
	25-26.05.2015	64	55
	18-19.06.2015	70	76

Water quality monitoring.

In the area of work, there is one body of water, the river Aschyagar to 755 km. Water sample was taken in April. Accredited laboratory analyzed samples from the definition: a dry residue, nitrates, sulfates, chlorides, oil products, iron.

Name of indicator, measurement unit	Norm	Actual value	
		22.04.2015	26.05.2015
Dry residue, mg/dm ³	-	700	674
Nitrates, mg/dm ³	40	3,68	3,20
Sulfates, mg/dm ³	100	87,24	84,77
Chloride, mg/dm ³	300	184,76	167,3
Petroleum products, mg/dm ³	0,05	0,038	0,03
Total iron, mg/dm ³	1	0,069	0,055

In accordance with the environmental management plan, the Contractor carried out monitoring of the environment in the frequency of the air, soil, surface water, noise and vibration measurements. As stipulated by the contract prior to the start of work 04 and March 5, 2015 samples were taken, which are basic. Then, on a monthly basis, on the specified points in every 10 km, entering and leaving the settlements and sanctuaries, as well as around construction sites samples were taken. As a result of comparing the average values of the impact on the environment of the Contractor for the 1st half of 2015 it is admissible. Obtained values do not exceed health standards set by the regulatory requirements of the Republic of Kazakhstan.

As a result of report submitted and monitoring of the environment, we can conclude that the ongoing environmental measures aimed at reducing the impact on the environment during the section reconstruction of 632-802 km "Shetpe-Aktau" of road "Beineu-Aktau" are effective, the activities of the Contractor has a permissible impact on the environment.