

# Environmental Monitoring Report

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Project Number: 48424-002  
September 2018

## KAZ: CAREC Corridors 1 and 6 Connector Road (Aktobe–Makat) Improvement Road

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

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**Loan No.: 3416 - KAZ**  
**Report period: October 2017 – June 2018**

Kazakhstan: CAREC Corridors 1 and 6 Connector road  
(Aktobe-Makat) Reconstruction Project  
(Road section km 330-504)

**Prepared by:** Construction Supervision Consultant Dongsung Engineering Co., LTD / LLP  
“Zhol-Sapa”

**For:** Committee for Roads, Ministry of Investments and Development, Republic of  
Kazakhstan

**Approved by:** Project Management Consultant “NC “KazAutoZhol” JSC

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### **Abbreviations**

RK	Republic of Kazakhstan
MID	Ministry of Investments and Development
CfR	Committee for Roads
KAZh	“NC “KazAutoZhol” JSC
ADB	Asian Development Bank
CAREC	Central Asia Regional Economic Cooperation
PMC	Project Management Consultant
DED	Design and Estimate Documentation
CP	Crushing Plant
CMP	Concrete Mixing Plant
ACP	Asphalt Concrete Plant
CSC	Construction Supervision Consultant
NC JSC	National Company Joint-stock Company
RSE	Republic State Enterprise
EMP	Environmental Management Plan
EcMP / EPMP	Ecological Management Plan / Environmental Protection Management Plan
EMMP	Environmental Management and Monitoring Plan
MEIMP	Monitoring and Environmental Impact Mitigation Plan
MAC	Maximum Allowable Concentration
MPD	Maximum Permissible Discharge
SEE	State Environmental Expertise
SPZ	Sanitary Protection Zone
SHW	Solid Household Waste
LLP	Limited Liability Partnership
EMS	Environmental Management System
OJSC	Open Joint-stock Company
EP	Environmental Protection
HS	Health and Safety

RS	Road Safety
PHP	Public Health Protection
CM	Complaints mechanism
SPH MH RK	Social Protection of Health, Ministry of Health, Republic of Kazakhstan

## **Plan I - Introduction**

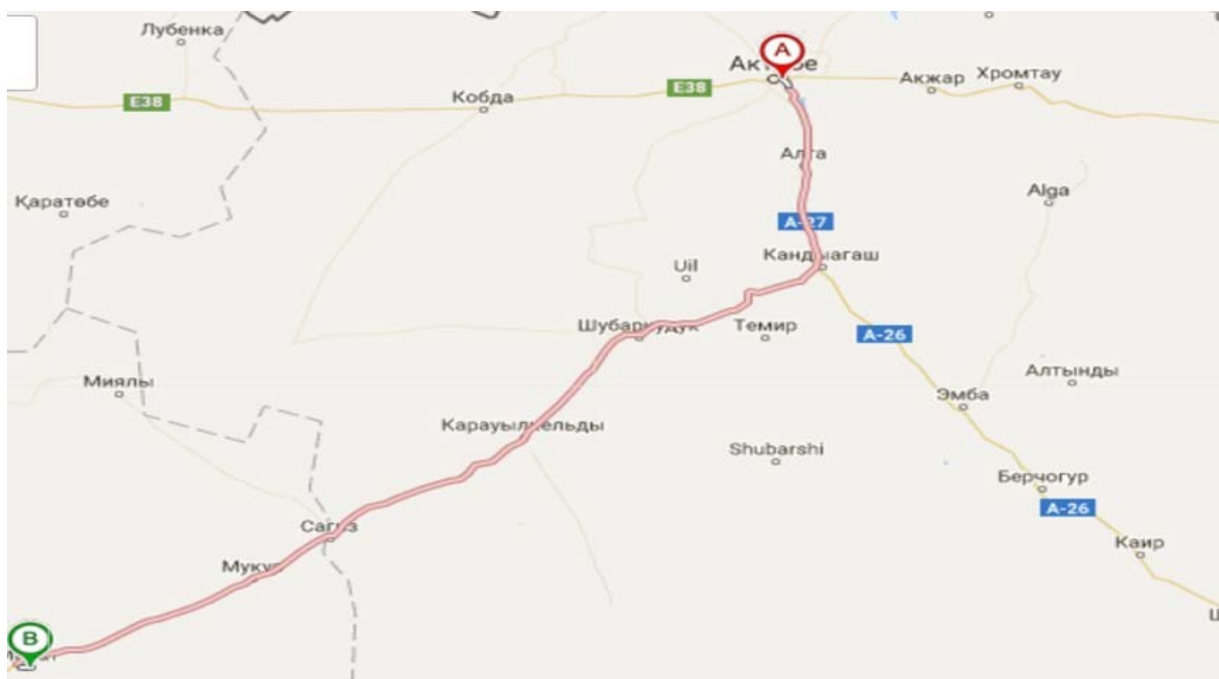
1. The Government of the Republic of Kazakhstan, with the participation of the Ministry of Investments and Development within the framework of the national action plan for the implementation of the President's message to Kazakhstan people, "Nur Zhol - the way to the future" executes an important program to develop and integrate the infrastructure of the transport system of the Republic of Kazakhstan until 2020. The Government of the Republic of Kazakhstan has decided to implement "Central-West" Corridor Reconstruction Project. "CAREC Corridors 1 and 6 Connector Road (Aktobe-Makat) Reconstruction Project" is part of this strategic direction that connects the center of Kazakhstan with its West with further access to Russia and Turkmenistan.
2. The Employer of this project is CfR MID RK, regional representatives are RSE "AktobeZholLaboratory" and RSE "AtyrauZholLaboratory".
3. The Government of the Republic of Kazakhstan has appealed to the Asian Development Bank (ADB) to finance reconstruction of Aktobe-Makat section of Aktobe-Atyrau-border of Russian Federation (to Astrakhan) road. The proposed Central Asia Regional Economic Cooperation (CAREC) Corridors 1 and 6 Connector Road (Aktobe-Makat) Reconstruction Project will expand regional cooperation and promote economic growth in Kazakhstan, and especially in Atyrau and Aktobe regions. The Project will (i) reconstruct about 300 km of the Aktobe-Makat road section and improve it to meet the standard category, and (ii) improve road safety and maintenance.
4. The project is funded by the Asian Development Bank (ADB) partly under Loan 3416. Particularly, ADB and the Government of the Republic of Kazakhstan are jointly funding this project in a ratio of 88% to 12%.

### **1.1. Construction works and project progress**

5. The project begins from Aktobe, administrative center of Aktobe region. The road follows from south-western route to the village Makat, which is located about 120 km north-west of Atyrau in Atyrau region. Aktobe-Makat Road is a two-lane road of republican importance and was built in 1970-1980. The length of the site is 457 km, mainly the road has category III / IV, and passes through the territory of Aktobe and Atyrau regions. The project as a whole aims to reconstruct 457 km of the section of the national road A-27 between Aktobe and Makat. The road will be reconstructed by the standards for category II in accordance with the national standard of the Republic of Kazakhstan.

**Table No.1. TECHNICAL CATEGORY**

No.	Technical Category	Length (km)	Region
1	II*	60	Aktobe Region
2	II*	39	Aktobe Region
3	II*	55	Aktobe Region
4	II*	40	Atyrau Region
5	II*	48	Atyrau Region
6	II*	40	Atyrau Region
7	II*	17	Atyrau Region



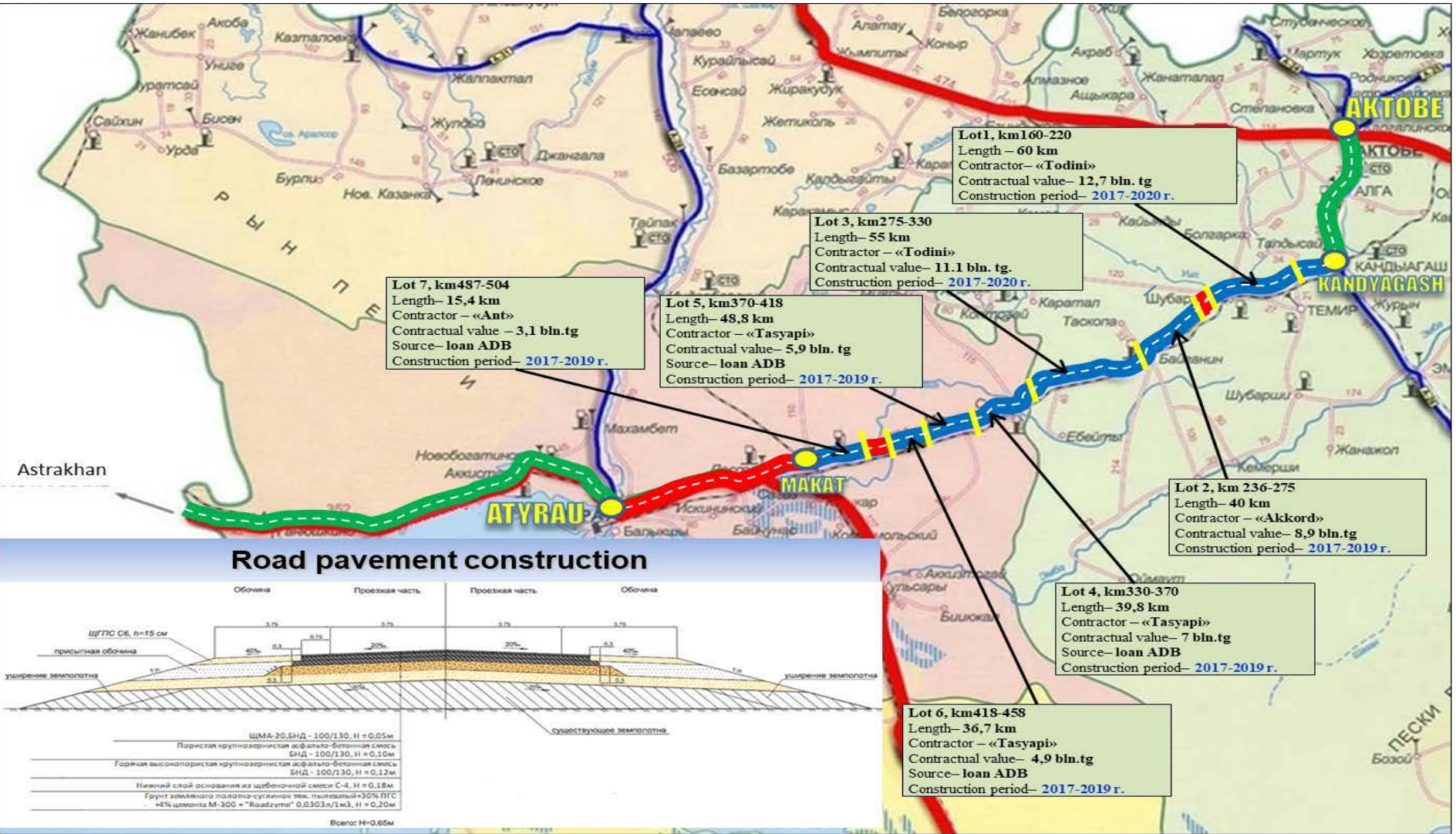
Picture 1. Project Road Location

6. During the reporting period, construction work progress and its impact to the environment will be submitted only for Lot 7. According to Lots 4, 5 and 6, information will not be provided in this report due to the Contract termination with the Contractor. Contracts 004-ADB / CW-2017, 005-ADB / CW-2017 and 006-ADB / CW-2017 with the Contractor of Lots 4, 5 and 6 were terminated by the Employer's letters dated February 21, 2018 respectively due to a significant mobilization delay and concern of the Employer about the Contract implementation as a whole.

The location of Aktobe-Makat road section is shown below in Picture 2.



# Reconstruction of Republican subordination road A27 “Aktobe-Atyrau-border of RF (to Astrakhan)”



Picture 2. Location of Project Road

7. Works on Lots 4, 5 and 6 stopped. Currently, tender for choosing new Contractors for these lots is in process. After concluding new contracts with the Contractors, environmental specialist will start monitoring the environmental impact on these sites. Therefore, this report provides breakdown for lots and brief information for each lot will be presented in the framework of this report in an informative type. After appointing new contractors to work on these sites, the information about environmental monitoring for these lots will be included in the environmental report by the growing information, i.e. by including them in subsequent environmental reports.

8. Section 4: km 330-km 370 (v. Sagiz): This site includes the reconstruction of the category III Road to category II with a total length of 40 km. Other parts of this section, the direction of the traffic flow are the same as the existing coverage with partial deviation from the embankment in areas of rectification and curvature designs. On this section the project provides construction of 2 bridges and 1 overpass. Overpass on km 336 + 900 is in length 42.2 meters. The bridge across the river Nogaity on km 302 + 900 is in length 66.15 meters. The bridge across the river Sagiz on km 160 + 500 is in length 105.3 meters. And in this area the construction of culverts in the number of 14 pcs of different diameters, 6 cattle crossings and 2 rest areas are provided.

9. Section 5: km 370-km 418 (v. Mukur - v. Zhanterek): This site includes the reconstruction of the category III Road to category II with a total length of 48,2 km. Other parts of this section, the direction of the traffic flow are the same as the existing coverage with partial deviation from the embankment in areas of rectification and curvature designs. On this section the project provides construction of 1 bridge. The bridge across the river Mukur on km 379+100 is in length 48.55 meters. And also in this area the construction of culverts is in the number of 12 of different diameters, 8 cattle crossings and 2 rest areas are provided.

10. Section 6: km 418-km 458 (v. Zhamansor): This site includes the reconstruction of the category III Road to category II with a total length of 36,73 km. Other parts of this section, the direction of the traffic flow are the same as the existing coverage with partial deviation from the embankment in areas of rectification and curvature designs. On this section the project provides construction of 1 bridge. The bridge across the river Sagiz on km 429 + 000 in length 84.25 meters. And also in this area the construction of culverts is in the number of 12 of different diameters, 1 cattle crossing and 2 rest areas are provided.

11. Section 7: km 487-km 504 (v. Dossor): length of 15,392 km, category II, 2 lanes. This site includes the reconstruction of the category III to II. Other parts of this section, the direction of

the traffic flow are the same as the existing coverage with partial deviation from the embankment in areas of rectification and curvature designs. And in this area the construction of culverts is in the number of 12 of different diameters and 2 cattle crossings are provided.

12. During the reporting period, the following types of work have been performed on Lot 7: road winter maintenance, surveying of temporary benchmarks, cross section of the roadbed, bypass road construction, dismantling obstructing structures: road pavement, culverts, road signs and fences. Earthworks have been carried out: cutting out the existing embankment and shoulders, development of excavation in the soil, suitable soil filling for embankment, structural excavation, embankment filling from soil quarries, surpluses disposal of suitable material. Culvert construction works on PK 15 + 68, PK 27 + 70 and on PK 31 + 77. Cattle pass construction work is in process on PK 34 + 56: base construction, base plate, wing wall and rear apron construction, waterproofing and backfilling. ACP building and units installation have been completed. Works for every month are shown below in table No.2.

**Table No.2: Construction works, performed during the reporting period  
(January - June 2018) Lot 7**

No.	Months	Construction activity
1	January	Mobilization
2	February	Mobilization and material stockpiling
3	March	Removal of artificial structures, bypass road construction, mobilization and base camp construction
4	April	Bypass road construction on the 3 stage with culvert construction. Clearing of all existing culverts, including the reinstatement of incoming and outgoing holes to ensure free flow of water. Excavation and loading on transport, all transportation, storage at laying area for permanent works or temporary storage, or on other approved places, including provision of storage areas, multiple delivery of excavation material, protection of Work from water impacts.
5	May	Bypass road construction on the 2 stage with culvert construction, carrying out of detailed road survey, including benchmark approval by the Engineer. Removal and recovery of existing road pavement. Base preparation for cattle pass on PK34+56.
6	June	Earthworks, bypass road, material stockpiling
Percent of work progress status as of June 30, 2018		28,8 %

13. Construction of base camp and mobilization works have been completed. Personnel mobilization compared to the planned data is within 90%. Comfortable containers have been delivered to base camp to accommodate the Contractor's personnel. There is given information about permit documents for the construction project in Attachment No.1 of this report.

14. The Engineer's office is provided in accordance with the Technical specification.

## **1.2. Changes in the project organization and environmental management team**

15. In the Project implementation regarding environmental part, monitoring works and environmental impact assessment, there are involved environmental specialists with different levels of authority and responsibilities. So in this project are involved: PMC, CSC, Contractors, Subcontractors, approved by CSC, organizations which perform outsourcing services for analysis and environmental monitoring, equipment and instrument.

16. According to the Contract No. 01-ADB / PMC-2017, the Project Management Consultant Team started their work on October 9 2017. The environmental part of PMC "NC KazAutoZhol" JSC organization is represented by social and environmental specialist Zeynullina Aliya Amantayevna. The environmental part of CSC was represented by environmental specialist Shedreev Yerzhan, who was mobilized in October 2017 and social safeguard specialist Imbarova Sara has been working also as environmental specialist from June 2018.

17. The team for environmental impact management, Environment, Health and Safety of the Contractors, local specialists (environmental, etc.) have been mobilized to the site after repeatedly written notices from CSC. Written notices have been sent from November 6, 2017 to November 27, 2017. From January 17, 2018 local environmental specialist Zhantokova Gulzhanat has been mobilized to Lot 7 on a regular basis.

## **1.3. Relations with the contractors, owner, creditor and etc.**

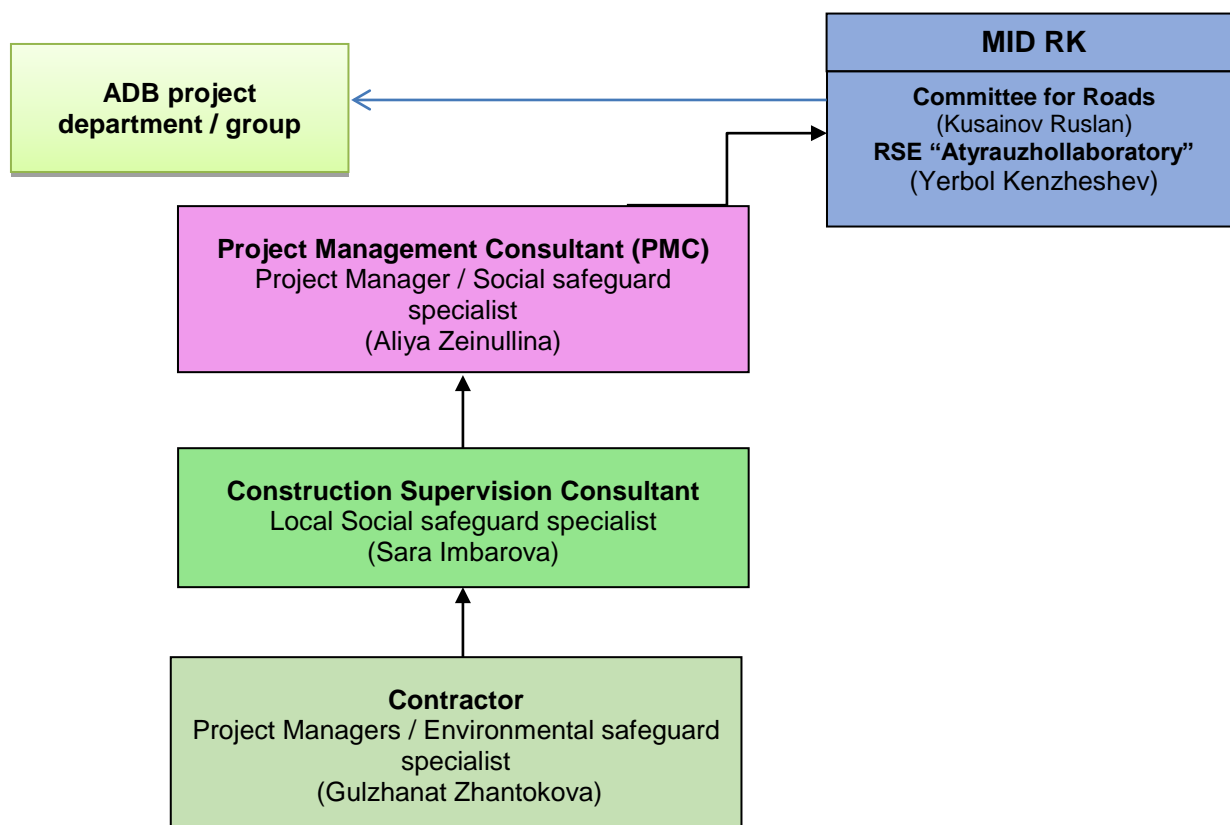
18. Loan contract No.3416-KAZ for CAREC Corridors 1 and 6 Connector Road (Aktobe - Makat) Reconstruction Project was signed between the Republic of Kazakhstan and Asian Development Bank on December 7, 2016 in Astana.

19. CfR MID RK signed the Contract with "NC KazAutoZhol" JSC (KAZh) for Project management consulting services in accordance with preliminary specifications acceptable for ADB and applicable within the framework of regulation of the Republic of Kazakhstan. KAZh is

fully staffed during the Project implementation. "NC KazAutoZhol" was created in accordance with the Government Resolution of the Republic of Kazakhstan dated February 1, 2013 No. 79, with amendment on August 21, 2013.

20. Regional Representative of the Employer is branch of RSE "AtyrauZholLaboratory".

21. Construction supervision works are being carried out by Construction Supervision Consultant under two Contracts i.e., CSC-1 and CSC-2 signed respectively. CSC-1 supervises section from 160 to 330 and CSC-2 from 330 to 504. The Contract was signed between the Employer and Construction Supervision Consultant (CSC-1) Dongsung Engineering Co., Ltd (Republic of Korea) jointly with the Sub-consultant LLP "Zhol-Sapa" (Kazakhstan) on September 6, 2017. Under the contract, CSC services consisted of consulting services for contract management and construction supervision. Detailed information is given in Attachment No.2 of this report.



**Picture 3. Organization chart of interaction upon the Project**

22. According to the Contracts No. 004-ADB/CW-2017, No. 005-ADB/CW-2017 and No. 006-ADB/CW-2017 dated August 16, 2017, "Tasyapi Insaat Taahhut Sanayi ve Ticaret A.S." was appointed as the Contractor of Lots 4, 5 and 6. Due to non-fulfillment of contractual obligations during the mobilization period, the Contracts with this contractors were stopped with subsequent termination. Contracts 004-ADB / CW-2017, 005-ADB / CW-2017 and 006-ADB /

CW-2017 with the Contractors of Lots 4, 5 and 6 were terminated by the Employer's letters dated February 21, 2018 due to a significant mobilization delay and concern of the Employer about the Contract implementation as a whole.

23. General Contractor of Lot 7 is "Ant Insaat Maden Sanayi A.S." (Turkey), in accordance with the Contract No. 007-ADB/CW-2017 dated August 16, 2017. According to the Contract, by November 17, 2017, the Contractor was mobilized on site on time and with declared quantities of equipment and personnel.

## **Part II - Environmental Monitoring**

### **2.1 Environmental monitoring of road section Lot 7**

24. The Contractor of Lot 7 JSC "Ant Insaat Maden Sanayi A. S." concluded an agreement with LLP "Environmental Analytical Laboratory" from March 28, 2018, having accreditation certificate No. KZ.I.66.0245 dated 6.11.2013 valid until 6.11.2018 for carrying out production monitoring including atmospheric air monitoring. For waste disposal and wastewater services, the Contractor concluded an agreement with LLP "West Dala" which has a state license for this type of activity No. 002329 dated 6.10.2008. Emissions for waste disposal have a deadline until end of 2018 completely. Also, an agreement was signed for noise and vibration measurement with Atyrau regional RSE "National Center of Expertise" of the Committee of SPH MH RK.

25. During the reporting period, construction works from December to February 2017 due to winter period was stopped. But, nevertheless, in order to implement effective monitoring, the Environmental Impact Assessment Report, together with the Environmental Control Plan, CSC environmental specialist conducted consultant works on preparation for all Contracts.

26. Uncovered bypass roads, access roads and the surface are periodically sprinkled with water by water truck. This procedure is carried out to control the excessive spread of dust, especially during the dry spring season. ACP on production base was built from "greenfield". There are a dust control system and additional filters in set of plant equipment. All construction work was carried out in such way as to reduce or even eliminate the spread of dust and other nuisance to road users and roadside population.

#### **2.1.1 Noise and vibration**

27. The Contractor used effective ways to reduce noise level from their construction work. Site monitoring and work observation showed that, the contractor reduced noise level by the proper use of machinery and equipment.

28. Not any opportunity to get acquaintance with the results of environmental report regarding environmental indicators monitoring, which was not submitted by local environmental specialist, CSC environmental specialist had the opportunity to familiarize with noise and vibration measurement protocols. The noise level was measured by Atyrau regional RSE "National Center of Expertise" of the Committee of SPH MH RK. According to the monitoring protocols, measurements were taken at the following sites: road construction site (beginning km 487, middle km 500 and end km 504), at the border of SPZ ACP km 510 (beginning, middle and end) and borrow pit (beginning, middle and end) Borrow pit No.1 km 487, borrow pit No.2 km 491 and borrow pit No.3 km 504. Laboratory data from test reports is given in Attachment No.3 of this report.

29. The results show that, with an allowable noise level of 80 DBA, data are fixed from 62 to 89 DBA. Excess of MAC is observed at the monitoring points of borrow pit. The greatest excess to 89 DBA is fixed at the point of the middle road to borrowpit.

30. The Contractors organized their work taking into account the location of the installation and the traffic in order to reduce noise. There are no any settlements near road. Special headphones - earplugs were not given for site workers to protect from harmful long-term noise emanating from construction equipment. In most cases, noise-related work was conducted during the day.

31. Thus, noise and vibration measurements of the laboratory and operator's equipment, also machines and equipment around the construction site do not exceed the norm, except measurement point of borrow pits. The vibration levels were determined by same company. The protocols of measurement results show that at an acceptable vibration level from 107 to 122 dB, data were recorded from 19 to 41 dB at measurement sites.

#### **2.1.2 Water quality monitoring**

32. There are no water sources on the territory of the contractor. As sources of technical and drinking water, water is taken from water towers, which are located in village Dossor, Makat and are in service of PSE "Atyrau Su Arnasy". During construction works, water is used for household and industrial needs. Water control is not provided, because drinking and technical water supply is provided from a culvert, which is located in village Makat and is in service of PSE "Atyrau Su Arnasy". The quality of drinking water conforms to sanitary and epidemiological requirements for water sources.

#### **2.1.3 Soil quality monitoring**

33. .Production is not carried out on the enterprise territory for permanent waste placement, temporary storage of production and consumption wastes is carried out with keeping

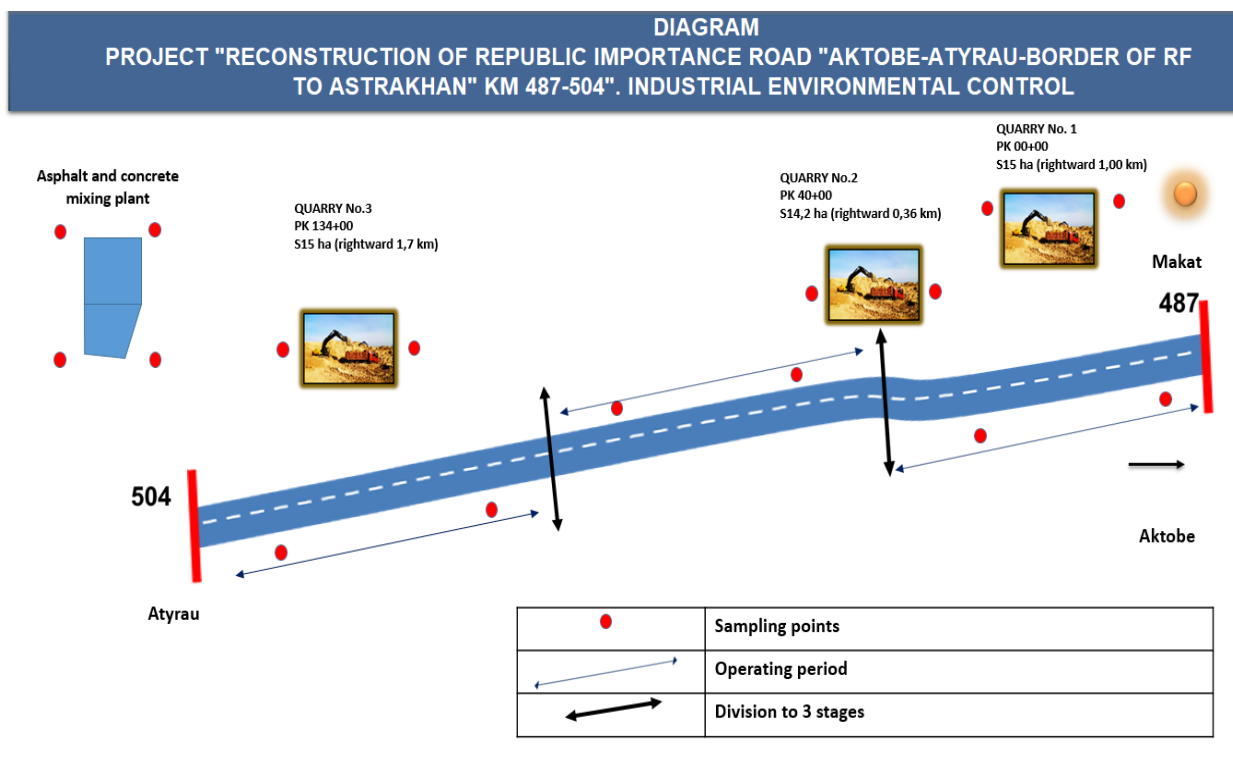


necessary requirements excluding impact on soil cover. Traffic of construction machineries will be carried out on existing roads. Due to it, soil monitoring is not included in environmental production control plan. But at the same time, to reduce impact on land resources, the Contractor included a number of activities in the Environmental Management Plan of this project:

- compliance with the technological work cycle;
- refueling and replacing fuel and lubricating materials in specially designated areas;
- dust control on the construction work sites;
- traffic of construction machineries is carried out on existing roads.

#### 2.1.4 Atmospheric air quality

34. Monitoring was carried out at the points specified in the Contractor's EMP. According to the submitted sampling protocols and their results, during sampling were recorded atmospheric air, climatic parameters: wind speed, direction, barometric pressure, humidity, temperature. Measurement points diagram of atmospheric air pollution is shown below in Picture 4.



**Picture 4. Layout diagram measurement points of atmospheric air, noise and vibration pollution**

35. Air quality monitoring was performed to determine the concentration of pollutant components: research inorganic dust parameters, nitrogen dioxide (NO<sub>2</sub>), nitrogen oxide (NO), soot, sulfur dioxide (SO<sub>2</sub>), formaldehyde (CH<sub>2</sub>O), carbon monoxide (CO) hydrocarbons



(C<sub>12</sub>-C<sub>9</sub>), etc. were carried out on the territory according to EMP. This monitoring and measurements were carried out by LLP "Environmental Analytical Laboratory".

36. During the reporting period, the Contractor's local environmental specialist did not submit environmental report to CSC environmental specialist. Measurement protocols has been submitted for the level of radiation, air, noise and vibration for period from June 4 to 11, 2018. Received results, according to these protocols, have not been processed by local environmental specialist, also LLP "Environmental Analytical Laboratory", which conducted test measurements, has not submitted monitoring report. The Contractor is waiting for report from laboratory.

37. After analyzing measurements results for the level of air pollution, vibration and noise, it can be concluded that there is no MAC excess for all pollutants on site. Detailed information is given in Attachment 3.

38. Soil borrow pit section: Soil borrow pits No.1 km 487, No.2 km 491 and No.3 km 504 provide the necessary quantity of high-quality material for road construction work.

Construction site control: Satisfactory appropriate traffic control is carried out.

Material storage: preparation a place for storage on site km 510 and performance of security measures.

Waste storage and cleaning: Works in progress. The move from village to base camp is scheduled for early July. Places for temporary waste and SHW storage are identified and established in accordance with the rules of sanitary and epidemiological safety.

Radiation impact: The pre-project EIA showed that there is no radiation impact sources. Instrumental measurements in accordance with the protocols (previously submitted without a survey report) were conducted on base camp site km 510, borrow pit No.1 km 487, borrow pit No.2 km 491 and borrow pit No.3 km 504.

Processing and disposal of harmful materials and waste: There have not been found out any unfavorable situations, work in progress. As the project belongs to the 3rd class of danger according to the sanitary classification of production facilities, therefore, the category of enterprise danger is II. Following the Republic of Kazakhstan legislation, the Contractor made Waste management plan. As there are no technological opportunities for reclamation of waste disposal sites by the Project activities, the Contractor has included measures to reduce their harmful impact to the environment in their Waste Management Plan. Namely, involving to the process of waste processing and disposal a third-party specialized organization, LLP "West

Dala" / LLP "Tazalyk Kogal", which has special equipment and permission for waste processing and disposal.

Emissions and dust control: Currently, emissions do not exceed the established standards. Active phase of work started in May 2018. Data about emissions and dust will be shown in the report for the second quarter of this year, which according to the timing rules of reporting emissions and dust, should be submitted on July 5, current year.

Implementation of public safety measures: Provided by the Project, there were verbal complaints regarding dust from public, complaints have not been received from project participants. Dust control measures have been carried out regularly.

Environmental permit documents: The Contractor received permission for base camp, concluded an agreement for waste processing and disposal, permission for construction on the right-of-way territory, and other types of additional environmental documentation.

Cultural, Historical and Archaeological Monuments: To date, there have not been found out any cultural, historical and archaeological facilities and cemeteries on road territory and impact zones.

Flora and fauna monitoring: The Contractor did not encounter with flora or fauna, flora has not been observed during the work.

There is given detailed information about environmental mitigation measures in Attachment 4 of this report, with activity progress status during the reporting period.

#### **2.1.5 Essential characteristics for Lot 7**

39. From the beginning of favorable weather conditions, the following environmental measures have been carried out on site:

- Standard equipment checks;
- Dust control measures at various sections, such as access roads, production facilities, temporary construction material storage. However, EMP specifies that a suspension will be used for dust control. Actually, water is used without suspension;
- The level of local environmental specialist raises doubts about the effectiveness of EMP activities execution, the implementation of production control and ecosystem monitoring as a whole on the project. According to CV of local environmental specialist, for last 4 years this specialist has worked as a laboratory assistant, whose job duties do not include the report preparation works, analysis of measurement results, study of relevant documents, the determination of environmental impacts and formulation of risks, if necessary.

40. During the period from October to December 2017, CSC environmental specialist Shedreev Yerzhan (hereinafter CSC environmental specialist) periodically inspected base

camp site visually, and also the status of site mobilization and preparation for CP and ACP. CSC environmental specialist conducted an audit of the Contractor's necessary documents. From October to December, to the Contractor have been sent the letters about necessity of EMP and relevant environmental plans submission, according to the list, to CSC Engineer:

- Base camp Management Plan;
- Solid Waste Management Plan;
- Hazardous Waste Management Plan;
- Dust Management Plan;
- Soil Management Plan;
- Water Quality Management Plan;
- Air Quality Management Plan;
- Noise Management Plan;
- Health and Safety Plan;
- Road Safety Plan.

41. Comments from CSC Engineer regarding EMP preparation were about detailing environmental risks, measures to reduce the negative environmental impacts.

### **Part III – Environmental Management**

#### **3.1. Environmental management systems (EMS), Environment management plan (EMP) and Work plans**

42. The management system includes the institutional responsibilities and mechanisms, necessary to ensure compliance with environmental requirements in the Project implementation. The Project preparatory stage includes an Environmental Impact Assessment (EIA), developed in 2015 by the Employer and approved by State Environmental Expertise Department of Atyrau regional Natural Resources Management and Environmental Management Department. Approved number: E14-0022 / 16 received on 18.04.2016.

43. Also this stage includes preparation of Environmental Management Plan (EMP) by the Contractor. In addition, specific environmental requirements and measures for environment protection, aimed to minimize the negative impact to environment and human health, are taken into account. The main impacts are presented in the matrix of Attachment 5. EMS covers the following aspects:

**Table No.3. Impact matrix**

<b>Preparatory stage</b>	
Basic Environmental Management Plan	Prepared by the Employer
Information publishing	Conducted
Giving information and consultation to public	Conducted public consultation
Analysis and approval	Have given in documents and contract obligations
Related conditions and responsibilities	Have written in pre-project EIA
Preliminary and subsequent analysis	Prepared by the Employer
<b>Realization stage:</b>	
Environmental Management activities	Dust control on site, planting base camp section
Learning and development	Environmental education and information is not available due to low qualification of local environmental specialist.
Reporting Monitoring	There is no reporting. Involved companies has conducted monitoring, but there is no report.

44. Regarding preparation of EMP and Environmental Plans during period from October to December, CSC environmental specialist did not have the opportunity for consulting preparation of EPMP and environmental plans, because the Contractors' environmental specialists have not mobilized.

### **3.1.1 Analysis of EMP for the construction project**

45. The following table provides information about EPMP preparation by the Contractors, evaluation of its content and quality. Submitted EMP with attached environmental plans, borrow pit management, air, water quality management, noise, waste management, dust control plan, health and safety plan, have been subsequently adjusted for 4 months due to non-complete set of plans, did not take into account all measures to reduce the impact to environment, had not specific deadlines for measures implementation, as well as indicators for assessing the actual environmental protection activities. The qualification level of local environmental specialist is raised doubts. She has no work experience in similar projects. The pre-approved Environmental measures Plan for the construction project is given in Attachment No. 5 to this report.

**Table No.4. The status of EMP development by the Contractors**

Management Plan	Status
<b>Tasyapi Insaat Taahut Sanayi ve Ticaret A.S (Lot – 4,5,6)</b>	
Environmental management plan / Site specific EMP (SSEMP)	Submitted, not approved
Programme for environmental monitoring	Not submitted
Fire safety and management plan	Submitted, not approved
Waste management plan for construction	Not submitted. Deadline for application: 15.02.2018
Hazardous material management and processing plan	Not submitted. Deadline for application: 15.02.2018
Emergency management plan during oil spill	Submitted on 15.02.2018 and approved on 20.02.2018
Health and Safety Plan	Submitted on 15.02.2018 and approved on 20.02.2018
<b>Ant Insaat Maden Sanayi A.S. (Lot – 7)</b>	
Environmental management plan / Site specific EMP (SSEMP)	Submitted on 10.01.2018 Approved 23.05.2018
Programme for environmental monitoring	Submitted on 10.01.2018 Approved 23.05.2018
Fire safety and management plan	Submitted on 10.01.2018 Approved 23.05.2018
Waste management plan for construction	Submitted on 10.01.2018 Approved 23.05.2018
Hazardous material management and processing plan	Submitted on 10.01.2018 Approved 23.05.2018
Emergency management plan during oil spill	Submitted on 15.02.2015 and approved on 20.02.2018
Health and Safety Plan	Submitted 15.02.2018 and approved on 20.02.2018

During the monitoring process, the Engineer used the Environmental Audit Form. Table of problematic issues was prepared based on completed form, which is given in Attachment No.6.

**Table No.5. Environmental compliance monitoring for Lot 7**

No.	Place	Problem issues	Recommended measures	Introduction / Conformity	Corrective actions
	Road section	Using safety tools (protective glasses, gloves, special clothes, helmet, safety shoes and etc.) by workers / Engineers	Availability of safety tools in labour camp and on construction site.	Safety tools are provided for workers and Engineers as necessary	Contractor - conducted
	Labour camp	Water supply	Water supply for drinking and domestic use, providing washbasin in shower unit, toilet, kitchen and	Things are available. Washbasins installed in all toilets, canteens, Water is taken from water intake	Contractor - conducted. Engineer's Personnel Is living in rented accommo-

			canteen. Cross-check and uninterrupted supply of drinking water	source.	dition in Atyrau.
		Sanitation and hygiene	Providing toilet bowls and rinsing water in shower units. Transportation to septic tanks for processing and disposal	All containers for accommodation are provided with toilet bowls and rinsing water. Sewerage is merged into a septic tank, removed by the appointed organization	In process
		Kitchen and canteen	Provision of appropriate ventilation, cranes and providing hygiene on food preparation and eating, food storage places	The Contractor's own canteen on progress	Employees eat in Dossor in canteen of local entrepreneur. The Contractor's own canteen on progress
		Drainage in labour camp	Provision of drainage water diversion in camp territory. To avoid accumulation of water inside of camp.	There is not found out accumulation of used water in the camp territory.	
		SHW and waste	Putting the trash buckets and urgent modernization of the pits for waste disposal, cover and control on base camp territory.	There is a trash bucket in each room, disposal by a special organization for removal and placement of SHW to a landfill	
	Borrow pit / soil borrow pit territory	Material stockpiling in accordance with the RK environmental legislation	To take permission for soil excavation in three borrow pits on PK 134, PK 40+00 and PK 00.	Conducted. Permissions from relevant organization have been received.	Contractor - conducted.
	Fire-fighting equipment in labour camp, in office	Fire-fighting must be in labour camp and in office.	To put fire fighting equipment in well visible place and in such way it can be used in case of emergency situation.	Fire extinguishers are placed on well visible places	Conducted

	Vehicle and equipment traffic in labour camp	Excessive dust pollution in camp territory and noise pollution of environment as a result of traffic in camp and on site.	Equipment, which meets environmental standards for noise should be used on construction site.	Parking for machinery is located far from office and accommodation.	Partly conducted
	ACP	Giving PPE, medicinal and prophylactic food and milk. Dust control in territory and in storage	Compliance with safety standards and requirements, compliance with FIDIC, Contractual obligations	In process	In process

### 3.2. Site inspection and audit

46. The opening ceremony of CAREC Corridors 1 & 6 Connector Road (Aktobe - Makat) Reconstruction Project, Lot 1 - Lot 7, was on November 8, 2017 in the presence of the Minister of Investments and Development - Mr. Kassymbek Zhenis Makhmudovich, on the 11th kilometer of road Aktobe-Astrakhan. During the reporting period, a number of missions were carried out to audit and inspect work status on the sites.

47. On October 31, the PMC visited with the following members: Project Manager / Road Engineer Krykbayev Nurzhan Nazymbekovich and Social and environmental specialist Zeynullina Aliya Amantayevna. The PMC team leader and social / environmental specialist arrived to the site to familiarize with construction area, with representatives of the Contractors and to monitor the current situation. During the site visit, the PMC representatives inspected construction site, laboratories, work program, provision to the Engineer and also checked the availability of permission documents for permanent and temporary land acquisition.

48. PMC held meetings with the Contractors and Engineering services, where the PMC group has been represented, its role in the project and acquaintance with representatives of the Engineer and the Contractor Company have been announced. During the meeting, for each lot, the current state of personnel and equipment mobilization, general readiness of the sites for construction work have been studied and discussed. Also, road engineer has personally acquainted with all construction areas by visiting the site.

49. On October 31, social and environmental specialist of the PMC visited road sections (Lots 4, 5, 6 and 7), inspected the location of base camp and construction site, expected unload depots. A mechanism for relation with local executive bodies regarding the Project impact has been discussed at the site. During the meetings with the interested parties, together with the Employer representatives (RSE "AtyrauZholLaboratory" Director), responsible person for complaints

review has been appointed in the framework of CM. For this site, Materials Engineer Abdenova Nurgul Zhanabayevna (Atyrau) is appointed as the responsible person. Questions about installing boxes for complaints from local population, EPMP submission before commencing construction work under the Contract and speeding up to take permission documents from relevant authorities have been discussed with the Contractors.

50. During the reporting period, local environmental specialist of the Engineer visited sites in December 2017. There were meetings with the Contractor representatives regarding choosing and involvement environmental specialists to the site. The Engineer also visited construction sites, material storage places, base camp and plants have been also inspected.

51. During the reporting period, the ADB mission visited 2 times. Familiarization visit by the ADB specialists was on September 30, 2017, this mission included environmental experts from Almaty ADB, Manila office (Philippines), Engineers, specialists from RSE "AtyrauZholLaboratory". During this period, CSC environmental specialist has not been mobilized, so there is no detailed information about the visit, issues of concern on site during site inspection.

52. The second visit was on April 13, 2018 with more members: head of the Bank's mission, ADB specialists: environmental specialist, social impact expert, road engineers, the Committee for Roads of the MID RK, RSE "AtyrauZholLaboratory", PMC, CSC, Contractor of Lot 7. The purpose of the visit is to get acquaintance with the project progress, equipping the engineer's office, the infrastructure of the production bases, status of EMP and environmental plans preparation, base line, permit documents.

**Table No.6: Information about meeting, inspection and audit**

No.	Auditor name	Purpose of the visit	Date
1	ADB mission	Acquaintance mission with all sections of reconstructed road	30.09.2017
2	MID, group of specialists and managers, Kassymbek Zh.M.	Opening ceremony of the project	08.11.2017
3	Krykbayev Nurzhan Nazymbekovich and social safeguard specialist Zeinullina Aliya Amantayevna	Mobilization audit	31.10.2017
4	Shedreev E., CSC	Audit of works regarding ACP and crusher plant mobilization	31.10.2017 15.11.2017
5	Shedreev E., CSC	Environmental monitoring of Lot 4, Lot	18.12.2017 18.12.2017



		5, Lot 6 and Lot 7	18.12.2017 21.03.2018
6	Specialists and Engineers of CfR and RSE "Atyrauzhollaboratory"	Construction audit of site works on Lot 4, Lot 5, Lot 6 and Lot 7	10.04.2018
7	ADB	Construction work audit, plan monitoring plans	13.04.2018
8	Imbarova S., CSC	Environmental audit Lot 7	04.06.2018

### 3.3 Non-conformance Notice

53. During the reporting period, CSC Engineer has notified non-conformance notices for Lots 4, 5 and 6 by 4 notices. There was non-conformance notice from the PMC regarding environmental specialist mobilization time and EPMP submission during the visit. There is given detailed information about non-conformance notices below in the Table No.7.

**Table No.7. Information about meeting, inspection and audit**

Monitoring / audit date	Auditor's name / organization name	Non-conformance description
6.11.2017	Shedreev Y., CSC	Environmental specialists have not been mobilized on Lots 4, 5, 6 and 7
22.11.2017	Shedreev Y., CSC	EPMP and 11 additional plans for EPMP have not been submitted
24.11.2017 27.11.2017	Shedreev Y., CSC	Environmental specialists have not been mobilized on Lots 4, 5, 6 and 7
09.01.2018	PMC	To the Contractors has been sent the following by the letter:  Incomplete set of EMP, there are not indicated all facilities and impact parameters in EMP, there is no information about sampling method and base line, there is no implementation schedule and reporting methodology.
26.01.2018	PMC	To CSC environmental specialist has been sent by the letter the following discrepancies in semi-annual report for 2017: The facts contradict with actual things on site, data are taken from the reports of other projects and are not adapted for this project.

### 3.4. Plans to act corrective measures

54. In the previous report period, from October to December 2017, CSC engineer prepared corrective measures plan to eliminate the above-mentioned non-conformances. The below-mentioned table No.8 provides information about status of execution and reasons for incompleteness of certain types of work.

**Table No.8. Status of non-conformity elimination by Lot 7**

<b>Actions</b>	<b>Deadline</b>	<b>Expected result</b>	<b>Execution</b>
Receiving EPMP from the Contractors	February 2018	Approved document	Executed on May
Receiving full set of plans for environmental monitoring and protection	February 2018	Full set of documents for environment including 10 plans	Executed on May
Regarding plans for production and environmental monitoring	February 2018	Approved document	Approved by the Engineer and PMC on May 22, 2018. Delay is due to the low competency of the contractor's environmental specialist and she has no experience
Receiving permission documents from the Contractor	May 2018	Legalization of all types of work and emissions for environment	Executed
To receive a notice from the Contractor about finding an accredited laboratory for carrying out baseline and production measurements	March 2018	Laboratory approval for carrying out independent environmental monitoring	Received on March 23, 2018.
To receive the initial monitoring program, it should be presented with basic environmental research (BER)	March-April 2018	Approved document	Programme received on May
Receiving EMP from the Contractor	February 2018	Approved document	Not executed. Sampling protocols for test and test results have been submitted. A report is expected by the middle of July.

**Table No.9. Corrective measures plan for non-conformances**

<b>Non-conformance title</b>	<b>Measures to eliminate non-conformance</b>	<b>Deadline</b>	<b>Responsible</b>	<b>Performance indicator</b>
Non submission of environmental report for the 1 and 2 quarter 2018 to the Engineer	- consultation for local environmental specialist - written notice to the Contractor about non-conformance	10.07.2018	Engineer's environmental specialist	Submitted reports of environmental specialist, production control report of test laboratory

Lack of basic environmental research, baseline / primary measurements	- consultation for local environmental specialist	10.07.18	Contractor's Manager	Baseline measurement report
CSC absence during taking sample, environmental monitoring measurement	During the sampling of various parameters (air quality, water quality, noise and vibration, electromagnetic radiation, etc.) the Contractor shall inform CSC before by submitting a Request for Inspection, letters. Thus, CSC representatives can assist in the development of a common research program, including cross-checking locations, calibrating tools and confirming the relevant procedures according to Environmental Plan;	15.08.18	Project Manager	Early submission a request for forthcoming measurement and sampling to CSC
Permit documents did not receive for ACP	-to fulfill the conditions, procedure for submission and completion an application for receiving permit documents	01.06.18	Contractor's Engineer	Permit documents
Used laboratory for Lot 7 expires accreditation certification time (06.11.18) for carrying out works regarding environment	Request from the Contractor for extension of accreditation or replacement of the laboratory	25.10.18	Contractor's Engineer	Permit documents

### 3.5 FINAL RECOMMENDATIONS

55. The project on progress, but environmental works should be urgently improved in order to monitor compliance with all recommendations of Environmental Control Plan for further compliance with the requirements of the RK and ADB.

56. However, the following recommendations should be revised and followed by the Contractor:

- The Contractor's environmental specialist is recommended to submit report every month to the environmental specialist of CSC regarding the implementation of environmental activities. The format of the report is a descriptive, there is a table, which contains a list of activities for the reporting period, with an indication progress status of each activity;
- During the sampling of various parameters (air quality, water quality, noise and vibration, electromagnetic radiation, etc.), the Contractor must inform CSC service

previously by submitting a Request for Inspection, letters. Thus, CSC representatives can assist in preparation of a common research program, including cross-checking locations, calibrating tools and confirming the relevant procedures under Environmental plan;

- Investigation of soil borrow pit territory on site should be carried out regularly. It is also recommended to pay attention if the characteristics and thickness of field are properly investigated. If the site is large and materials are similar, the distance should be extended. Sanitary protection zone for borrow pits is 300 m.

#### **Plan IV – Action Plan for next period July-December 2018**

**Table No. 10: Actions for the second quarter 2018**

<b>Actions</b>	<b>Deadline</b>	<b>Responsible person</b>	<b>Expected result</b>
EPMP submission for the construction project for Lot 4, Lot 5, Lot 6	06.09.18	Contractor Project Manager Environmental specialist	Approved document
Report submission for operational and environmental monitoring for Lot 7	15.07.18 15.09.18 15.11.18	Contractor's environmental specialist	Approved document
Submission of permit documents for borrow pits and plants by the Contractor for Lot 4, Lot 5, Lot 6	15.10.18	Project Managers of Lot 4, Lot 5, Lot 6	Legalization of all kind of work and emission to environment
To give information and carry out environmental study among the Contractor's personnel and local people	Quarterly	Contractors' environmental specialists Lot 4, Lot 5, Lot 6, Lot 7	Reports for information works, environmental booklets and summary sheet
Weekly reports and records of environmental specialist for site work inspection	Weekly	CSC	Reports and results of inspection
Organization of works for prevention of negative impact to flora and fauna, taking into account regional peculiarities: periods of nesting of birds, migration	September-November	Environmental specialist	Photo report, environmental specialist's report

Extension of the contract with laboratory for environmental production control or involve another one with the license and certification validity	25.10.18	Contractor's environmental specialist	Document set. Licenses and programs for measurement tools and kind of work
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57. Environmental quality monitoring will be carried out in the subsequent period after this reporting period. Regarding Lot 7, for the period from July to December 2018 the following measures will be done according to approved EMP:

**Table No.11: Measure aspects for road sections**

Measures item	List of measurement parameters	Period
Emission monitoring	Sulfur dioxide SO <sub>2</sub> Nitrogen oxide NO	The 3 and 4 quarter 2018
Monitoring of road construction (3 points: beginning, middle and the end of site) km 487, km 500 and km 504	Nitrogen dioxide NO <sub>2</sub> Carbon oxide CO Carbon dioxide CO <sub>2</sub> Hydrogen sulfide, H <sub>2</sub> S Total suspended particulates (TSP) Formaldehyde Vibration and noise Inorganic dust: 70-20% 20% SiO <sub>2</sub> Hydrocarbons C <sub>12</sub> -C <sub>19</sub> (Alkane C <sub>12</sub> -19)	
Monitoring on SPZ border of ACP km 510 (4 points)	All pollutants from the list above and plus Radiation background - 1 time in the 3 quarter (for checking with baseline indicators)	
Borrow pit monitoring No.1, No.2 and No.3	All pollutants names	
Monitoring of production and household waste management plans	Waste quantities	As stockpiled in temporary storage places
Noise and vibration monitoring	Noise and vibration	Every month 2018
Environmental report submission	- quarterly environmental reports - instrumental measurement reports	Report submission for the 2 quarter – July 10. For the 3 quarter – October 10. For the 4 quarter – December 20.

**Part V. Consultations and complaints**

58. On March 16, 2018, CSC engineers, environmental specialist together with Health and safety Engineer conducted a visiting consultation with representatives of local authorities, the administrative police department and public. At meeting has been clarified CM process, developed by CfR MID, with the participation of JSC NC "KazAutoZhol" by the project TC 7566 REC: Strengthening and using national systems for protective measures - public consultation and complaint mechanism, introduced from August 2014 for all road construction projects. During site monitoring, a number of interviews have been executed with population and the Contractor's employees. During this work, there have not found any complaints and appeals. During the reporting period, any complaints or appeals have not been received by CSC.

## ATTACHMENT:

### Attachment 1

#### Permit documents for the construction project

Document name	Information and document status
"Aktobe-Makat" Road - km 487-504	Permission for environmental emission for objects category IV, No.KZ83VDD00081237 dated 20.11.2017
"Environmental Impact Assessment (EIA)" of the project	Developed in 2015, submitted for approval to State Environmental Expertise Department of Atyrau regional Natural Resources Management and Environmental Management Department on 04.04.2016 No.92. Approved number: E14-0022 / 16 received on 18.04.2016.
Act for land allocation for land with size 62,24 hectare for reconstruction of "Aktobe-Makat-border of RF (to Astrakhan)" road	No. 0138010, issued by Makat district department of Atyrau regional RSE "National Center of Expertise" dated December 31, 2015.
Land allocated for reconstruction of A-27 "Aktobe-Makat-border of Russian Federation (to Astrakhan) km 487-504" road, total area 62,24 hectar	Decree of Makat district Akimat of Atyrau region dated December 30, 2015 No. 289 "About giving a right for land allocation by the Committee for Roads, Ministry of Investments and Development of the Republic of Kazakhstan"
Borrow pit and its work status	On 28.05.2018, 3 borrow pits have received permissions for environmental emission for objects category IV, No. KZ8VDD00094352
About compliance with the requirements for keeping animals during road reconstruction	RSE "Atyrau regional territorial inspection of forestry and animals of the Ministry of Agriculture of the Republic of Kazakhstan" - letter dated June 21, 2016 No. 05-06 / 953
Environmental monitoring	Concluded an agreement from 28.03.2018 with testing laboratory LLP "Environmental Analytical laboratory" in Atyrau. From June 4 to 11 they have conducted base line.

SHW and waste disposal and processing services	Concluded an agreement from 29.03.2018 with LLP "WEST DALA". Concluded an agreement from 05.02.2018 with LLP "Tazalyk – Kogal"
EMP with 10 environmental action plans	First submission was on January 10, 2018. After corrections, have been submitted on April 23, 2018 to CSC for review. On May 16 the Engineer has given her remarks for correction. On May 22 all plans have been approved by CSC and PMC.
For special water use	Culvert from LLP "Atyrau Su Arna". There is an agreement for drinking and technical water.



**Attachment 2**

**Information about CSC mobilization**

No.	Name	Position	Mobilization date
	KEY EXPERTS (international)		
1	Park Kwang Yong Cha Joon Dae	Team Leader Resident Engineer	October 02, 2017 January 16, 2018
	KEY EXPERTS (national)		
1	Bassarygin Viktor	Deputy Resident Engineer / Road Engineer 1	November 06, 2017
2	Bealu Dmitriy	Deputy Resident Engineer / Road Engineer 2	December 22, 2017
3	Kurmangaliyev Zhasulan	Quantity Surveyor 1	October 06, 2017
4	Rakhimov Maksot	Materials and quality Engineer	October 02, 2017
5	Abdrakhmanov Dastan	Land Surveyor	October 06, 2017
6	Essimov Kuat	Land Surveyor	October 02, 2017
7	Temirbek Zhenisgul	Road Safety Engineer	October 12, 2017
8	Imbarova Sara	Social safeguard specialist	March 04 , 2018
	NON-KEY EXPERTS (national)		
1	Beisikenova Moldir	Office manager / accountant	December 19, 2017
2	Sagyngaliyeva Nazerke	Translator 1	October 12, 2017
3	Amangeldiyeva Gulnur	Translator 2	December 19, 2017

From October 2017 to April 20, office was located in Atyrau, street Abylkhair khan 8, 1-2 floors.

**Contact person:**

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**Attachment 3**

**Laboratory test data of atmospheric air measurements on sampling points**

Sampling place	Pollutants, mg//m <sup>3</sup>								Radiation
	CO	SO <sub>2</sub>	NO <sub>2</sub>	NO	Suspended particulates (dust)	CH <sub>2</sub> O	C <sub>12</sub> -C <sub>9</sub>	Soot	Permissible limit mc <sup>3</sup> /hour
MAC of pollutants (mg/m <sup>3</sup> )	5,0	0,5	0,2	0,4	0,5	0.05	1,0	0,15	0.3
<b>Borrow pit 1 Km 487</b>	Not detected	< 0,01	< 0,02	< 0,03	< 0,02	< 0,05	Not detected	< 0,02	Point 1 – 0,078 Point 2 - 0,078
<b>Borrow pit 2 Km 491</b>	0,1	< 0,01	< 0,02	0,1	< 0,02	< 0,005	Not detected	< 0,025	Point 1 – 0,077 Point 2 – 0,077
<b>Borrow pit 3 Km 504</b>	0,3	< 0,01	< 0,02	0,1	< 0,02	< 0,005	Not detected	< 0,025	Point 1 – 0,071 Point 2 – 0,071
<b>ACP – 4 sampling points</b>									
1 point	Not detected	< 0,01	< 0,02	< 0,003	< 0,03	< 0,02	< 0,005	Not detected	0,071
2 point	0,02	< 0,01	< 0,02	< 0,003	< 0,03	< 0,02	< 0,005	Not detected	0,071
3 point	Not detected	< 0,01	< 0,02	< 0,003	< 0,03	< 0,02	< 0,005	Not detected	0,071
4 point	Not detected	< 0,01	< 0,02	< 0,003	< 0,03	< 0,02	< 0,005	Not detected	0,071
<b>Road construction site - 2 sampling points on the beginning and end of site</b>									
Point 1	Not detected	< 0,01	< 0,02	< 0,003	< 0,03	0,02	< 0,005	Not detected	Not determined
Point 2	0,02	< 0,01	< 0,02	< 0,003	< 0,03	0,02	< 0,005	Not detected	Not determined

**Progress status of Environmental management plan at the design phase**

<b>Environmental management plan (EMP) for pre-construction mitigation</b>				
<b>Title</b>	<b>Potential Impact/issue</b>	<b>Mitigation measure</b>	<b>Duty / Responsible person</b>	<b>Comments about realization status</b>
<b>Air quality and climate</b>	Air quality impacts from stationary sources	Location of quarries and pits, asphalt plant must be approved by the Engineer and Territorial environmental protection offices (TEPO) before construction starts. It is necessary to make efforts that the location of these facilities should be as close as possible to the Project road in order to avoid unnecessary mileage and potential dust pollution from transport during construction work. In addition, quarries, soil excavation and asphalt plants should not be located less than one kilometer from any populated area or sensitive site.	<ul style="list-style-type: none"> <li>Contractor to select location</li> <li>Engineer and TEPO to approve location</li> </ul>	<ul style="list-style-type: none"> <li>Executed. Permit documents were received.</li> <li>Engineer reviewed and approved selected location of facilities</li> </ul>
	Construction impacts	The Contractor is responsible to prepare Air quality management plan (AQMP), which must be submitted to the Engineer before the commencement of work. The plan should describe the measures that must be taken to minimize dust pollution (for example, by water spraying non-asphalt roads, covering stockpiling, drilling and blasting operations using small charges, etc.), and the types, service life and the requirements for equipment used. The plan should also provide emergency work in case of emissions of toxic pollutants. Emergency Response Plan (ERP) should be prepared during the design phase and should be a part of EMP.	<ul style="list-style-type: none"> <li>Contractor to prepare AOMP</li> <li>Engineer to review and approve ERP within the framework of EMP</li> </ul>	<ul style="list-style-type: none"> <li>Has been prepared and approved</li> </ul>
	Technical condition degradation of road pavement	It is necessary to do an assessment to determine if an adjustment needs for the pavement content in case of possible temperature increase to 5 ° C (for example, adjusting lower asphalt pavement layer or replacing the mineral aggregate).	<ul style="list-style-type: none"> <li>Design Company</li> </ul>	<ul style="list-style-type: none"> <li>It has been included in design documents</li> </ul>
	Corrosion of steel reinforcement in	To assess the possibility of using advanced concrete-containing materials and structures in order to increase the service life of concrete	<ul style="list-style-type: none"> <li>Design Company</li> </ul>	<ul style="list-style-type: none"> <li>It has been included in design</li> </ul>

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	concrete structures	facilities and their resistance to climate change.		documents
	Damage of road and drainage system due to flooding	To assess the frequency of floods in the past 50 years for all bridges and road dams, and prepare measures to mitigate the flood risks in all sections of reconstructed road. To increase throughput of side and cross drainage ditches in case of strong flooding.	<ul style="list-style-type: none"> <li>Design Company</li> </ul>	<ul style="list-style-type: none"> <li>It has been included in design documents</li> </ul>
	Increase in washout of road, bridges and supporting infrastructure	To assess designs of dams, road embankments, bridge piers, etc. to determine if additional protection / reinforcement is required to cope water volume and increased water flow.	<ul style="list-style-type: none"> <li>Design Company</li> </ul>	<ul style="list-style-type: none"> <li>It has been included in design documents</li> </ul>
<b>Topography</b>	Existing quarry sites	For existing quarries a due diligence review will be carried out by the Engineer to confirm that those sites identified for use by the Contractor are indeed operating or operable in an appropriate manner. This will include review of the borrow pits operational license. The license should clearly show the validity of the operational period of the quarry. A copy of the agreement between the operator and the Contractor should also be provided to the Engineer.	<ul style="list-style-type: none"> <li>Contractor to provide copies of agreements / licenses to Engineer.</li> <li>Engineer to approve quarry</li> </ul>	<ul style="list-style-type: none"> <li>Works have been done during mobilization</li> </ul>
	New quarry sites	Any new quarries must obtain the required permits prior to commencement of works at these sites, this shall include approval from the TEPOs and the Engineer. Efforts should be made to ensure that quarries selected are as near to the site as practical to avoid unnecessary journeys. However, no quarry shall be located within one kilometer of any populated area or sensitive site. The locations of the quarries shall be indicated within the Contractor's EMP. In addition, Contractors should ensure that quarries and crusher plants are located at least one kilometer from populated areas to prevent noise and dust impacts and where possible located on government owned lands.	<ul style="list-style-type: none"> <li>Contractor to select quarry sites and apply for approval from TEPOs and any other regulatory agencies.</li> <li>Engineer to review quarry locations, licenses and approvals from TEPOs</li> </ul>	<ul style="list-style-type: none"> <li>Works have been done during mobilization</li> <li>Engineer reviewed submitted documents</li> </ul>
<b>Soils / Hydrology</b>	Existing Borrow Pits	For existing borrow pits a due diligence review will be carried out by the Engineer to confirm that those sites identified for use by the Contractor are indeed operating or operable in an appropriate manner.	<ul style="list-style-type: none"> <li>Contractor to provide copies of agreements / licenses to Engineer.</li> </ul>	<ul style="list-style-type: none"> <li>During mobilization on site</li> </ul>

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		This will include review of the borrow pits operational license. The license should clearly show the validity of the operational period of the borrow pit. A copy of the agreement between the operator and the Contractor should also be provided to the Engineer.	<ul style="list-style-type: none"> <li>Engineer to approve borrow pit.</li> </ul>	
	New Borrow Pits	If new borrow pits are to be opened the Contractor shall obtain all necessary permits from the regulatory authorities and prepare a Borrow Pit Action Plan (BAP) that should be submitted as part of EMP to the Engineer prior to the start of construction. The BAP will identify the locations of all proposed borrow pits. The locations of the borrow pits shall be approved by both the Engineer and the TEPOs. No borrow pit shall be located within five hundred meters of any protected area. The locations of the borrow pits shall be indicated within the Contractor's EMP.	<ul style="list-style-type: none"> <li>Contractor to select borrow sites and apply for approval from TEPOs and any other regulatory agencies.</li> <li>Engineer to review borrow locations, licenses and approvals from TEPOs.</li> </ul>	<ul style="list-style-type: none"> <li>Works have been done during mobilization on site</li> </ul>
	Selection of Asphalt Plant Location	New asphalt plant shall not be located within one kilometer of any urban area, protected area or sensitive receptor. The locations of the asphalt plants shall be indicated within the Contractor's EMP. Asphalt plant locations shall be approved by the Engineer and the TEPO.	<ul style="list-style-type: none"> <li>Contractor to select sites and apply for approval from TEPOs and any other regulatory agencies.</li> <li>Engineer to review locations, licenses and approvals from TEPO.</li> </ul>	<ul style="list-style-type: none"> <li>Works have been done during mobilization, permit documents were received</li> </ul>
	Selection of Construction Camp Site	<p>The Contractor shall be responsible for the preparation of a Construction Camp Site Plan, which will be a part of EMP. The Plan shall indicate the system proposed and the locations of related facilities on site, including toilet, storage areas, etc. The Contractor shall ensure the following conditions are met within the Plan:</p> <ul style="list-style-type: none"> <li>Rain-water run-off arising on the site shall be collected, removed from the site via a suitable and properly designed temporary drainage system and disposed of at a location and in a manner that will cause neither pollution nor nuisance. The drainage system should be fitted with oil and grease interceptors.</li> <li>There shall be no direct discharge of sanitary or wash water to surface water. Septic tanks shall be provided at construction camps for sewage water. Licensed contractors will be required to collect and disposal of liquid waste from the septic tanks on regular</li> </ul>	<ul style="list-style-type: none"> <li>Engineer to review and approve Site Plan</li> </ul>	<ul style="list-style-type: none"> <li>Works have been done during mobilization</li> </ul>

		<p>basis.</p> <ul style="list-style-type: none"><li>• Disposal of materials such as lubricating oil and such onto the ground or water bodies shall be prohibited.</li><li>• Liquid material storage containment areas shall not drain directly to surface water.</li><li>• Lubricating and fuel oil spills shall be cleaned up immediately and spill clean-up shall be materials be maintained at the storage area.</li><li>• Construction and work sites will be equipped with sanitary latrines that do not pollute surface waters and are connected to septic tanks, or waste water treatment facilities.</li><li>• Discharge of sediment-laden construction water directly into surface watercourses will be forbidden. Sediment laden construction water will be discharged into settling lagoons or tanks prior to final discharge.</li><li>• Washing out concrete trucks at construction sites shall be prohibited unless specific concrete washout areas are provided for this purpose at the construction site (e.g. a bridge site). The washouts should be impermeable and emptied when 75% full.</li><li>• Spill clean up equipment will be maintained on site. The following conditions to avoid adverse impacts due to improper fuel and chemical storage:<ul style="list-style-type: none"><li>○ Fueling operations shall occur only within containment areas.</li><li>○ All fuel and chemical storage (if any) shall be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 % of the volume of tanks.</li><li>○ Filling and refueling shall be strictly controlled and subject to formal procedures and will take place within areas surrounded by bunds to contain spills / leaks of potentially contaminating liquids.</li><li>○ All valves and trigger guns shall be resistant to unauthorized interference and vandalism and be turned off and securely locked when not in use.</li><li>○ The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any drain or watercourses.</li></ul></li></ul>		
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		<ul style="list-style-type: none"> <li>○ Disposal of lubricating oil and other potentially hazardous liquids onto the ground or water bodies will be prohibited.</li> <li>○ Should any accidental spills occur immediate clean up will be undertaken and all cleanup materials stored in a secure area for disposal to a site authorized to dispose of hazardous waste.</li> </ul> <p>Site plans shall be devised to ensure that, insofar as possible, all temporary construction facilities are located at least 50 meters away from a water course, stream, or canal. If determined warranted by the Engineer, the Contractor shall provide a wash pit or a wheel washing and/or vehicle cleaning facility at the exits from the sites. If so requested, the Contractor shall ensure that all vehicles are properly cleaned (bodies and tires are free of sand and mud) prior to leaving the site areas. The Contractor shall provide necessary cleaning facilities on site and ensure that no water or debris from such cleaning operations is deposited off-site.</p>		
	Well drilling	The Contractor is preparing all permits before drilling any wells.	<ul style="list-style-type: none"> <li>• Contractor does not need to carry out these works</li> </ul>	<ul style="list-style-type: none"> <li>• It is not necessary</li> </ul>
	Bridge construction	All new bridges are designed for a lifetime of 75 years. Reconstruction and repairing of bridges should provide 50 years service life. Design load and development of all structure components must meet the bridges design standards, as stated in the special requirements of the Employer. Finally, the developed and designed bridges should have aesthetic appeal and fit the environment.	<ul style="list-style-type: none"> <li>• Project Designers</li> </ul>	<ul style="list-style-type: none"> <li>• It has been included in design documents</li> </ul>
	Soils Contamination	The Contractor will be responsible for preparation of an Emergency Response Plan (ERP), which will cover storage issue of hazardous materials, oil spills, and work-site accidents. The plan will detail the process for handling, and subsequently reporting, and specify the organizational structure (including responsibilities of nominated personnel). The plan will be submitted to the Engineer for approval as part of EMP.	<ul style="list-style-type: none"> <li>• Contractor to prepare ERP</li> <li>• Engineer to review and approve ERP as part of EMP</li> </ul>	<ul style="list-style-type: none"> <li>• Works have been done during mobilization on site</li> <li>• Engineer reviewed and approved plans as a part of EMP</li> </ul>
	Soil erosion	To reduce the impact of erosion processes, design shall include slopes of embankments are constructed so as to take into account the soil strength and other conditions according to the technical specifications to prevent landslides and soil erosion.	<ul style="list-style-type: none"> <li>• Project Designers</li> </ul>	<ul style="list-style-type: none"> <li>• It has been included in design documents</li> </ul>

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<b>Land use</b>	Loss of property and land	MID must prepare Land Acquisition and Resettlement Plan (LARP), get approval of ADB, then execute this plan and redeem land before the commencement of construction work.	<ul style="list-style-type: none"> <li>• MID to prepare LARP, also additional framework LARP</li> <li>• ADB to approve LARP</li> </ul>	<ul style="list-style-type: none"> <li>• Executed before the commencement of work on site. LARP in 2015 and LARP inspection report in 2016</li> </ul>
<b>Waste and Spoil</b>	Waste Management	<p>The Contractor shall be responsible for preparing a Waste Management Plan (WMP) to manage all spoil and waste material. The Plan, which is a part of EMP, shall include items relating to the safe handling and management of:</p> <ul style="list-style-type: none"> <li>• Domestic waste</li> <li>• Food waste</li> <li>• Inert garbage</li> <li>• Recycled Waste</li> <li>• Plastic</li> <li>• Metals</li> <li>• Wood</li> <li>• Construction Waste</li> <li>• Hazardous Waste</li> <li>• Liquid Waste</li> </ul> <p>The Plan will also include provisions to manage all excess spoil material. The Plan should indicate where the spoil will occur and methods and locations for disposal.</p>	<ul style="list-style-type: none"> <li>• Contractor to prepare WMP</li> <li>• Engineer to review and approve WMP as a part of EMP</li> </ul>	<ul style="list-style-type: none"> <li>• Works have been done during mobilization on site</li> <li>• Engineer reviewed plans and approved as a part of EMP</li> </ul>
<b>Health and Safety</b>	Health and Safety of workers	The Contractor must prepare Health and Safety Plan (HSP), as a part of EMP, to ensure safety of workers. Plan should include clause how to behave in case of emergency emission of toxic gas.	<ul style="list-style-type: none"> <li>• Contractor to prepare HSP</li> <li>• Engineer to review and approve HSP as a part of EMP</li> </ul>	<ul style="list-style-type: none"> <li>• Works have been done during mobilization on site</li> <li>• Has been approved by the Engineer</li> </ul>
	Traffic Safety	<p>At the design phase, the Contractor must take into account traffic safety issues, such as:</p> <ul style="list-style-type: none"> <li>• Safety fencing</li> <li>• Road signs</li> <li>• Crosswalk</li> <li>• Speed bumps</li> </ul>	<ul style="list-style-type: none"> <li>• Engineer to review and approve design documents</li> </ul>	<ul style="list-style-type: none"> <li>• Works have been done during mobilization on site</li> <li>• Has been approved by the Engineer</li> </ul>



<b>EMP requirements</b>	EMP development	<p>The Contractor prepares EMP based on this EMP requirements. Particularly, EMP should contain sections related to:</p> <p>A) Physical environment management</p> <ul style="list-style-type: none"> <li>- Soils</li> <li>- Water</li> <li>- Air</li> </ul> <p>B) Ecological environment management</p> <ul style="list-style-type: none"> <li>- Flora</li> <li>- Fauna</li> <li>- Protected area</li> </ul> <p>C) Economic characteristics management</p> <ul style="list-style-type: none"> <li>- Infrastructure</li> <li>- Transport</li> <li>- Land use</li> <li>- Agriculture</li> </ul> <p>D) Social and cultural resources management</p> <ul style="list-style-type: none"> <li>- Communities, health and educations institution</li> <li>- Historical and cultural sites</li> <li>- Noise</li> </ul> <p>In addition, EMP should include the following special plans as attachments for management:</p> <ul style="list-style-type: none"> <li>- Borrow pit management plan</li> <li>- Air Quality Management Plan</li> <li>- Water Quality Management Plan</li> <li>- Noise management plan</li> <li>- Waste management plan</li> <li>- Emergency response plan</li> <li>- Dust mitigation plan</li> <li>- Construction camp plan</li> <li>- Health and Safety Plan</li> </ul> <p>Each section should contain a description of the exact location of the required measures for impact mitigation / monitoring, an indication of</p>	<ul style="list-style-type: none"> <li>• Contractor to submit EMP</li> <li>• Engineer to review and approve EMP</li> </ul>	<ul style="list-style-type: none"> <li>• Has been prepared and approved by the Engineer</li> </ul>
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		the person responsible for the impact mitigation / monitoring, schedule for implementation of the relevant measures and reporting methodology. EMP should be submitted during 30 days after Contract award. Construction works can not be started without EMP approval by the KazAutoZhol – Atyrau / KazAutoZhol – Aktobe and Engineer.		
	Incorporation of Items into Bid Documents	The Contractor shall be responsible for ensuring compliance with this EMP. A specific environmental section shall be included within the main Bid Documents indicating that the Contractor shall be responsible for conforming with the requirements of EMP. This EMP shall be included as an attachment to the Contract Bid Documents.	<ul style="list-style-type: none"> <li>• CfR to ensure, that EMP is included in Bid Documents</li> </ul>	<ul style="list-style-type: none"> <li>• Executed</li> </ul>

### Environmental management plan at construction phase

There are given environmental mitigation measures for construction phase

Title	Potential Impact/ issue	Mitigation measure	Duty / Responsible person	Comments about realization status
Air Quality	Open burning of waste materials	The Contractor shall ensure no open burning of waste or other materials will occur on the site without permission of the Engineer.	<ul style="list-style-type: none"> <li>Contractor to implement mitigation.</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor implements</li> <li>Engineer monitors</li> </ul>
	Fuel Emissions	Contractor shall ensure that no furnaces, boilers or other similar plant or equipment using any fuel that may produce air pollutants will be installed without prior written consent of the Engineer.	<ul style="list-style-type: none"> <li>Contractor to implement mitigation.</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor implements</li> <li>Engineer monitors</li> </ul>
	Exhaust emissions from the operation of construction machinery	<p>The Contractor shall ensure construction machinery shall be maintained to a good condition and fitted with pollution control devices. The equipment (including the pollution control devices) will be checked at regular intervals by the Engineer to ensure they are maintained in working order and the checks will be recorded by the Contractor and Engineer as a part of environmental monitoring. In addition, the Contractor shall:</p> <ul style="list-style-type: none"> <li>Discouraging of the idling of engines;</li> <li>Prohibit of the use of equipment and machinery that causes excessive pollution (i.e. visible smoke) at project work sites;</li> <li>Ensure material stockpiles being located in sheltered areas and be covered with tarpaulins or other such suitable covering to prevent material becoming airborne.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor to implement mitigation.</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor ensures a maintenance in good condition. But machineries are not equipped with control devices.</li> </ul>
	Fugitive emissions from quarries and asphalt plants.	The Contractor shall ensure that conveyor belts at ancillary facilities (e.g. quarries) shall be fitted with wind-boards, and conveyor transfer points and hopper discharge areas shall be enclosed to minimize dust emission. All conveyors carrying materials that have the potential to create dust shall be totally enclosed and fitted with belt cleaners.	<ul style="list-style-type: none"> <li>Contractor to implement mitigation</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor implements, plant is a new, it has all preventive measures and units to reduce environmental impacts.</li> </ul>

	Dust generated from bypass roads, unpaved roads, exposed soils and material stockpiles.	<p>The Contractor shall ensure that the following dust suppression measures shall be instituted:</p> <ul style="list-style-type: none"> <li>• All trucks used for transporting materials to and from the site will be covered with canvas tarpaulins, or other acceptable type cover (which shall be properly secured) to prevent debris and/or materials from falling from or being blown off the vehicle(s);</li> <li>• Areas of reclamation shall be completed, including final compaction, as quickly as possible consistent with good practice to limit the creation of wind blown dust.</li> <li>• Hard surfaces will be required in areas with regular movements of vehicles; and</li> <li>• Effective use of water sprays will be implemented (e.g., all roads within the construction areas of the Site shall be sprayed at least twice every day, and more if necessary to control dust to the satisfaction of the Engineer).</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor is used canvas partly</li> <li>• Water spray is in regularly process</li> </ul>
<b>Soils</b>	Erosion	<p>The Contractor will be responsible for ensuing:</p> <ul style="list-style-type: none"> <li>• Material that is less susceptible to erosion will be selected for placement around bridges and culverts.</li> <li>• Re-vegetation of exposed areas including; (i) selection of fast growing and grazing resistant species of local flora; (ii) immediate re-vegetation of all slopes and embankments if not covered with gabion baskets; (iii) placement of fiber mats to encourage vegetation growth.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Bridge construction has not started</li> </ul>
	Contamination Due to Spills or Hazardous Materials	<p>The Contractor shall ensure that:</p> <ul style="list-style-type: none"> <li>• All fuel and chemical storage (if any) shall be sited on an impervious base within a bund and secured by fencing. The storage area shall be located away from any watercourse or wetlands. The base and bund walls shall be impermeable and of sufficient capacity to contain 110 % of the volume of tanks.</li> <li>• The construction camp maintenance yard shall be constructed on impervious hardstanding with adequate drainage to collect spills, there shall be no vehicle maintenance activities on open ground.</li> <li>• Filling and refueling shall be strictly controlled and subject to formal procedures. Drip pans shall be placed under all filling and fueling areas. Waste oils shall be stored and disposed of by a licensed contractor.</li> <li>• All valves and trigger guns shall be resistant to unauthorized</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Repair area is in construction and arrangement process</li> </ul>

		<p>interference and vandalism and be turned off and securely locked when not in use.</p> <ul style="list-style-type: none"> <li>• The contents of any tank or drum shall be clearly marked. Measures shall be taken to ensure that no contaminated discharges enter any soils.</li> <li>• Full or used bitumen drums or containers shall not be stored on open ground. They shall only be stored on impervious hardstanding.</li> <li>• Areas using bitumen shall be constructed on impervious hardstanding to prevent seepage of oils into the soils.</li> </ul>		
<b>Hydrology</b>	Drainage and Flooding	<p>The Contractor shall ensure implementation of the following conditions:</p> <ul style="list-style-type: none"> <li>• During the construction phase the Contractor is required to construct, maintain, remove and reinstate as necessary temporary drainage works and take all other precautions necessary for the avoidance of damage by flooding and silt washed down from the work sites.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>
	Water Supply	<p>The Contractor shall ensure that during construction only legally permitted water resources are used for technical water supply. The Contractor shall also ensure that potable water for construction camps and workers meets the necessary water quality standards.</p>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>
	Bridge Construction	<p>The Contractor shall consult with the local TEPOs and Regional Territorial Fishery Inspections to establish the fish spawning period in relation to the bridge construction works. The Contractor shall ensure that all works are undertaken in periods least likely to affect the fish spawning period. In addition, concerning bridge construction works, the Contractor shall:</p> <ul style="list-style-type: none"> <li>• Divert the water flow near the bridge piers.</li> <li>• Cofferdams, silt fences, sediment barriers or other devices will be provided to prevent migration of silt during construction within streams.</li> <li>• Dewatering and cleaning of cofferdams will be performed to prevent siltation by pumping from cofferdams to a settling basin or a containment unit.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation.</li> <li>• Contractor to consult with TEPO and with Regional Territorial Fishery Inspection.</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Has not been started</li> </ul>

	Borrow Pits	<p>The Contractor shall ensure that:</p> <ul style="list-style-type: none"> <li>• Pit restoration will follow the completion of works in full compliance all applicable standards and specifications.</li> <li>• Arrangements for opening and using material borrow pits will contain enforceable provisions.</li> <li>• The excavation and restoration of the borrow areas and their surroundings, in an environmentally sound manner to the satisfaction of the Engineer will be required before final acceptance and payment under the conditions of contracts.</li> <li>• Additional borrow pits will not be opened without the restoration of those areas no longer in use.</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• In process</li> </ul>
<b>Flora and Fauna</b>	Loss of flora	<p>The Contractor shall ensure that all animal passes are constructed to the correct size and locations. Tentative locations for the cattle passes include:</p> <ul style="list-style-type: none"> <li>• Shubarkuduk</li> <li>• Nogaity</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to approve final locations.</li> </ul>	<ul style="list-style-type: none"> <li>• Has not been started</li> </ul>
	Impacts to Important Bird Area (IBA)	Construction camp or construction facility, such as asphalt plant, shall not be constructed within 5 km from IBA	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to approve final locations.</li> </ul>	<ul style="list-style-type: none"> <li>• There is no IBA on site</li> <li>• Monitors</li> </ul>
<b>Land Use</b>	Construction Camps and other ancillary facilities	The Contractor will be required to coordinate all construction camp activities with neighboring land uses. The Contractor shall also be responsible to maintain and cleanup campsites and respect the rights of local landowners. If located outside the right of way, written agreements with local landowners for temporary use of the property will be required and sites must be restored to a level acceptable to the owner within a predetermined time period.	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>
<b>Transport and Infrastructure</b>	Road closures, bypass road and blocking of access roads	<p>The Contractor shall ensure that:</p> <ul style="list-style-type: none"> <li>• He shall be responsible for provision of all road diversion signs and ensure that bypass roads do not impact negatively upon private lands.</li> <li>• All bypass roads shall be agreed by the Engineer.</li> <li>• The Contractor shall be responsible for ensuring that all access</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>

		roads are kept open during Project works for at least 50% of the day during construction works and 100% of the time after construction works are completed for the day.		
	Electrical Systems and Gas pipes	During construction the Contractor shall ensure that all power lines and gas pipes be kept operational, this may include the provision of temporary transmission lines while existing poles and lines are moved.	<ul style="list-style-type: none"> <li>Contractor to implement mitigation</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Implements</li> <li>Monitors</li> </ul>
<b>Waste and Spoil</b>	Spoil	At any circumstances the Contractor shall not dump excess materials on private lands without permission of the owner and approval from the Engineer. In addition, excess spoil shall not be dumped or pushed into any river at any location.	<ul style="list-style-type: none"> <li>Contractor to implement mitigation.</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Implements</li> <li>Monitors</li> </ul>
	Inert Solid and Liquid waste	<p>The Contractor shall be responsible for the following:</p> <ul style="list-style-type: none"> <li>Provide refuse containers at each worksite;</li> <li>Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all wastes before transportation and final disposal;</li> <li>Train and instruct all personnel in waste management practices and procedures as a component of environmental induction process, and</li> <li>Collect and transport non-hazardous wastes to all approved disposal sites. The sites for waste disposal shall be agreed with the local municipal authorities and TEPO. A specialized company may be contracted, if available, to ensure collection of domestic and general waste from camps and temporary storage areas and transportation to landfills approved and licensed by TEPO.</li> </ul>	<ul style="list-style-type: none"> <li>Contractor to implement mitigation.</li> <li>TEPO to approve any waste disposal site.</li> <li>Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>Implements</li> <li>Monitors</li> </ul>
	Asphalt	The project designers should assess the feasibility of re-using the existing asphalt for other projects in the local area.	<ul style="list-style-type: none"> <li>Project Designers to assess feasibility in Design and estimate document (DED).</li> <li>Contractor to implement any recommendations included in DED for re-use of asphalt.</li> </ul>	<ul style="list-style-type: none"> <li>In process</li> </ul>

	Hazardous Waste	Management, handling and storage protocols for hazardous waste will be outlined in the Contractor's Waste Management Plan. Disposal locations of hazardous wastes should be agreed with TEPO. The Contractor shall collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at the temporary storage sites and further at the locations approved by TEPO or pass it to the licensed operator having environmental permit on operation of the hazardous wastes.	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation.</li> <li>• TEPO to approve any waste disposal site.</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>
<b>Health and Safety</b>	Health and Safety of workers	<p>The Contractor shall be responsible for provision of:</p> <ul style="list-style-type: none"> <li>• Safety Training Program. A Safety Training Program is required and shall consist of an Initial Safety Induction Course. All workers shall be required to attend at the Initial safety induction course within their first week on Site and Periodic Safety Training Courses.</li> <li>• Safety Meetings. Regular safety meetings will be conducted on a monthly basis and shall require attendance by the safety representatives of Subcontractors unless otherwise agreed by the Engineer.</li> <li>• Safety Inspections. The Contractor shall regularly inspect, check and maintain all safety equipment, scaffolds, guardrails, working platforms, hoists, ladders and other means of access, lifting, lighting, signing and guarding equipment. Lights and signs shall be kept clear of obstructions and legible to read. Equipment, which is damaged, dirty, incorrectly positioned or not in working order, shall be repaired or replaced immediately.</li> <li>• Safety Equipment and Clothing. Safety equipment and protective clothing are required to be available on the site at all material times and measures for the effective enforcement of proper utilization and necessary replacement of such equipment and clothing, and all construction machinery and equipment used on or around the site shall be fitted with appropriate safety devices.</li> <li>• First Aid facilities. A fully equipped first aid base shall be climatically controlled to maintain the temperature of the inside of the building at +20°C. Arrangements for emergency medical services shall be made to the satisfaction of the Engineer.</li> </ul> <p>The Contractor shall coordinate with local public health officials and</p>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Programs and plans have been prepared by the Contractor</li> <li>• Engineer has been approved</li> <li>• Control on progress</li> </ul>



		shall reach a documented agreement with regard to the use of hospitals and other community facilities.		
	Health and Safety of Subcontractor	All subcontractors will be supplied with copies of SSEMP. Provisions will be incorporated into all subcontracts to ensure the compliance with SSEMP at all tiers of the subcontracting. All subcontractors will be required to appoint a safety representative who shall be available on the site throughout the operational period of the respective subcontract unless the Engineer's approval to the contrary is given in writing. In the event of the Engineer's approval being given, the Engineer, without prejudice to their other duties and responsibilities, shall ensure, as far as is practically possible, that employees of subcontractors of all tiers are conversant with appropriate parts of SSEMP.	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors and subcontractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>
	HIV / AIDS	The Contractor shall subcontract with an Approved Service Provider to provide an HIV Awareness Program to the Contractor's Personnel and the Local Community within two weeks after the Contractor's Personnel arrive at site and to repeat the HIV Awareness Program at intervals not exceeding four months.	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation.</li> <li>• Service Provider to implement training.</li> <li>• Engineer to review program.</li> </ul>	<ul style="list-style-type: none"> <li>• In process</li> </ul>
<b>Historical and archeological areas</b>	Impacts to Historical and archeological areas	<p>To avoid potential adverse impacts to historic and cultural resources, the Contractor shall:</p> <ul style="list-style-type: none"> <li>• In the event of any chance finds during the construction works procedures shall apply that are governed by Kazakhstan legislation and guidelines, specifically by paragraph 2 of Article 39 of the "Law on Protection and Use of Historical and Cultural Heritage in the Republic of Kazakhstan" which stipulates: <i>"In case of detection of objects of historical, scientific, artistic, and other cultural value, physical and legal persons are obliged to suspend the further conduct of the work and inform the authorized body."</i></li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>
<b>Noise</b>	Construction Noise and Vibration	<p>The Contractor shall ensure provision of the following:</p> <ul style="list-style-type: none"> <li>• Source Controls, i.e., requirements that all exhaust systems will be maintained in good working order; properly designed engine enclosures and intake silencers will be employed; and regular equipment maintenance will be undertaken;</li> <li>• Site Controls, i.e., requirements that stationary equipment will be placed as far from sensitive land uses as practical; selected to</li> </ul>	<ul style="list-style-type: none"> <li>• Contractor to implement mitigation</li> <li>• Engineer to routinely monitor Contractors activities.</li> </ul>	<ul style="list-style-type: none"> <li>• Implements</li> <li>• Monitors</li> </ul>

		<p>minimize objectionable noise impacts; and provided with shielding mechanisms where possible;</p> <ul style="list-style-type: none"><li>• Work near Sensitive areas shall be limited to short term activities;</li><li>• Time and Activity Constraints, i.e., operations will be scheduled to coincide with periods when people would least likely be affected; work hours and work days will be limited to less noise-sensitive times. Hours-of-work will be approved by the Engineer having due regard for possible noise disturbance to the local residents or other activities. Construction activities will be strictly prohibited between 10 PM and 6 AM in the populated areas. When operating close to sensitive areas such as residential, nursery, or medical facilities, the Contractor's hours of working shall be limited to 8 AM to 6 PM;</li><li>• Community Awareness, i.e., public notification of construction operations will incorporate noise considerations; methods to handle complaints will be specified. Sensitive areas will be avoided as possible (i.e., crushers operators, etc.). Disposal sites and haul routes will be coordinated with local authorities.</li></ul>		
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**Attachment 5**

**Environmental monitoring checklist**

Site inspection checklist		
<b>Site visiting date:</b> 3.06.2018  <b>Time:</b> 10:00	<b>Engineer's Representative:</b> Environmental specialist Imbarova S.E.  <b>Contractor's Representative:</b>	Engineer's ref. No.       Contractor's ref. No.
Weather condition: +23 C° wind speed 3-4 m/s, clearly		
Work in progress:	Bypass road construction, milling of existing bituminous pavement layers on Lot 7 site, soil compaction, asphalt concrete pavement construction, artificial structures construction	
Environmental problems	Possible reasons	Proposed mitigations
Increased dust content on road	Hot weather condition and top soil peculiarity, also possible insufficient road watering	To increase round number of water trucks
Low quality of bypass road	Lack of work team for bypass road work or low control by the Contractor	To increase round number of water trucks and to strengthen work control
There is a special machinery failure, which leads to increased exhaust emissions	Low control over technical condition of special machinery or lack of time and specialists for control	To strengthen control over special machinery condition
Removed old culverts have not been moved for disposal	Collection all structures from site for subsequent removal from whole site	Storage on safety distance from construction works, also from bypass road
Environmental audit carried out by:  Imbarova S.E.		Contractor's Representative:

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
Contractor's labour camp						
1	Septic tanks installed and are cleaned according to approved procedures	<input type="checkbox"/>		<input type="checkbox"/>		Septic tanks are cleaned as they are filled, pumping and disposal do according to level monitoring
2	All wastewater is directed to septic tanks or to reservoirs for technical water	<input type="checkbox"/>		<input type="checkbox"/>		Respected
3	All hazardous liquids are stored on designated area on an impervious base with runoff collection	✓		<input type="checkbox"/>		To organize special concrete area, to install fences
4	Solid hazardous materials are stored on designated safe places at work areas	<input type="checkbox"/>		<input type="checkbox"/>		To organize special concrete area, to install fences for storage hazardous materials in accordance with the requirements
5	Runoff is stored in drainage system and disposed by the Contractor	<input type="checkbox"/>		<input type="checkbox"/>		An agreement for waste disposal and utilization was conducted
6	All vehicles, entering to and outgoing from labour camp, are controlled	<input type="checkbox"/>		<input type="checkbox"/>		Repair and maintenance service mechanics carry out pre-shift checking technical condition of vehicles
7	Local communities and organizations are informed with construction schedule and any noisy activities on a regular basis through workers and other activities					There is no village in the near place
8	Open containers for material storage are covered with canopies		<input type="checkbox"/>	<input type="checkbox"/>		Containers, intended for used oil, located on construction site territory, must be covered with a canopy

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
9	Open burning is prohibited	<input type="checkbox"/>				
10	Fire-fighting equipment <ul style="list-style-type: none"> <li>Sand bucket and shovel</li> <li>Foam fire extinguisher</li> <li>Fire blanket in the canteen</li> </ul>	<input type="checkbox"/>		<input type="checkbox"/>		Fire-fighting equipment is ready
11	Entering other people to camp is prohibited by installing fencing and organizing security	<input type="checkbox"/>		<input type="checkbox"/>		Organized checkpoint, warning signs are installed.
12	All employees provided with personal protective equipment (PPE)	<input type="checkbox"/>		<input type="checkbox"/>		
13	Smoking is prohibited except smoking places	<input type="checkbox"/>		<input type="checkbox"/>		There are smoking places in front of offices on camp territory
14	Relevant road signs and warning boards with inscriptions on site and in dangerous areas	<input type="checkbox"/>		<input type="checkbox"/>		According to CSC Road Safety Engineer's instructions and Road Safety Plans
15	Drinking water is provided for all employees from commercial and licensed sources	<input type="checkbox"/>				Organized continuous water supply
16	Special clothes of all employees are washed every day	<input type="checkbox"/>		<input type="checkbox"/>		Special clothes of all employees are washed according to Sanitary Rules and Regulations
17	All employees are provided with three time meal per day	<input type="checkbox"/>				It is necessary to improve nutrition on place, which is serviced by local individual entrepreneur
18	Canteen with sanitary and hygienic conditions on camp			<input type="checkbox"/>		
19	Medical point and first aid kit on camp and on work areas	<input type="checkbox"/>		<input type="checkbox"/>		First aid kits are replenished as necessary. There is a

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
						registry book for health care request
20	All employees under control of camp doctor, and provide appropriate services and monthly health checks	<input type="checkbox"/>		<input type="checkbox"/>		There is organized daily control of employees and is a registry log for daily health check (sobriety test, pressure and etc.) in medical point.
21	All territory are clean, there is no any waste, except special places for waste disposal	<input type="checkbox"/>		<input type="checkbox"/>		Camp territory cleans every day from SHW and waste is stored only on special place.
22	Provision of rest area on camp	<input type="checkbox"/>				There is a summer arbor in front of office
23	Child labour (younger than 15 year)	<input type="checkbox"/>				-
<b>Plant area</b>						
1	Bitumen and chemical material storage is located away from watercourse and bund wall, it is an impenetrable and capable to contain 110 % of tank volume			✓		Under construction
2	Liquid waste from Asphalt plant is stored in designated tank and emptied by specialized suction vehicle Liman ≤MTTSTH≥			✓		Under construction
3	Bitumen is stored in designated area and bended in concrete to 110% volume					Delivery from sources
4	Solid waste from Asphalt plant is stored in designated area and disposed in accordance to approved procedures			✓		In process
5	The plant area is graveled for reduction of dust emission			✓		In process
6	The plant area is watered for			✓		Additional planting is

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
	reduction of dust emission					carried out because there is a windy and a sand on site
7	Plant can not discharge effluent water to any watercourse; impervious concrete basins will be constructed for receiving such waters			✓		In process
8	All employees at Asphalt concrete and Crusher Plants are supplied with dust masks			✓		These measures are included in Health and Safety plan
9	All employees at Asphalt concrete and Crusher Plants are wearing their dust masks			✓		There is working assembly team
10	All sands and fractions for concrete and asphalt are stored on wet or covered place			✓		These measures are included in the plan
11	Asphalt concrete and Crusher plants are provided with firefighting equipment			✓		It is included in the plan. At the moment assembly works on progress
12	Plant or equipment causing high vibration levels are in appropriate design, well maintained and correctly operated			✓		Measures are given in Noise and vibration management plan
13	Fencing is erected to protect the river / canal					There is not
<b>Fuel station</b>						
1	Oil filling will be strictly controlled and is permitted only at the fuel filling station and on workshop area			✓		Measures are given in relevant plans
2	Fuel tank storage area is fenced and it an impervious and roof is closed		✓			In process
3	Fuel station, which provided with firefighting equipment, is checked			✓		Measures are given in relevant plans

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
	weekly					
4	There is a warning signs at fuel station			✓		Measures are given in relevant plans
5	Fuel station provided with wastebasket			✓		In ordering process
<b>Contractor's Workshop and Car Wash</b>						
1	Liquid hazardous materials are stored in designated area at the workshop	<input type="checkbox"/>		<input type="checkbox"/>		It is necessary to organize special concreted areas for storage of hazardous materials and to install a fence
2	Solid hazardous materials are stored in designated area at the workshop	<input type="checkbox"/>		<input type="checkbox"/>		It is necessary to organize special concreted areas for storage of hazardous materials and to install a fence
3	There are containers for used oils and hydraulic liquids		✓	<input type="checkbox"/>		Delivery is expecting
4	Used oil products are collected in concrete tank with a volume up to 110% and tank is emptied according to approved procedures					Works are not in process, at the moment equipment installation on progress
5	Workshop is provided with drainage system	<input type="checkbox"/>				
6	Every vehicle is inspected and maintained on a regular basis	<input type="checkbox"/>		<input type="checkbox"/>		To strengthen daily control of special machinery
7	All construction vehicles meet Euro standards and are fitted with modern noise suppression equipment		<input type="checkbox"/>	<input type="checkbox"/>		It is necessary to strengthen vehicle conformity control of rented vehicles from local public
8	Silencing equipment of all vehicles is maintained and checked		<input type="checkbox"/>		<input type="checkbox"/>	Environmental specialist needs to



No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
	accordance with approved procedures					make a monitoring schedule for these works
9	All workshop workers are provided with welding equipment and PPE	<input type="checkbox"/>		<input type="checkbox"/>		
10	All technical water is collected in concrete tank and emptied according to approved procedures		<input type="checkbox"/>	<input type="checkbox"/>		There is tank
<b>Project Road</b>						
1	All roads, where construction works on progress, are watered by water trucks	<input type="checkbox"/>		<input type="checkbox"/>		To increase watering time and water truck number, special control of sites near villages
2	There are provided flags for passage of cattle, sheep and other animals on appropriate places of the project road		<input type="checkbox"/>		<input type="checkbox"/>	It is recommended to install warning signs on frequently used areas for cattle pass
3	Culvert and bridge construction areas are provided with safety ribbons and wringing signs		<input type="checkbox"/>		<input type="checkbox"/>	
4	Fencing and checkpoint are installed at all work areas where necessary		✓	✓		
5	Waste storage for any kind as well as machinery or vehicles parking is not permitted within a distance of 100m of any stream (including drainage or irrigation facilities)	<input type="checkbox"/>		✓		Respected
6	Adequate road signs and warning notices are provided on work sites and dangerous areas	<input type="checkbox"/>		<input type="checkbox"/>		According to Road Safety plan
7	Construction vehicle and plants are maintained properly to reduce gas emissions	<input type="checkbox"/>		<input type="checkbox"/>		To strengthen special machinery control
8	Noise control measures at sensitive sites	<input type="checkbox"/>		<input type="checkbox"/>		

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
Borrow pits						
1	Temporary drainage is provided at borrow pits and quarries		✓	✓		
2	Construction work is stopped between 22.00 and 6.00 hours within 200m of the nearest habitation		✓	✓		There is no any village, but they have plan for night workers
3	Crushed stone fractions are obtained only from approved borrow pits		✓	✓		-
4	Extraction of crushed stone fraction is carried out on 100m from a river or watercourse		✓	✓		-
5	Stockpiles do not exceed 3m in height		✓	✓		-
6	All vehicles with an open body are used for transportation of materials with dust possibility, designed for these purposes with a well-chosen convertible body	✓		✓		According to Environmental, Health and Safety, Road Safety plans
7	During construction works all noise volume is restricted according to the national standards	✓		✓		
8	Materials with dust possibility are not loaded higher than convertible body level and covered with clean tarpaulin	✓		✓		
9	All vehicles, equipment and plant meet Euro standards for exhaust emissions		✓	✓		Mechanic will strengthen rented vehicles control
10	All temporary acquired land is rehabilitated		✓	✓		After construction work completion in accordance with remediation plan
11	All material residues and contaminated sites are collected and disposed accordance with	✓		✓		It is necessary to strengthen control by the environmental

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
	approved procedures					specialist
12	Watering is provided during material delivery and processing	✓		✓		Environmental specialist control
13	Any adjacent areas are damaged due to spoil ground, restored to its original state		✓	✓		Works have not been started
14	River banks are protected from materials or temporary contractor stockpiles		✓			There is no a river and water reservoir
15	Nuisances or disturbances, arising from construction works, are controlled with permissible level according to standards	✓		✓		An agreement for in-process control was concluded with licensed company
16	Access roads to borrow pits, borrow pits, quarries and traffic operations are maintained by approved standards	✓		✓		According to Borrow pit management plan
17	Discharging and diverting water, avoiding flooding or damaging to other works or service causing erosion	✓		✓		According to Borrow pit management plan
<b>Flora and Fauna</b>						
1	Trees and shrubs outside of construction site, but on road reserve are generally preserved from damages					There are no trees on construction site territory
2	Ancient trees have not cut down during construction works					There are no ancient trees on construction site territory
3	Cutting down has not taken place without the prior permission of relevant local authorities					Cutting down of trees is not required
4	Trees or shrubs felled or removed only if they interfere to necessary temporary or permanent work					Trees and shrubs don't interfere to construction works, so cutting down is not required

No	Environmental protection measures	Executed		In process		Comments
		Yes	No	Yes	No	
5	Construction works are stopped on bridge sites during spawning seasons (indicate yes or no to construction activities on going, indicate date)		<input type="checkbox"/>			Bridge construction does not affect to cultivation and harvesting, because they are located on far places
6	Construction works on rivers take place only during period of low flow to minimize pollution	<input type="checkbox"/>				There is no a river on site

**Attachment 6**

**Project photo**



**Engineer's office on base camp, km 510**



**Asphalt concrete plant construction km 510**





Object passport on km 510



Meeting with the representatives of RSE "Atyrauzhollaboratory" and the Contractors  
of Lots 4, 5, 6 and 7

Dust control on km 487



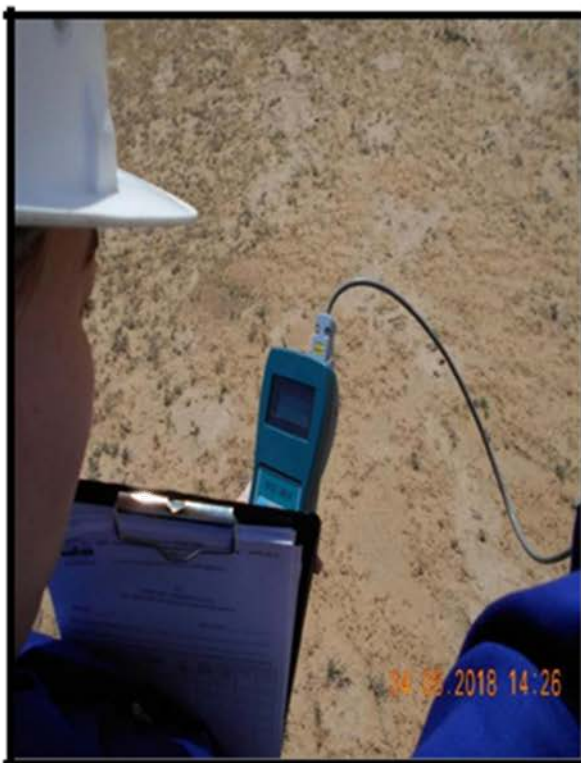
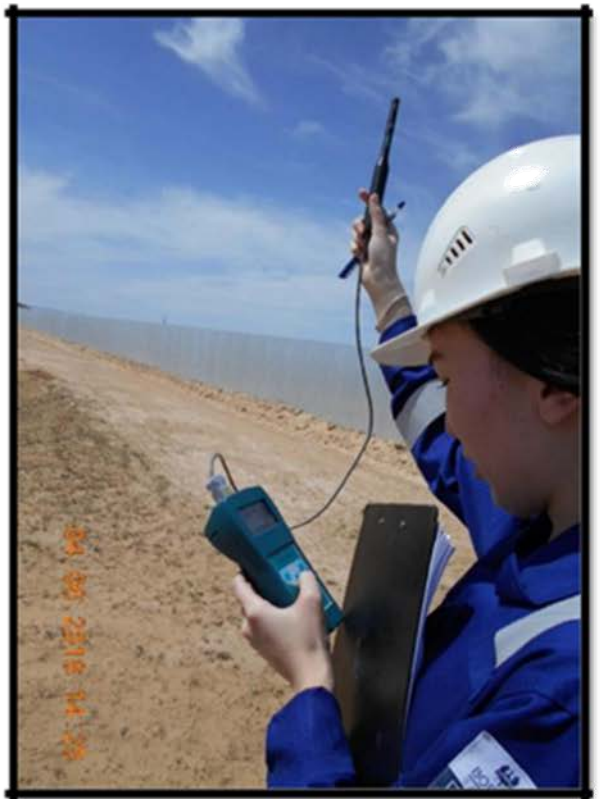


Measurement of atmospheric air pollution on ACP km 510





**Measurement of radiation background, noise and vibration at ACP km 510**





**Cutting of shoulder and slope, replacement on 20 meters at km 491**



**Removal and taking out culverts of artificial structures PK 34+60**