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Semi-annual Environmental Report  
From July 1 to December 31 2018

Kyrgyz Republic:

CAREC Corridor 3 Improvement Project (Bishkek- Osh  
Road), Phase 4

Financed by the Asian Development Bank

Prepared by:

**EPTISA Servicios De Ingeniería S.L. Eptisa Muhendislik and RAM Engineering**

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## Abbreviations

ADB	-	Asian Development Bank
CAREC	-	Organization of Central Asian Regional Economic Cooperation
CSC	-	Construction Supervision Consultant
EMP	-	Environmental Management Plan
IPIG	-	Investment Project Implementation Group
IFC	-	International Finance Corporation
km	-	kilometer
KR	-	Kyrgyz Republic
MPC	-	Maximum permissible concentration
MPL	-	Maximum permissible level
MoTR	-	Ministry of Transport and Roads of the Kyrgyz Republic
MoF	-	Ministry of Finance of the Kyrgyz Republic
SAEPF	-	State Agency for Environmental Protection and Forestry under the Government of the Kyrgyz Republic
SIETS	-	State Inspectorate for Environmental and Technical Safety under the Government of the Kyrgyz Republic
DDPTSSSES	-	Department of Disease Prevention and State Sanitary-Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic
TA	-	Technical Assistance
TS	-	Technical Specification
CEMWP	-	Construction Environmental Management Work Plan
AP	-	Asphalt Plant
SCP	-	Stone crushing plant
CBP	-	Concrete batch plant

## 1. INTRODUCTION

### 1.1 Preamble

1. Roads are essential for the Kyrgyz Republic, in this regard, the Government of the Kyrgyz Republic appealed to Asian Development Bank (ADB) to assist in funding for the realization of CAREC Corridor 3 (Bishkek-Osh road) Improvement project, Phase 4.
2. This report is the third "semi-annual" environmental monitoring report, covering the period from July to December 2018, within the ongoing CAREC Corridor 3 (Bishkek-Osh road) Improvement Project, Phase 4, which contains environmental issues, mitigation and monitoring measures performed by the Contractor and reviewed by the EPTISA Construction Supervision Consultant. During the reporting period, the road rehabilitation works included reconstruction of five bridges, replacement of culverts, removal of old asphalt, preparation of new road lanes in the eastern and western directions, marking and tree cutting at sections 2.1, 2.3, 2.4, as well as the launch and operation of asphalt and concrete plant, stone crushing plant for aggregate processing.
3. The report contains reporting materials on the progress of work and changes related to the prevention of environmental impacts. The results are based on numerous site visits, conducted by a local environmental specialist from July to December 2018, wherein the focus was on monitoring of compliance with the environmental and safety requirements during execution of earthworks, tree cutting, construction of bridges and culverts, noise impact, traffic management.

### 1.2 Headline Information

4. The Bishkek-Osh road represents about one fourth of international road corridor network in the Kyrgyz Republic, and links the country to Kazakhstan in the north, Uzbekistan and Tajikistan in the south, and the People's Republic of China in the southeast. The road crosses four of the seven regions of the country and serves about 2 million people. It is the only direct surface link between the southern and northern parts of the country making it crucial for maintaining the country's social, political, and economic integrity. The Bishkek-Osh road forms part of the Central Asia Regional Economic Cooperation (CAREC) Corridor 3, which runs from the west and south Siberian region of the Russian Federation through Kazakhstan, Kyrgyz Republic, Tajikistan, Afghanistan, and Uzbekistan to the Middle East and South Asia.
5. The CAREC Corridor 3 (Bishkek-Osh road) Improvement project, Phase 4, (Bishkek-Kara-Balta section, 45.1 km long) aims to improve connectivity and market access in the Kyrgyz Republic. The project outputs will be efficient movement of freight and passenger traffic along the Bishkek-Osh road, improving the safety of both road users and pedestrians, as well as minimizing the environmental impact of the road in terms of noise impact from passing traffic by updating asphalt pavement.



Figure 1 Bishkek-Kara-Balta road section, of the Bishkek-Osh road

## 2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

### 2.1 Project Description

#### 2.1.1 Location of the project site and basic design

6. The project will improve connectivity between north and south in the Kyrgyz Republic. The project output will be efficient movement of freight and passenger traffic along the Bishkek-Osh road. According to the classification of the ADB Safeguard Policy Statement, the project classified as B category. Improvement of the Bishkek-Osh road section (Bishkek-Kara-Balta section) will connect important, but densely populated areas, what will ultimately provide better access to services, goods and markets; improve regional connectivity and increase road safety for all road users in general.
7. The project aims to rehabilitate 45.1 km of Bishkek-Osh road. The project site located between Bishkek and Kara-Balta cities and is located between 15.9 km and 61 km of the Bishkek-Osh road. The existing pavement is asphalt concrete and the paved width is between 15 and 20 m. Shoulder width ranges from 1.5 to 3.0 m. The project road section proceeds westward from km 15.9 to the outskirts of Kara Balta city, and has four, then three lanes, which at km 24 reduced to two lanes. The width of the road pavement of the two-lane section is 8-12 m, with shoulders another 1.5-3.0 m. At km 61, at the roundabout, the Bishkek-Osh road turns to south, and marks the end of the project.
8. The terrain across the site can be classified as a foothill plain with a height of 750-800 m above sea level and steadily gaining altitude southward toward the Tian Shan mountain range.
9. The road reconstruction will meet the laws and norms of the Kyrgyz Republic. This reconstruction will bring the geometric parameters of the road to the required category, becoming a 4-lane highway for the entire length to Kara Balta, increasing the radii of curvatures in the plan and longitudinal profile.
10. In order to improve drainage system, the work includes reconstruction of the degraded culvert system and addition of new cross drainage structures. Existing bridges are being totally replaced. Finally, it will be constructed more the 64 km of sidewalks, 95 new above ground pedestrian crossings, 12 new signaled pedestrian crossings, and six underground pedestrian crossings.
11. Due to the serious resettlement issues and the need to address them before commencement of construction period, such a sequence of construction works was planned, where the works primarily covered those areas where there are no or there are minor resettlement issues.

Table 1 Road sections where the construction work was carried out in 2017

Sections No.	Start of the section, km	End of the section, km	Length of section, km
1-1	15.900	21.300	5.400
1-2	35.500	40.580	5.080
1-3	45,600	51,600	6.000
1-4	54.200	59.350	5.150



Table 2 Road sections where the construction work was carried out in 2018

<b>Sections No.</b>	<b>Start of the section, km</b>	<b>End of the section, km</b>	<b>Length of section, km</b>
2-1	21+300	35+500	14+200
2-2	40+580	45+600	5+020
2-3	51+600	54+200	2+600
2-4	59+350	60+926	1+576

12. The construction work will be carried out mainly within the existing road right-of-way, thus keeping environmental impacts to a minimum. The Project will involve a number of consequential activities such as development of borrow pits, operation of asphalt plants and aggregate crushing plants, arrangement of contractor's worker camps and storage sites, etc.
13. According to the Terms of Reference, the road pavement will be designed for an initial design life of 10 years with structural overlay options for 15 and 20 years of design life.

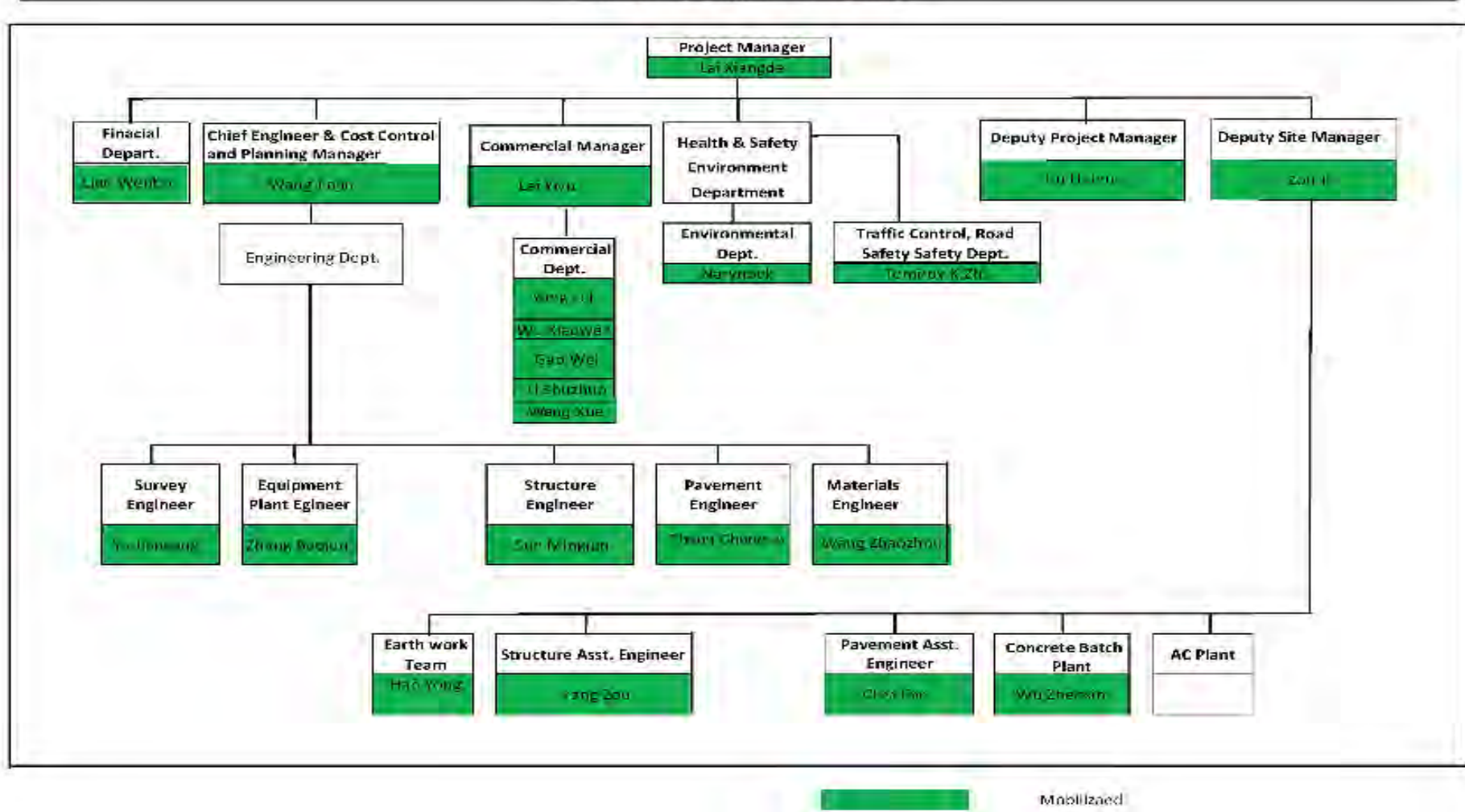
## 2.2 Project Contracts and Management

Table 3 Project Contracts and Management

<b>Project</b>	<b>Central Asia Regional Corridor 3 (Bishkek-Osh Road) Improvement Project Phase 4</b>
<b>Contractor</b>	<b>China Railway No.5 for Component 1 implementation</b>
<b>Road section:</b>	<b>15.9 km – 61 km, the overall length is 45.1</b>
<b>Donor:</b>	<b>Asian Development Bank.</b>
<b>Contract Sign Date:</b>	<b>28/03/2017</b>
<b>Executive Agency</b>	<b>Ministry of Transport and Roads of the Kyrgyz Republic</b>
<b>Notice to Commence</b>	<b>03/04/2017</b>
<b>Completion Date</b>	<b>April 02, 2020.</b>
<b>Time for Completion – Days</b>	<b>2 years 4 month</b>
<b>Extension of Time – Days</b>	<b>-</b>
<b>Defect Liability Period – Days</b>	<b>365</b>
<b>Contract Amount</b>	<b>USD 70,239,899.29</b>
<b>Minimum Amount of Interim Payment USD (3%)</b>	<b>USD 2,107,196.97</b>
<b>Total Amount of Advance Payment</b>	<b>Maximum 20% of the Accepted Contract Amount less Provisional Sums</b>
<b>Amount of Performance Security</b>	<b>%20 of Accepted Contract Price</b>
<b>Amount of Third Party Insurance</b>	<b>500,000 USD per occurrence with the number of occurrence unlimited</b>
<b>Periods for submission of insurance</b> a) evidence of Insurance b) relevant policies	<b>14 days</b> <b>14 days</b>
<b>Delay damages for the Works</b>	<b>0.05% of the Accepted Contract Amount for each lot, which is in delay, per day in USD</b>
<b>Maximum amount of delay damages</b>	<b>10% of the Accepted Contract Amount</b>
<b>Repayment Amortization of Advance payment</b>	<b>10%</b>
<b>Limit of Retention Money</b>	<b>10% of Accepted Contract Amount</b>
<b>Percentage of Retention</b>	<b>5% of Value of Works certified for Payment</b>

Figure 2 Project Organization Structure and Management

Contractor's Organization Chart



## 2.2.1 Main Organizations involved in the project

14. Relevant organizations involved in the project: the Ministry of Finance of the Kyrgyz Republic (MOF); the Ministry of Transport and Roads of the Kyrgyz Republic (MoTR); the Investment Projects Implementation Group (IPIG) under the MoTR; the State Agency for Environmental Protection and Forestry (SAEPF); the State Inspectorate for Environmental and Technical Safety under the Government of the Kyrgyz Republic (SIETP); the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance under the Ministry of Health of the Kyrgyz Republic (DDPSSSES).
1. MoTR is responsible for the development of the transport sector, and is the Executive Agency (EA) of the project. MoTR has overall responsibility for the planning, designing, implementation and monitoring of the project. IPIG works under the MoTR and implement the tasks assigned by MoTR.
  2. The Ministry of Finance of the Kyrgyz Republic is the authorized state body responsible for coordinating actions with ADB and other donors on external assistance issues.
  3. The state Agency for Environmental Protection and Forestry – the head environmental state agency responsible for the state policy in this field and coordinating the actions of other state bodies on these issues. Its functions as follow:
    - environmental policy development and implementation;
    - state ecological expertise;
    - issuance of environmental licenses;
    - ecological monitoring;
    - provision of environmental information services.
  4. The State Inspectorate for Environmental and Technical Safety works in accordance with the Law "On the procedure for conducting inspections of entrepreneurship entities". The State Inspectorate for Environmental and Technical Safety in the prescribed manner carries out supervision procedure on compliance with:
    - (ii) environmental legislation, established rules, limits and norms of environmental management, standards of emissions and discharges of pollutants and waste disposal in the environment;
    - (iii) industrial safety requirements during construction, expansion, reconstruction, technical re-equipment, operation, conservation and liquidation of hazardous production facilities;
    - (iv) the requirements of land legislation;
    - (v) safety requirements for operation of equipment and facilities for the storage and distribution of petroleum products and gases, cranes;
    - (vi) requirements of safe operation rules in construction, installation and maintenance of electrical networks and electrical equipment.
  5. Department of Disease Prevention and State Sanitary and Epidemiological Surveillance supervises the sanitary and epidemiological welfare of the population, the safety of goods, products, environmental objects and conditions, and the prevention of harmful impact of environmental factors on human health.

Table 4 Main organizations involved in the project and relating to Environmental Safeguards

No	Organization name	Role in project	Responsible person for the environmental safeguards	Contacts
1	ADB	Donor	Ana Paula Oliveira Das Neves Araujo	<a href="mailto:paraujo@adb.org">paraujo@adb.org</a>
2	ADB	ADB Consultant	Sultan Bakirov	<a href="mailto:Sbakirov.consultant@adb.org">Sbakirov.consultant@adb.org</a>
3	IPIG ADB	Executive agency	Asylbek Abdygulov	<a href="mailto:asylbeka@piumotc.kg">asylbeka@piumotc.kg</a>
4	Eptisa	Consultant	Tatiana Volkova	volkova_ti55@mail.ru
5	The limited liability company "China railway engineering group No. 5»	Contractor	Narynbek Myrsaliev	narynbek_m@mail.ru
6	LLC «Ishmer»	Subcontractor	-	
7	PE "Maksat"	Subcontractor	-	
8	Municipal Maintenance Depot	Subcontractor	-	

Table 5 Consultant's staff

<b>International Staff</b>	
Highway Engineer/Team Leader	Hakan Nemutlu
Pavement and Materials Engineer	Paolo Cocco
Bridge/Structural Engineer	Sabbir Siddique
Road Safety Specialist	Partha Mani Parajuli
Quality Assurance Engineer	Ruhi Eren Gurcay
Contract Specialist	Serdar Hakkaçirmaz
Social Development and Resettlement Specialist	Dragica Veselinovich
Environmental Specialist	Geza Teleki
PBM Consultant	Akli Ourad
Climate Change Specialist	Henrikus M. Bosch

<b>National Staff</b>	
Highway Engineer/Deputy Team Leader	Yzatbek Toktomambetov
Pavement and Materials Engineer	Abdykerim Kaparov
Bridge/Structural Engineer	Viktor Urlanpov
Hydraulic and Drainage Engineer	Vasily Chernyh
Road Safety Specialist	Sadryrallev Shalloobek
Quality Assurance Engineer	Sanjar Satybaldiev
Quantity Surveyor	Edil Shabdanov
Social Development and Resettlement Specialist	Azamat Omorbekov
Environmental Specialist	Tatiana Volkova
PBM Consultant	Nurbek Jumaliev

### 2.1.3 The characteristics of the road according to the specifications of the project

15. Design of the project meets standards of Technical Category 1-b (main urban arteries) with the following geometrical attributes:

- Number of lanes – 4 and 6
- Lane width – 3,5 - 3,75m;
- Carriageway width – 2x7,5;
- Shoulder width – 3,75m
- Carriageway shoulder breakpoint stabilization – 0,75m
- Axle design weight – 11,5 tones.

16. Over the entire length of the project area, the two layers of the asphalt-concrete pavement 14 cm thick will be laid, the upper one is 5 cm and the lower one is 9 cm thick, with underlying black crushed stone course 9 cm thick.

17. The RoW (Right of Way) width is from 50 to 60 meters. The Project provides for construction and repairing works for the following service facilities and the communications as well as work scope.

#### **Pavement Construction Quantities:**

- Wearing course 5cm thick – 46 692 m<sup>3</sup>;
- The same in junctions 5cm thick – 4 169 m<sup>3</sup>;
- Binder course 9cm thick – 84 046m<sup>3</sup>;
- The same on junctions 9cm thick – 7 505 m<sup>3</sup>;
- Black crushed stone 9cm thick – 86 906 m<sup>3</sup>;
- Base 15cm thick – 157 257m<sup>3</sup>;
- Sub-base 28cm thick – 448 920 m<sup>3</sup>;
- Asphalt-concrete course on sidewalks 4cm – 9 754 m<sup>3</sup>;

#### **In addition, it also includes:**

- Bridge repairs with widening– 6;
- Minor engineering structures – 548;
- For water diversion, reinforced-concrete chutes – 77661 linear meters;

- Intersections and junctions – 477;
- The project provides for parking lots next to market places – 4;
- Auto pavilions – 114;
- Sidewalks – 81 285 meters;

### **Road Safety Features:**

18. The Project provides for repair and construction of 7 existing underground pedestrian crossings: 4 existing underground crossings and 6 new underground pedestrian crossings;
- Marker posts – 515;
  - Metallic foot-walk guard rails – 3980 linear m;
  - Parapet guard rails – 1158;
  - Median railings – 14 887;
  - Retaining walls – 3669 linear m;
  - Street lights – at 26 intersections.

### **Reconstruction of the Utilities**

- VL-10kV – 43 poles
- VL-0,4kV – 166 poles
- Communication lines – 507 posts
- Lighting poles – 2190
- Gas casings – 650 linear m

### **Vegetation Planting**

19. Almost throughout the entire length of the project road there are trees planted in both sides, most of which will be cut down in course of road rehabilitation. As compensation, it is required planting of hardwood seedlings in the ratio of 1:2.

### **Land Acquisition and Resettlement Plan**

20. The project site passes through densely populated areas. The project provides for the demolition of commercial services, pavilions, billboards, service stations, gas stations, fences and houses that will be affected by the project, in the sections of road widening and sections of construction of new sidewalks. A Resettlement Plan was drawn up, based on which compensation was paid to 106 affected persons, including owners and users of land, business owners, tenants and employees.

## **2.3 Project Activities During Current Reporting Period**

21. During the reporting period from July to December 2018, road construction works were carried out at all road sections.

### **2.3.1 Construction work included:**

- earthworks - laying, removal and taking out of excess unsuitable soil, rolling and tamping of road side slopes. According to the direction of ADB, works on soil compaction were carried out without vibration;
- works on pavement laying, laying of sub-base course, asphalt laying;
- arrangement of parapets and reinforced concrete chutes;
- construction of bridges and culverts



Figure 4 Roadbed compaction



Figure 3 Removal and taking out of excess soil



Figure 5 Laying of new asphalt



22. In July, production of asphalt at the asphalt plant and asphalt laying at sections 1-1 and 1-3 has been started. At these sections asphalt was laid, road was temporary marked and traffic was allowed.

### 2.3.2 Construction of bridges and culverts

#### *The Bridge over Jelmysh River.*

23. During the construction of the bridge over Jelamysh river, bypass road was not built. The construction of the bridge did not affect the traffic. During the construction of the bridge, traffic is carried out on the main road. On the northern side of the bridge, construction was completed; the road is opened for traffic.

24. Construction of the bridge was carried out on the southern side of the road. In September, the construction of the bridge was completed. All construction waste, formed during the construction of the bridge, was removed.





Figure 6 Construction of the bridge over Jelamysh river

25. There was no water in Jelamysh River during the construction period.

*The Bridge over Sokuluk River*

26. During the construction of the bridge over Sokuluk river, bypass road was not built. The construction of the bridge did not affect the traffic. During the construction of the northern side of the bridge, traffic is carried out on the main road.



Figure 7 Construction of the bridge over Sokuluk River. Bentonite pit

27. In October, the construction of part of the bridge at the northern side of the road was completed. The northern part of the bridge is open for traffic. Works on construction of the southern part of the bridge is underway. Pedestrian crossing over the river is constructed at the southern side of the road.



Figure 8 Pedestrian crossing over Sokuluk River. Road on the northern side of the bridge

- 28. On the photo: pedestrian crossing over Sokuluk river and road constructed on the northern side of the bridge, where traffic is carried out.
- 29. After the completion the construction of the northern side of the bridge, traffic was opened along it. Construction of the southern side of the bridge has begun. The bridge is constructed on bore hole piles. Bentonite is used as boring mud. The water solution with bentonite, remaining after use is taken into a special pit located in the river bed. It is necessary to remove the used clay from the riverbed after the completion of boring operations and after dewatering to take out from the construction site to place (pit) specially designated by local administration.

*The Bridge over Ak-Suu River*

- 30. Subcontractor carries out the construction of the bridge at the left bank of the river. Method of construction - boring.



Figure 9 Construction of the bridge over Ak-Suu River on bore hole piles on the left bank

- 31. At the site, bypass road for traffic was constructed. Old bridge is dismantled. The Contractor carried out works at the right bank of the river. The bridge is constructed on bore hole piles. Bentonite is used as boring mud. The riverbed is blocked. Water diverted from the site where the construction works are underway. The bentonite pit is located directly in the river bed.





Figure 10 Construction of the bridge over Ak-Suu River on bore hole piles on the right bank

32. At the end of October, part of the Contractor's equipment was taken out, the clay pit waste in the riverbed cleared.

*The Bridge at KM 44 +641*

33. Construction of bridge at the south side of the road is finished. At this side of the bridge, traffic is open. Construction works are underway at the north side of the bridge. Currently, construction is suspended for the winter period.



Figure 11 Construction of the bridge at KM 44+641

*The Bridge over Jantay canal*

34. In October, construction of the bridge over Jantay canal was started. The bridge will be constructed in a rectangular tube, 6x2 meters in size.



Figure 12 Construction of the bridge over Jantay canal

35. The construction of the bridge was complicated by increased level of ground water.

### 2.3.3 Culverts

36. Works on dismantling of old and installation of new culverts were carried out at all road sections. Construction of culverts is finished at sections 1-1, 1-3. Construction works are underway in other road sections.

37. Watering machines were constantly presence at sites; water sprinkling of construction sites was regularly carried out.





Figure 13 Construction of culverts



Figure 14 Water sprinkling at work sites

#### 2.3.4 Borrow-pits

38. At the project road (Bishkek-Kara-Balta road section, km 15,9 – km 61) 6 plots were allocated for borrow-pits. The Contractor has obtained permits for the development of the borrow-pits from local authorities, the State Committee for Industry, Energy and Subsoil Use (SCIESU) and the State Agency for Environmental Protection and Forestry (SAEPF). The usage of 6 borrow-pits will be determined by MoTR and the Consultant.
39. Table 6 shows the main characteristics of 6 borrow-pits. Currently, the Contractor has received all the necessary documents / approvals for borrow-pits.



Table 6 Borrow-pits Description

No. of borrow-pit	Stock (M <sup>3</sup> )	Square (M <sup>2</sup> )	Distance from the road (km)
№1 «Jelamysh»	677 250	64 500	11
№2 «Sokuluk-1»	496 100	90 200	3,3
№3 «Sokuluk -2»	190 280	47 570	7,7
№4 «Ak-Suu -1»	303 800	86 800	2,5
№5 «Ak-Suu -2»	3.406 900	486 700	8,6
№6 «KaraBalta»	2.050 080	427 100	3,5

40. During the reporting period, at “Ak-Suu-2” and “Jelamysh” borrow-pits works on excavating, sifting and stockpiling of material in the spoil areas are carried out, and since September, the development of “Karabalta” borrow-pit has been started. The development of "Ak-Suu-1" borrow-pit was completed in 2017.

*Ak-Suu 2 Borrow-pit*

41. At section 1-4 works on leveling and preparation of new sites for production of sand and gravel mix were performed, also as necessary, the shipment of raw materials for the work of crushing plant and for stockpiling, was carried out. In November, the development of the borrow-pit at the right side of Ak-Suu River has been started.



Figure 15 Development of Ak-Suu 2 borrow-pit

*Jelamysh Borrow-pit*

42. From July to November, works on excavating, sifting and taking out of material from the spoil areas were carried out.

43. In November due to the completion of works on development of Jelamysh borrow-pit, a letter was sent to the Contractor, stating that the Contractor should draw-up a reclamation design for disturbed lands of the borrow-pit. After receiving all necessary approvals, it is necessary to perform reclamation works at borrow-pit, according to the design.



Figure 16 Development of Jelamysh borrow-pit

#### *Kara-Balta borrow-pit*

44. The development of Kara-Balta borrow-pit has been started in September. Works on excavation, sifting and stockpiling of material were carried out in spoil areas. The works were suspended in the end of November.



Figure 17 Development of Kara-Balta borrow-pit

### **2.5.3 Asphalt plant territory**

45. The production site is located at the territory of Sokuluk ayil okmoty, close to Ak-Torpok village. The area belongs to the industrial and communal zone. Total land area - 10 hectares.



Figure 18 Production site of the asphalt plant

46. The following buildings and structures are located in the site: console control building, stone-crushing plant (SCP), asphalt-bitumen plant (asphalt plant), concrete batch plant (CBP), silos - bin for cement, workers camp, office, eating room, car parking; parking for trucks; storage for fill materials - crushed stone and sand; transformer substation, platform for the installation of garbage containers, concrete cesspit pit for sewage.

*Workers camp*

47. The workers' camp accommodates 50 people. The camp has two firefighting equipment stands. Each room is designed to accommodate two workers. The camp has a kitchen unit, equipped place for eating, showers, sinks, toilets.
48. Considering that among the living workers, many people smoke, in order to observe the fire safety rules, it is strictly forbidden to smoke in residential premises. Smoking is allowed only in designated areas, metal urns for cigarette butts are installed. Regular explanatory conversations on the observance of the camp rules with the residents is carried out.



Figure 19 Workers' camp area





Figure 20 Kitchen at the workers' camp

### *Stone crushing plant*

49. Raw materials for production of crushed stone and sand is delivered to the stone-crushing plant from Ak-Suu 2 borrow-pit by dump trucks. Crushing of ballast is carried out in crush lines of crushers. Water sprinkling is done during the crushing, which reduces the emission of inorganic dust by 70%. Sieving is carried out with washing - on vibrocribble screens, transportation is carried out by belt conveyors.



Figure 21 Stone crushing plant

50. Sand after sieving and washing distributed to spiral classifier, where it is mixed, dehydrated and delivered to the finished product storage. Crushed stone and sand are stored separately in storages.

### *Concrete Mixing plant (CMP)*

51. Production of concrete is carried out with concrete mixing plant HZS50. Capacity is 50 m<sup>3</sup>/h. Crushed stone and sand is delivered by motor transport. There are installed storages for reception and storage of crushed stone and sand at the plant. From the intake hopper crushed stone and sand are delivered to the indoor storage by belt conveyor. There is a separate compartment for sand and crushed stone in the storage. From the storage through the passageway sand and gravel are delivered to the receiving section of concrete mixing

plant. The receiving section is equipped with separate storage bins for crushed stone and sand.



Figure 22 Concrete-mixing plant

- 52. Production of concrete involves mixing of cement, sand, crushed stone and water in the necessary proportions. Raw materials for preparation of concrete mix are: cement, ballast, (sand and gravel mix), sand, crushed stone, water.
- 53. The technological production process of concreted structures include preparation of concrete mixture and its transportation to construction site, delivery, distribution, laying and compacting it in structure, curing of concrete in setting process. Concrete mix is prepared at concrete mixing plant and delivered as a finished product to construction sites. Transportation of concrete mix from preparation place to place of unloading or directly to concreting section is carried by motor transport.

*Polygon for production of reinforced concrete products*

- 54. The area of polygon for production of reinforced concrete products is provided for the production of reinforced concrete products. The production sites of the polygon used for the production of welded rebar meshes and carcasses. Cleaning of rebar from cinder and corrosion is performed on special equipment, followed by straightening and cutting to rods of a given length. The bending of the rods is made on the bending machine, where they are given shape. Metallic dust is released during the operation of straightening-cutting machine. Workers are provided with personal protective equipment.
- 55. Separate rods are connected into grids and carcasses by electric arc welding. Pollutants released during the use of electric arc welding are: welding aerosol, manganese oxides, hydrogen fluoride.

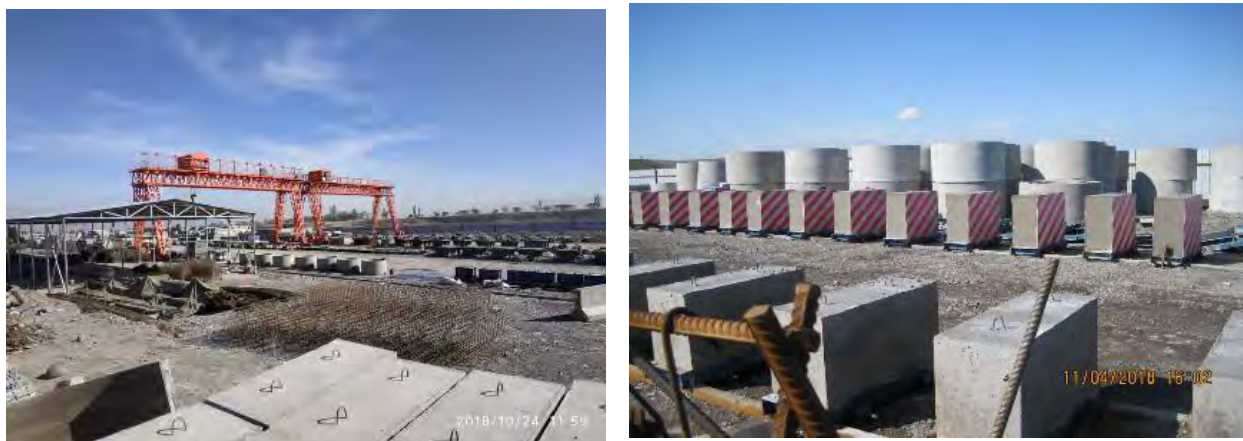


Figure 23 Polygon for production of reinforced concrete products

### *Asphalt-bitumen plant*

56. The plant for the production of asphalt-bitumen mixture with a capacity of 280-320 tons/hour is installed at the territory of the enterprise.
57. The technological production process of asphalt-bitumen mixture is carried out according to the following production scheme and have four sections; bin-loading; dosing, mixing and delivering of finished products.
58. Mineral materials coming to the plant are unloaded to special sites. Bitumen is supplied to the asphalt mixture production plant in a solid state, in the form of briquettes and stored on a specially designated site. Asphalt mixture is prepared in asphalt mixers of forced batch mixing with preliminary drying, heating and dosing of mineral materials.



Figure 24 Asphalt-bitumen plant

59. In the territory of the plant water is supplied from an existing well based on the Contract No. 38 dd October 10, 2017 “On the provision of a well for temporary use”. The well was restored by the Contractor and pipeline was laid to the plant in order to provide water to the plant. Currently, there are no problems with water at the plant. On the photo: the fenced area of the well.





Figure 25 Restored well for water supply to the plant

### 2.3.6 Soil Management

60. Topsoil is removed and stored in special areas allocated by the local administration. After completion of the construction work, it can be used for backfilling slopes. (Figure 27).
61. Obtaining permission to remove topsoil in the construction corridor from the environmental authorities is not required. The contractor has obtained permission from local authorities to store topsoil in several sections. Embankments of topsoil are kept at a height not exceeding 1.5 m and maximally protected from the impact of elements, mainly, from a wind during the dry construction season. International Environmental specialist of EPTISA instructed the Contractor to plant embankment of topsoil with a seed of natural grasses to reduce erosion. But given the long dry period in the road construction area, this is not possible to carry out. Currently, topsoil is removed on an area of 15 hectares. The total volume of removed soil is 30 000 m<sup>3</sup>.



Figure 26 Road section with the removed topsoil



Figure 27 The stored topsoil

### 2.3.7 Tree management

62. At sections 2-1, 2-3 and 2-4 trees were marked, all documentation was prepared, Tree Planting Plans were drawn up and agreed by ADB. Permission for tree cutting was obtained. In September, at sections 2-3 and 2-4 trees were cut down completely. Stems of the cut down trees were stored in specially designated areas. For section 2-1 permission for cutting was obtained in December, after that trees were cut down.

63. In total, 5,363 trees were cut down in 2017 and 2018, of which 3,524 were in 2017, and 1,839 in 2018.



Figure 28 Marking of trees for cutting down



Figure 29 The stored stems of cut down trees

### 2.3.8 Workers camp

64. All violations identified before at the workers' camp at the asphalt plant, Contractor's camp in Belovodskoe village and in Sokuluk were eliminated.
65. Household and construction waste was removed, redecoration / painting of residential premises was carried out, thereby the sanitary and hygienic conditions for residents are significantly improved. Trash cans are installed. Fire extinguishers and fire protection panels are installed in the kitchen and residential premises. Explanatory conversations were held (letter No.ER-CR5-HN-397) with the residents about the rules and the need to keep the room clean.
66. Household waste and sewage water from sewage caisson are timely removed; in general, all protective measures are respected.

Table 7 Progress of construction work

	Name of works	Unit	Scope per design	Total completed
				Volume
1	Clearing and grubbing	ha	76	20,18
2	Tree cutting	pcs	3 348,00	5363
3	Earthworks	m3	258 730	162 853,32
4	Unsuitable soil excavation to dump	m3	103 129	73 861,41
5	Existing asphalt scarification	m3	84 340	44 935,54
6	G&S mixture (Subbase)	m3	448 920	112 433,84
7	Base course	m3	157 257	38 990,69
8	Black crushed stone (Organomineral layer)	m3	86 906	19 827,90
9	Binder course (1 asphalt layer)	m3	84 046	8 015,43
10	Wearing course (2 asphalt layer)	m3	46 692	-
<b>Culverts</b>				
1	culverts 0,5x0,5m			
2	<b>Culverts 0,8x0,8m</b>	half		
	culvert half Completed	half	194	84
	In culvert half progress	half		
3	<b>Culverts D 1,5m</b>	half		
	culvert half Completed	half	108	61
	In culvert half progress	half		

	Name of works	Unit	Scope per design	Total completed
				Volume
4	<b>Culverts 2,0x2,0 m</b>	pcs	1	
	Completed	pcs		1
<b>Bridges</b>				
1	Djelamysh		18.3 KM	96,00%
2	Djantai		24.4 KM	-
3	Sokuluk		27.7 KM	58,00%
4	Krepostnoi channel		40.7 KM	-
5	Aksu		44 KM	27,00%
6	Aksu small bridge		44.6 KM	57,00%
	New		6	-
	Existing		4	-
1	<b>transmission line</b>			
	Reconstruction of poles	km	90,00	63,00
	Reconstruction of lines			31,24
2	<b>communication line</b>			
	Reconstruction of poles	km	90,00	131,00
	Reconstruction of lines			12,00

### Staff information

67. During the contractual negotiations with the Contractor on staff structure, an agreement was reached according to which:

- the structure of the management and engineering staff:  
60% - international staff, 40% - local staff;
- workforce structure:  
20% - international workers, 80% - local workers.

68. In 2018, the Contractor involved 368 persons (the total number including management, engineering staff and workforce), including:

- 95 persons - international staff;
- 273 persons - local staff

### 2.4 Description of Any Changes to Project Design

69. At sections 1.1, 1.2, 1.3, 1.4, 3628 trees fell under the cutting, however, 104 trees were saved after conducting additional site surveys for changes in design of construction of new sidewalks. In 2017, the Contractor cut down 3524 trees and 1839 in 2018.

70. In accordance with the project, it was planned to construct retaining walls in 40 places, mainly in areas where there is a narrowing. This year, in September, several local residents



appealed to the IPIG with a request to make changes in design of construction of retaining walls. The reason was the inconvenient entrance to the houses where the construction of retaining walls was completed. It was decided to partially destroy retaining walls (1-2 meters) in 4 places where the construction is completed, to improve the entrance/exit to the houses and revise the design. The design was revised and 33 retaining walls were removed from the design.

## **2.5 Description of Any Changes to Agreed Construction Methods**

71. In 2017, earthworks at section 1.3 in Petrovka village was suspended by the ADB until the winter season, the reason for this was the complaints of the local residents on the vibration coming from construction equipment, in particular from road rollers. 17 complaints were received from the households of Central'naya street. The problem was the compaction of materials using vibration.
72. The British company MRCL conducted a study of the intensity and transmission of vibration. The purpose of the study was to monitor vibration in different places to determine the magnitude of the risk depending on the distance from the source of vibration and the condition of the house along the 45.4 km of the Bishkek-Kara-Balta road. The focus was on quantifying the impact of compaction using vibration on nearby homes and recommending practical mitigation measures to avoid these impacts and reduce the risk of damage.
73. This study was the starting point for the implementation of the vibration impact contour map.
74. Additional data was also obtained from field measurements of seismic vibrations arising during the operation of the rollers. The literature related to the existing methods for calculating vibrations ranging from preparation and compaction of soil was examined, and there was also documented data, on which threshold levels of vibration damage were established for classes of buildings with low, medium and high risk, on the basis of internationally accepted standard. A vibration modelling report was drawn up.
75. In special vibration study, various options of mitigation were proposed, in particular limitation for vibratory rollers on pre-determined road sections with high vulnerability residential houses and usage of deep trenches to protect vulnerable structures from vibrating compaction. Although the report contains useful limiting parameters for visible and structural damage due to soil vibration, IPIG and EPTISA have found that the most effective and least costly solution was to eliminate vibration compaction at all road sections where there are residential houses.
76. EPTISA consultant (material engineer) conducted a study to verify the possibility of compaction without vibration. The study was conducted on fill materials, unbound materials and binders.
77. The study has shown that it is possible to compact available materials without vibration using a reasonable number of passes.
78. It was decided not to use vibration in the future during the compaction of materials.



### 3. ENVIRONMENTAL SAFEGUARD ACTIVITIES

#### 3.1 General Description of Environmental Safeguard Activities

79. During the reporting period, regular visual monitoring on compliance with environmental requirements during the execution of construction works at all road sections was carried out by the EPTISA local environmental specialist, the environmental specialist of the Investment Project Implementation Group under the MoTR KR, the environmental specialist of the Contractor.

##### 3.1.1 Construction work:

80. Dust formation has the main impact on the environment during the execution of earthworks. The increased air temperature led to increase of dust formation in the road, but despite repeated warnings given to the Contractor on the need to increase the water sprinkling, the situation did not change. In this regard, the Contractor was instructed to increase the intensity of road watering sprinkling, including shoulders, at construction sites from 6 a.m. to 20 p.m. without a break for lunch. The contractor has drawn up a schedule of water sprinkling of the road with an indication of the interval between water sprinkling 30 minutes. But the constant monitoring of compliance with the interval for water sprinkling by watering machines was not made.



Figure 30 Increased dust formation at construction sites

81. With decreasing air temperature and increasing precipitation, dust formation in the roads decreased, but water sprinkling was carried out before the onset of frost.
82. During the construction of culverts, the works on waterproofing with bitumen had significant impact on the environment.
83. These violations include the installation of barrels for bitumen melting directly under the trees, next to the residential houses, the melting of bitumen was carried out by burning of bitumen due to lack of firewood. The resulting black poisonous smoke spread throughout the village, causing harm to health of local community and workers. The Contractor was recommended to promptly conduct explanatory work in sites with the experts responsible for production of waterproofing works about the rules of these works.



Figure 31 Violations in the melting of the bitumen during the waterproofing of culvert pipes

- 84. After the Contractor's explanatory conversations and delivery of firewood to the construction sites, the situation has improved.
- 85. During the construction of the culverts at KM 16 of the road, slope steepness was done without taking into account the angle of gravel material's natural slope. Therefore, there is a shedding of gravel, which led to the overlapping of inlet and outlet holes of pipe and stagnation of the incoming water. It is necessary to clean up the pipe from blockages, as well as to inspect and clean all constructed culvert pipes.



- 86. To take measures to prevent gravel shedding around the culvert pipes.

Figure 32 Overlapping of inlet and outlet holes of the pipe caused by gravel shedding

- 87. The Contractor cleaned the inlet and outlet holes of the pipe. Pipe length has been extended. An extra section has been added to the pipe. Eptisa inspectors inspected constructed pipes; when such violations were detected, clearing measures were taken.



Figure 33 The pipe with an extra section

### **3.1.2 Bridge construction**

#### *The Bridge over Jelamysh River.*

88. In September, the construction of the bridge was completed. All construction waste formed during the construction of the bridge was removed.

There was no water in Jelamysh River during the construction.

#### *Bridge over Sokuluk River*

89. The bridge is constructed on bore hole piles. Bentonite is used as boring mud. Water solution with bentonite remaining after the use is taken to a special pit located in the riverbed. The contractor is warned on the need to remove used clay from the river bed after completion of boring operations and after dewatering to transport it to special place (pit) appointed by the local administration.

#### *Bridge over Ak-Suu River*

90. The Contractor carried out works at the right bank of the river. The bridge is constructed on bore hole piles. Bentonite is used as boring mud. The bentonite pit is located directly in the river bed. At the end of October, the Contractor's equipment was taken out. Contractor will complete removal of clay residues in early January 2019.

91. Currently, the river bed is blocked by an earthen dam. The water flow goes along the right bank and wash out the clay from the pit located in the riverbed with used clay, which causes river pollution. The Contractor was warned on need of urgent cleaning of the riverbed, but until now, the situation remains unchanged.





Figure 34 Residual clay at the riverbed of Ak-Suu River

#### *The Bridge at KM 44 +641*

92. A large amount of construction waste is stockpiled at the northern side of the bridge under construction. A letter was sent to the Contractor on the need to take out the formed concrete waste to the designated places.



Figure 35 Construction waste at the northern side of the bridge under construction

93. The Contractor replied that the soil stockpiled at the northern side of the bridge would be almost entirely used for filling of the voids formed during the construction of the main bridge support structure. After completion of works on filling and compacting of the voids, the remaining soil and old concrete waste will be removed and disposed. Completion of construction of this bridge is planned for the construction season in 2019.

#### **3.1.3 Borrow-pits**

94. Works on excavating, sifting and stockpiling of material in the spoil areas were carried out.

*Ak-Suu 2 Borrow-pit*

95. In November, the development of borrow-pit located at the right side of Ak-Suu River has been started. It was revealed that the top soil and unsuitable soil dumped by bulldozer into the riverbed, which is a violation of environmental legislation.
96. Another letter was sent to the Contractor on the need to remove all dumped soil from the riverbed. Later the soil was removed to the boundary of the borrow-pit. Further, the soil will be used for reclamation of the borrow-pit.



Figure 36 Top soil shifted to the riverbed side



Figure 37 Top soil shifted to the boundary of the borrow-pit

97. It is also identified, that the water sprinkling is not constantly carried out during the execution of works in borrow-pit, what leads to dust formation. In March and April 2019, the Consultant will hold additional discussions on the issue of dust suppression measures, in order to improve the situation, and also raise the issue of increasing the number of water transport vehicles.



Figure 38 Dust formation during carrying out of works at the borrow-pit

*Jelamysh Borrow-pit*

98. During the reporting period no violations in works on development of borrow-pit were revealed. Currently, the works in the borrow-pit are completed. In 2019, it is necessary to carry out reclamation of the borrow-pit.



Figure 39 Jelamysh borrow-pit before development

Boorow-pit now

*Kara-Balta Borrow-pit*

99. Development of Kara-Balta borrow-pit has been started in September. Works on excavating, sifting and stockpiling of material in the spoil areas were carried out.



Figure 40 Development of Kara-Balta borrow-pit

100. In the end of November, the works were suspended. The materials from the borrow-pit were transported along the asphalt road passing next to the administrative buildings of the refinery. Given the condition of the road, there is a high probability of asphalt damage. In this regard, in 2019 it is necessary to find new ways of transporting material from the borrow-pit.

### 3.1.4 Asphalt Plant Territory

101. *Bitumen issues* – As it was already noted in the previous report, a large amount of bitumen in plastic packages was brought to the plant, which were placed directly on the soil. With increasing temperature, the leakage of bitumen in the soil has steadily increased. There was an uncontrollable situation that could be corrected only after using all the bitumen. Several letters were sent to the Contractor with recommendations to appoint a responsible officer to control the bitumen leaks and timely clean it from the soil.

102. At the end of September all bitumen located at the asphalt plant was used up. All leakages were collected and stacked in barrels. A concrete platform for bitumen storage has been prepared. Empty barrels of bitumen are stored in the asphalt plant and are used as road barriers



Figure 41 Bitumen in plastic packages





Figure 42 Leakage of bitumen to the soil



Figure 43 Empty barrels from used bitumen

103. For production of asphalt, bitumen pits were rented and bitumen carriers deliver bitumen to the territory of the plant. In November, bitumen was delivered to the territory of asphalt plant on metal barrels, and was stored in prepared platform.



Figure 44 Bitumen in metal barrels stored in the prepared platform



104. During the operation of the plant, all soil around the tanks with chemicals must be protected from leaks and spills of hazardous materials with an impermeable protective coating.

105. The Contractor was recommended to protect the soil around the tanks with chemicals from leaks and spills of hazardous materials with an impermeable protective coating. These recommendations were considered and performed by the Contractor.



Before

After



Figure 45 Impermeable protective coating around the tanks with chemicals

#### *Stone crushing plant issue*

106. It has repeatedly been found that the stone-crushing plant operates without water sprinkling, polluting the plant's territory and the area adjacent to the plant, causing harm to health and the environment. Several non-compliance letters were sent to the Contractor, but the violation continued. All warnings from Eptisa were ignored. The Contractor explained the situation by breakdowns on pipelines.

107. Whereby the requirements of the general conditions of the Contract - Technical Specifications clause 1.2.10 (j) were violated: "Crushing plants should only work with dust control devices". Also abundant dust formation is noted at the asphalt plant.



Figure 46 Dust in the stone crushing plant and the asphalt plant

### 3.1.5 Tree Management

108. At section 1-3, starting from KM 51, during the installation of reinforced concrete chutes, tree stems were covered with excess soil. The Contractor promised to remove unsuitable soil and clear tree stems. In due time the soil was removed.





Figure 47 Stems of trees during installation of concrete culvert chutes before and after clearing of stems from the soil

109. In autumn 2018, it was planned to start planting seedlings instead of cut trees. But, given the fact that no construction site has completed the installation of culverts and the construction of sidewalks, the planting of seedlings was not carried out.

### 3.1.6 Construction waste

110. A large amount of construction reinforced concrete and other construction waste was formed during the removal of old asphalt, construction of culverts and dismantling of bridges. RMU 9 refuses to accept these waste. Partially unsuitable old reinforced concrete waste was taken out to the permitted areas, but in the upcoming 2019 construction season, the Contractor must determine in advance the place for the removal of construction waste. More detailed information on waste management in the reporting period is described in Section 4.5.

### 3.1.7 Workers camp

111. The territories of workers' camps in the asphalt plant in Sokuluk and Belovodskoe villages were cleaned from household and construction waste, as well as cosmetic repair of premises was carried out, and living conditions were improved. All noted violations are eliminated. Garbage cans are installed. In the kitchen and living areas, there are fire extinguishers and fire extinguishing panels. Explanatory works with residents on the rules of residence, the need to keep the premises clean were conducted

### 3.2 Monitoring of Construction Sites

Table 8 Monitoring of construction sites in July 2018

No.	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	0.2.07	T. Volkova N. Myrsaliev.	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	There is no water in Ak-Suu River The construction of bypass bridge is underway. Pedestrian crossing is not provided. A warning was given to the Contractor
2	04.07	T. Volkova	Joint visit with the laboratory of the state Agency for environmental protection. Air sampling.	Old asphalt is dumped into the riverbed of Ak-Suu River. A letter was sent to the Contractor.
3	05.07	T. Volkova	Joint visit with the laboratory of the state Agency for environmental protection. Air sampling.	At KM 16 of the road during the construction of culvert, the watering chute was destroyed and not restored. A letter was sent to the Contractor
4	09.07	T. Volkova	Monitoring of construction sites	Heaps of old asphalt were dumped in a private land during the filling of roads in Lomonosova street. A letter was sent to the Contractor.
5	11.07	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Increased dust generation in the road was noted. Warning was given to the Contractor
6	13.07	T. Volkova	Monitoring of construction sites	Plastic packages from bitumen is stored in the soil, bitumen leaks out from them, polluting the environment. It is recommended to build a canopy with a concrete bottom for storing plastic packages.
7	16.07	T. Volkova	Joint visit with the laboratory of the Department of state sanitary and epidemiological surveillance. Water	Water samples were taken from the Sokuluk and Ak-Suu rivers. There is a lot of water in the rivers.

			sampling.	
8	18.07	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Dusting is noted in stone crushing plant located in the asphalt plant.
9	20.07	T. Volkova	Monitoring of construction sites	Household waste combustion in the camp in Belovodsk. A warning was given.
10	23.07	T. Volkova	Monitoring of construction sites	A chute is installed at KM 16.
11	25.07	T. Volkova	Monitoring of construction sites	There were noted bitumen spills from the plastic packages on the soil. A warning was given.
12	27.07	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Lecture of doctor from Sokuluk sanitary epidemiological control about AIDS
13	30.07	T. Volkova	Joint visit with the laboratory of State Agency for Environmental Protection and Forestry. Soil sampling	Soil samples were taken at sections 2-1, 2-2, 2-3, 2-4.

Table 9 Monitoring of construction sites in August 2018

No	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	01.08	T. Volkova	Monitoring of construction sites	There were noted bitumen spills from the plastic packages on the soil.
2	03.08	T. Volkova	Monitoring of construction sites	Meeting with the Contractor. Discussion of environmental issues.
3	06.08	T. Volkova	Monitoring of construction sites	Bitumen is partially collected from the soil. Furnace for remelting of collected bitumen is installed. The canopy is constructed.
4	08.08	T. Volkova	Monitoring of construction sites	Monitoring of construction of the bridge in Ak-Suu River. Construction waste.



5	10.08	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Monitoring of construction of the bridge in Jelamysh River.
6	13.08	T. Volkova	Monitoring of construction sites	There is dusting at Ak-Suu 2 borrow-pit. Chemical solutions leak out from the tanks in the territory of the plant.
7	15.08	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Concrete platforms around the tanks with chemical solutions were constructed. There is dusting in stone crushing plant in asphalt plant.
8	17.08	T. Volkova	Monitoring of construction sites.	ADB and MoTR specialists site visiting. Meeting.
9	22.08	T. Volkova	Monitoring of construction sites	Visual monitoring of the works in the Jelamysh borrow-pit.
10	24.08	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Installation of watering chutes at KM 49 -51. Tree rods are covered with soil.
11	28.08	T. Volkova	Monitoring of construction sites	Violation of safety rules during the development of Ak-Suu borrow-pit. Barrels with bitumen were brought to the plant, and installed in the soil with violation.
12	30.08	T. Volkova	Monitoring of construction sites.	In the alternative road, the heaps of removed soil are not leveled

Table 10 Monitoring of construction sites in September 2018

No.	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	03.09	T. Volkova	Monitoring of construction sites.	Strong dust formation was noted at the stone crushing plant in the territory of asphalt plant. Dust is spread beyond the territory of the plant.
2	05.09	T. Volkova	Monitoring of construction sites.	At asphalt plant 2 layers of polyethylene laid under the barrels
3	07.09	T. Volkova N. Myrsaliev.	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Strong dust formation was noted at the stone crushing plant in the asphalt plant. Dust is spread beyond the territory of the plant.

4	10.09	T. Volkova	Monitoring of construction sites.	Bitumen spills issue at the asphalt plant
5	13.09	T. Volkova	Monitoring of construction sites	Tree cutting has started at section 2-3. At section 1-1 traffic is open along the new pavement.
6	14.09	Волкова Т. Мырсалиев Н.	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Unsuitable soil with construction waste (wood roots and branches, reinforced concrete) are taken out to the alternative road.
7	17.09	T. Volkova	Monitoring of construction sites.	The bitumen spills issue in the asphalt plant is not resolved
8	18.09	T. Volkova	Monitoring of construction sites	Construction waste at the alternative road is not removed.
9	19.09	T. Volkova N. Myrsaliev.	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Joint visit with the laboratory LLC "Profilab". Measurements of noise and vibration in the road sections, where construction is underway, is carried out.
10	24.09	T. Volkova	Monitoring of construction sites	A group of workers for cleaning bitumen from the ground was created.
11	26.09	T. Volkova	Monitoring of construction sites.	Construction waste from alternative roads removed.
12	28.09	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	The concreted platform for bitumen storage is constructed in the asphalt plant

Table 11 Monitoring of construction sites in October 2018

No.	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	02.10	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	It is identified that at KM 16, the inlet hole of the culvert pipe is covered with soil, what prevents water flow
2	04.10	T. Volkova	Monitoring of construction sites	Tree cutting at section 2.3 in Petrovka village is continuing
3	08.10	T. Volkova N. Myrsaliev.	Monitoring of construction sites. Jointly with the Contractor's	The removal of old asphalt from section 1.3 is continuing

			environmental specialist	
4	10.10	T. Volkova	Monitoring of construction sites	Monitoring of the construction of the bridge over Ak-Suu river. Construction waste. Water appeared in the river.
5	12.10	T. Volkova	Monitoring of construction sites.	Monitoring of the construction of the bridge over Sokuluk river. The main bridge is closed. Traffic is open along the constructed northern part of the bridge.
6	15.10	T. Volkova	Monitoring of construction sites	Meeting with the Contractor. Discussion of environmental issues
7	17.10	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Monitoring of construction of the bridge over Ak-Suu river. The Contractor initiated construction with using of bentonite clay at the right bank. The pit with used clay is located in the river bed.
8	19.10	T. Volkova	Monitoring of construction sites.	Monitoring of storage areas for tree stems and roots. At the request of the local authorities, tree stems are laid parallel to each other.
9	22.10	T. Volkova	Monitoring of construction sites	Visual monitoring of works at Jelaymysh borrow-pit.
10	23.10	T. Volkova	Monitoring of construction sites.	ADB and MoTR specialists site visits.
11	24.10	T. Volkova	Monitoring of construction sites	ADB and MoTR specialists site visits
12	25.10	T. Volkova N. Myrsaliev.	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Meeting with the Contractor. Discussion of environmental issues. Summing up the site visits in conjunction with ADB experts
13	26.10	T. Volkova	Monitoring of construction sites	Violations revealed at Ak-Suu 2 borrow-pit and during the construction of a bridge over Jantai channel.
14	30.10	T. Volkova	Monitoring of construction sites	Monitoring of all construction sites.



Table 12 Monitoring of construction sites in November 2018

No.	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	01.11	T. Volkova N. Myrsaliev.	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Monitoring the construction of the bridge over Ak-Suu river. The pit with used clay, located in the river bed, remains not cleaned. Water diverted from it by an earthen dam.
2	02.11	T. Volkova	Monitoring of construction sites.	Monitoring the construction of the bridge over Ak-Suu river, mudflow at 44.6km. At the north side of the bridge works has been started.
3	05.11	T. Volkova	Monitoring of construction sites.	Barrel for bitumen melting for waterproofing culverts installed under the tree next to the house. Smoke burns the branches of tree and enters the territory of a residential house. A letter was sent to the Contractor.
4	06.11	T. Volkova	Monitoring of construction sites.	Violations in the development of the Ak-Suu2 borrow-pit, soil is dumped into the riverbed. Significant dust formation at the stone crushing plant in the asphalt plant. Dust spreads beyond the territory of the plant.
5	09.11	T. Volkova	Monitoring of construction sites.	The soil around the trees covered during the installation of chutes was partially removed, but the tree stems were left covered.
6	14.11	T. Volkova	Monitoring of construction sites.	Monitoring the construction of the bridge over Jantai canal. The construction is complicated by ground water.
7	16.11	T. Volkova	Monitoring of construction sites.	Patching in asphalt road broken during the construction of culverts at section 2.3.
8	19.11	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Marking of trees to be cut down at section 2-1 in Sokuluk.
9	21.11	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Bitumen in metal barrels was delivered to the asphalt plant. Barrels are installed on a concrete platform.
10	23.11	T. Volkova	Monitoring of construction sites	Monitoring of works on Jelamysh borrow-pit. Development works were suspended. It was sent a letter on the

				need to draw up borrow-pit rehabilitation plan.
11	26.11	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Marking of trees to be cut down at section 2-1 in Aleksandrovka village.
12	29.11	T. Volkova	Monitoring of construction sites.	Monitoring the construction of 5 bridges, the construction of which is underway in the road. A letter was sent to the Contractor on the revealed violations.
13	30.11	T. Volkova	Monitoring of construction sites.	Monitoring of all construction sites.

Table 13 Monitoring of construction sites in December 2018

No.	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	03.12	T. Volkova N. Myrsaliev	Monitoring of construction sites. Jointly with the Contractor's environmental specialist	Marking of trees to be cut down at section 2-1 in Sadovoe village.
2	05.12	T. Volkova	Monitoring of construction sites.	Bitumen melting for waterproofing culverts is carried out by burning of bitumen due to the lack of firewood. Black poisonous smoke spreads throughout the village, harming the health of the population and workers. A letter was sent to the Contractor.
3	07.12	T. Volkova	Monitoring of construction sites	Monitoring of construction of the bridge in AK-Suu River, mudflow at KM 44.6 on the northern side of the bridge. Violations of the safety rules were revealed.
4	10.12	T. Volkova	Monitoring of construction sites	Monitoring of construction of the bridge in Ak-Suu River. The pit with used clay, located in the river bed, remains not cleaned. Water in the river washes out the clay.
5	12.12	T. Volkova	Monitoring of construction sites.	Monitoring of all construction sites. Construction of culverts
6	14.12	T. Volkova	Monitoring of construction sites.	Monitoring of all construction sites. Construction of culverts
7	26.12	T. Volkova N. Myrsaliev	Monitoring of construction sites.	Monitoring of all construction sites. Construction of culverts

### 3.3 Issues Tracking (Based on Non-Conformance Notices)

Table 14 Report of non-compliance with the environmental requirements (July-December)

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
1	Construction of culvert	EP-CR5-HN-577, dated 06.07.2018		At section 1, between 15 and 16 km, reinforced concrete chute was dismantled during the replacement of culvert pipe. Currently the pipe has been replaced, but the chute has not been restored to date.	16.07.2018  The chute has been restored	09.07.2018  To date, nothing has been done  The follow-up letter was sent to the Contractor EP-CR5-HN-593 dated 12.07.2018	Resolved.
2	Asphalt concrete plant	CEWMP №2.9.4  EP-CR5-HN-576 dated 06.07.2018	Annex 5 Waste Management Plan	New leakages of bitumen are noted at the asphalt plant	The Contactor tries to remove bitumen leaks, but new ones are formed.  It is necessary to constantly monitor and clean the area from bitumen leakages to the soil  Done. After using whole bitumen	Eptisa conducts regular monitoring, but the situation with bitumen remains a problem  24.08.2018 all bitumen leakages were removed	Resolved.

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
3	Section 1-3	CEMWP № 2.2.2 EP-CR5-HN-576, dated 06.07.2018	Annex 11 Dust Suppression Plan	The increase in air temperature led to increased dust formation in the road, but despite the repeated warnings of the Contractor about the need to increase the water sprinkling, the situation does not change. In connection with the current situation, it is necessary to increase the intensity of water sprinkling of the road, including the shoulders. To do this, it is necessary to monitor the observance of the water-sprinkling interval by watering machines.	The schedule is drawn up with an interval of 30 minutes between watering, but it is necessary to strengthen the control over the observance of the water sprinkling interval by watering machines.	At the end of August, with decrease in air temperature, dusting decreased  EPTISA will conduct follow-up monitoring in next construction period.  Eptisa conducts regular monitoring, but the situation with dust remains a problem	Pending
4	The problem of recycling of construction and household waste	CEMWP № 2.6.2. EP-CR5-HN-576, dated 06.07.2018	Annex 5 Waste Management Plan	During the construction of bridge over the Ak-Suu river, a large amount of construction waste was generated in the riverbed. It is necessary	Construction waste removed from this site	Repeated letters were sent  EP-CR5-HN-593, dated 12.07.2018,  EP-CR5-HN-683,	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
				to remove construction waste from the riverbed		dated 09.08.2018,  EP-CR5-HN-731, dated 29.08.2018  But until  07.09.2018 the situation has not changed  In December 2018 all reinforced concrete waste generated during the dismantling of the bridge over Ak-Suu river was removed.	
5	<b>The problem of disposal of old asphalt</b>	<b>CEMWP № 2.6.1.</b> EP-CR5-HN-593 dated 12.07.2018	Annex 7. Old Asphalt Management Plan	Removed old asphalt from Section 3 was taken out to the road, located along the field between the Molodezhnaya and Lomonosova streets. Currently, taking out of	Eliminated. The main large pieces of old asphalt are aligned and removed.  The Contractor's letters with	09.07.2018  Some of the comments remain unresolved. Heaps of asphalt in the agricultural field and from the tree is	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
				<p>asphalt suspended, but heaps of asphalt dumped in the roadbed, roads are not leveled and are blocking the passage for vehicles. Vehicles, passing the road, are forced to drive around the heaps of asphalt, along private fields, and damaging crops. There is no excavation equipment in the road.</p> <p>It is necessary to level the covered section of the road. Excess asphalt should be taken out to areas agreed by Petrovskiy ayil okmotu.</p>	<p>response:</p> <p>220-024 dated 18.06.2018</p> <p>220-028 dated 02.07.2018</p>	<p>not removed</p> <p>During the monitoring of construction sites on July 19, 2018 it was found that old asphalt from the agricultural land and from the tree was removed.</p>	
6	<b>The problem of disposal of old asphalt</b>	<b>CEMWP № 2.6.1.</b> EP-CR5-HN-605 dated 16.07.2018	Annex 7. Old Asphalt Management Plan	It is necessary to provide a list of streets that should be backfilled with old asphalt, according to the requests of local authorities	The Contractor has prepared a list of roads in 07.09.2018	Eptisa regularly reminded about submission of the list  Repeated letter No. EP-CR5-HN 682	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
						dated 09.08.2018	
7	<b>Activities, according to the work plan on the results of the ADB mission</b>	<b>EP-CR5-HN-636 dated 25.07.2018</b>		<p>- organize workshops for the Contractor's workers on improving working conditions and safety procedure.</p> <p>- conduct a campaign to raise awareness of HIV / AIDS among the workers living in the camps in the Sokuluk village, Belovodskoye village, in the camp in the asphalt plant</p>	<p>Report of workshops for the Contractor's workers on improvement of working conditions and safety procedure is not submitted to date</p> <p>- campaign to raise awareness of HIV / AIDS among the workers was conducted, report was submitted</p>	<p>Despite repeated reminders to the Contractor, a report on OHS is not submitted</p> <p>Local Environmental Specialist attended a training on AIDS on 30/07/18</p>	Resolved
8	<b>Occupational Health and Safety Manual</b>	EPT-720 dated 31.07.2018	Annex 3 Plan For Safety, Health And Hygiene	According to the work plan on the results of the ADB mission, it is necessary to develop a		Local environmental specialist of EPTISA,	Pending



No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
				<p>MANUAL</p> <p>"Requirements for occupational health, safety and environmental protection of the persons employed in the projects implemented in the framework of the ADB Project on Improvement of Transport Corridor CAREC 3 (Bishkek-Osh road), Phase 4»</p>		<p>Consultant on construction supervision, developed MANUAL</p> <p>"Requirements for the occupational health, safety and environmental protection of the persons employed in the projects implemented in the framework of the ADB Project on Improvement of Transport Corridor CAREC 3 (Bishkek-Osh road), Phase 4.»</p>	
9	The problem of disposal of old asphalt	CEMWP № 2.6.1. EP-CR5-HN-736 dated	Annex 7. Old Asphalt Management Plan	In May - June 2018, the removed old asphalt was taken out from Section 1 -1 to the road located from the Bishkek-	Contractor's response №220-036 dated 17.08.18	20.08.2018  It was identified that heaps of old asphalt were Eliminated. The	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		30.08.2018		<p>Karabalta road to the new housing development of the Malovodnoe village, at km 17.5 (alternative road),</p> <p>Taking out of asphalt was suspended, but the heaps of old asphalt dumped in the roadbed were not leveled. The road section dumped in recent days is not levelled and is in poor condition. In some places, pieces of asphalt are laid beyond the road on private land.</p>		leveling of the laid material was carried out, pieces of asphalt located outside the road were collected.	
10	<b>Dust formation</b>  <b>Health and safety hazards:</b>	<b>CEMWP2.2.2</b>  <b>CEMWP2.9.3</b> EP-CR5-HN-731 dated	Annex 11 Dust Suppression Plan  Annex 3 Plan For Safety, Health And	Stone crushing plant at the asphalt plant operates without water sprinkling. Dust is spread not only in the territory of the plant, but also beyond it, causing harm	A response was received from the Contractor №220-035 dd 13.09.2018 that workers received PPE, and water sprinkling	Repeated letter was sent EP-CR5-HN-748 dated 06.09.2018  Eptisa conducts regular monitoring, but dust control	Pending

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		29.08.2018	Hygiene	<p>to the health of the plant workers and the environment. Workers work without respiratory protection means-respirators.</p> <p>At Section 1-4, during the removal of old asphalt, dust formation occurs, which spreads to residential buildings. Water sprinkling of work sites is should be carried out.</p> <p>In AK-Suu2 borrow-pit works are carried out without water sprinkling. Workers work without respiratory protection means - respirators. It causes great harm to the health.</p>	system is connected	<p>remains a problem</p> <p>There is a need to follow-up in next monitoring period (i.e. dust control)</p>	
11	<b>The Contractor's warehouses</b>	<b>CEMWP2.9.4</b>	Annex 12 Land Protection Management	In the territory of the plant, bitumen was delivered in metal	The Contractor relocate the barrels with bitumen to an	07.09.2018 the violation was	05.09.2018 Resolved.

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
	are not maintained	EP-CR5-HN-731 dated 29.08.2018	Plan	barrels. Barrels were unloaded directly to the soil without a solid foundation.	impermeable foundation	eliminated  Eptisa conducts regularly monitoring but the situation with dust remains a problem	
12	Dust formation  Hazards to health and safety	CEMWP 2.2.2  CEMWP 2.9.3	Annex 11 Dust formation Supersession Plan  Annex 3 Plan for Safety, Health and Hygiene	Stone crushing plant at the asphalt plant operates without water sprinkling. Dust is spread not only in the territory of the plant but also beyond it, causing harm to the plant workers' health and environment. Workers work without respiratory protection means - respirators.	The Contractor took measures.  Water sprinkling system is work in stone crushing plant.  Contractor's response letter: №220-035 dated 13.09.2018	Eptisa conducts regularly monitoring,  The situation with the dust is under constant control.	Pending
13	Topsoil conservation	CEMWP 2.7.1		Requirements for topsoil conservation	The Contractor removed the soil at the site of construction of a	Topsoil was removed, but not taken out so far.  Eptisa conducts	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
					weighing station.	regularly monitoring In October, the topsoil was removed to the area designated by the local administration.	
14	<p><b>Asphalt Concrete Plant construction site</b></p> <p>During the operation, the surface of the storage area, used for the storage of construction materials, should be protected from the discharges and spills of</p>	<p><b>CEMWP № 2.9.4</b></p> <p><b>EP-CR5-HN-774</b></p> <p><b>dated 17.09.2018</b></p>	<p>Annex 5</p> <p>Waste Management Plan</p>	<p>A large amount of bitumen in plastic packages delivered to the construction area of the asphalt-concrete plant. Bitumen is unloaded to the soil without observance of environmental requirements. Visual inspection identified that some of the packages during unloading were damaged; in consequence there were leakages of bitumen to the soil. It is necessary to remove bitumen from the</p>	<p>08.10.2018</p> <p>Bitumen packages and bitumen leakages were removed from the soil.</p> <p>The concrete platform prepared for the storage of bitumen packages.</p>		Resolved



No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
	hazardous materials, by using of impermeable protection, covering the soil, and a system for collecting contaminated discharges			ground, and install packages with bitumen to the solid foundation under the canopy.			
15	Asphalt Concrete Plant construction site Workers camp	CEMWP№2.9.3 EP-CR5-HN-775 dated 17.09.2018	Annex 3. Plan for Safety, Health and Hygiene	Hazard to the health and safety of workers living in the territory of the asphalt plant from the dust, emissions from machinery and noise	19.09.2018  The Contractor took some measures. Water sprinkling system is works in the stone crushing plant	Eptsa conducts regularly monitoring. The situation with dust is under the constant control, Noise measurements were conducted in the territory of the camp.	Resolved.  Needs follow-up monitoring in next construction period.
16	Old asphalt disposal issue	CEMWP	Annex 7. Old Asphalt	Unsuitable soil containing a large	24.09.2018	Eptisa conducts	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		№2.6.1 EP-CR5-HN-783 dated 19.09.2018	Management Plan	amount of construction (concrete blocks) and wood waste (roots and branches of trees) is taken out to the road, located at km 17.5 from the Bishkek - Karabalta road (alternative road),	Wood waste was selected and removed.	regularly monitoring 26.09.2018 it was found that the wood waste was selected and removed but the road was unsatisfactory leveled	
17	Culvert issue	CEMWP №2.4.2 EP-CR5-HN-817 dated 03.10.2018		During the construction of a culvert at 16 km of the road, the slope steepness was performed not including the angle of natural slope of the gravel material. In this regard, the gravel is shedding, which led to the overlap of the inlet and outlet holes of the pipe and the stagnation of the incoming water	The Contractor's letter 220-038 dated 11.10.2018  The Contractor cleared the inlet and outlet holes of the pipe and eliminated the stagnation of incoming water.	12.10.2018  Eptisa monitored the implementation of activities  03.12.2018 it was found that the Contractor has performed work on the extension of the pipe	Resolved
18	Construction waste disposal issue	CEMWP №2.6.2 EP-CR5-HN-	Annex 5. Waste Management Plan	Road Maintenance Unit 9 - refuses to accept the dismantled elements of engineering structures,	203-041 dated 12.10.2018  Request for	16.10.2018  The problem has not been solved so	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		833 dated 12.10.2018		such as concrete slabs and racks. The problem of disposal	disposal of dismantled elements of engineering structures	far 26.11. 2018 Construction waste was taken out	
19	Kara-Balta Borrow-pit	CEMWP № 2.2.1 CEMWP № 2.4.2. EP-CR5-HN-859 dd 26.10.2018	Annex 14 Borrow Pit Management Plan	Increased dust formation during the transportation of borrow-pit material.  The riverbed of Kara-Balta River is blocked by a dam	The Contractor's letter 220-039 dd 05.11.2018  The riverbed is cleared from blocking dam.  Dust formation is reduced due to precipitation	12.11.2018 Eptisa monitored the implementation of activities.  The riverbed is cleared from the soil	Resolved
20	Bridge over Jantai canal	CEMWP № 2.4.2. EP-CR5-HN-859 dd 26.10.2018	Annex 13 Environmental Protection Plan for the Construction and	Water course of Jantai canal is blocked by stored wet clay	The Contractor's letter 220-039 dd 05.11.2018	12.11.2018 Eptisa monitored the implementation of activities. The water course is	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
			Reconstruction of Bridges		Water course is cleared from the liquid clay	cleared from clay.	
21	Tree management	CEMWP № 2.5.1 Tree management EP-CR5-HN-874, dd 06.11.2018	Annex 10 Tree Management Plan	Barrel for bitumen melting was installed under the tree; the flame burns the branches of trees.  Tree stems during the installation of culvert chutes were covered with soil	The Contractor's letter 220-039 dd 05.11.2018  The Contractor held explanatory conversations with inspectors at the sites on how to properly installing bitumen barrels.  Tree stems are cleared from the soil	12.11.2018 Eptisa monitored the implementation of measurements.	Resolved
22	Ak-Suu 2 Borrow-pit	CEMWP 2.2.1	Annex 14 Borrow Pit	The top soil and unsuitable soil dumped	The Contractor's	26.11.2018 Eptisa monitored the	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		<p><b>CEMWP № 2.7.1</b></p> <p>EP-CR5-HN-877, dd 06.11.2018</p>	<p>Management Plan</p>	<p>into the riverbed by a bulldozer, what is a violation of environmental legislation. It is also identified that during the execution of works at the borrow-pit water sprinkling is not used, what leads to dust formation</p>	<p>letter 220-042 dd 23.11.2018</p> <p>The soil was shifted to the boundary of the borrow-pit. In the future, the soil will be used for the reclamation of the borrow-pit.</p>	<p>implementation of activities.</p>	
23	<p><b>Dust formation</b></p> <p><b>Health and Safety Hazards:</b></p>	<p><b>CEMWP 2.2.2</b></p> <p><b>CEMWP 2.9.3</b></p> <p>EP-CR5-HN-877 dd 06.11.2018</p>	<p>Annex 11 Dust Suppression Plan</p> <p>Annex 3 Plan For Safety, Health And Hygiene</p>	<p>Stone crushing plant at the asphalt plant operates without water sprinkling. Dust is spread not only in the territory of the asphalt plant, but also beyond it, causing harm to the health of the plant workers and the environment. Workers works without respiratory protection means-</p>	<p>The Contractor's letter 220-042 dd 23.11.2018</p> <p>The Contractor repaired the water sprinkling pipes. Water sprinkling system in stone crushing plant works</p>	<p>Eptisa conducts regular monitoring.</p> <p>The situation with dust is under constant control</p>	Resolved



No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
				respirators			
24	Jelamysh Borrow-pit	CEMWP № 2.7.1 EP-CR5-HN-893, dd 23.11.2018	Annex 14 Borrow Pit Management Plan	Due to the completion of works on development of Jelamysh borrow-pit, a design of borrow-pit reclamation should be drawn-up and after obtaining all approvals, the reclamation works should be carried out.	<b>Not done</b>		Pending
25	Bridge construction issues	CEMWP 2.4.2 EP-CR5-HN-896, dd 30.11.2018r	Annex 13 Environmental Protection Plan for the Construction and Reconstruction of Bridges  Annex 3 Plan For Safety,	<i>Bridge over Ak-Suu River</i> The riverbed is blocked by an earthen dam. The water flow is go along the right bank and washes the clay from the pit located in the riverbed with used clay, which causes pollution of the river.  <i>Bridge over Sokuluk River</i> The construction of the	<b>Not done</b>  <b>Not done</b>	10.12.2018  riverbed of Ak-Suu River  Not cleared to date  riverbed of Sokuluk River  To date, construction work in the riverbed is	Pending        Pending



No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		CEMWP № 2.6.2.		<p>workers' knowledge on occupational health and safety requirements, if necessary, re-instruct them in OHS.</p> <p><i>Bridge over Ak-Suu River mudflow at 44.6 km</i></p> <p>In the northern side of the bridge under construction, a large amount of construction waste was stored.</p> <p><i>Bridge over Ak-Suu River</i></p> <p>In the right bank there is reinforced concrete waste from the destroyed old bridge.</p>	Done	<p><i>Bridge over Ak-Suu River mudflow at 44.6 km</i></p> <p>Construction waste has not yet been removed</p> <p><i>Bridge over Ak-Suu River</i></p> <p>Construction waste removed</p>	
26	Air Pollution	CEMWP №	Annex 9	At section 2-2 during the construction of culverts	Contractor fulfills consultant	In letter №EP-CR5-HN-874 dated	Resolved

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
		<p><b>2.2.1</b></p> <p>EP-CR5-HN-904, dd 04.12.2018</p>	Air Quality Management Plan	and execution of waterproofing works, due to the lack of firewood, the melting of bitumen is carried out by burning of bitumen. The resulting black poisonous smoke spreads throughout the village, causing harm to health of local community and workers	<p>requirements prohibition of use for burning bitumen, as well as the location of barrels for heating bitumen at a sufficient distance from trees and courtyard walls. Repeat instructions will be given in the current construction season.</p> <p><b>Done</b></p>	<p>05.11.2018 the Contractor has already been recommended to conduct explanatory work with the specialists responsible for the production of waterproofing works on the rules of these works, but violations continue.</p> <p>6.12.2018 during the visual inspection it was found that the bitumen is melted using firewood</p>	
27	The problem of old asphalt crushing		Non-compliance with technical specifications of the contract	From the contractor's side, the old asphalt is crushed into pieces that do not correspond to the specified size. According	The contractor conducts the crushing of large pieces at the place of laying, i.e. in the	This issue will be further discussed with the contractor.	

No	The issue of non-compliance, defined by EPTISA (e)	CEMWP Number and date of notification EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results of EPTISA Inspection	Status as of current monitoring period
				to the technical specifications of the contract, pieces of asphalt must be broken down to size 20x20.	area where the filling is carried out		

Table 15 Summary of Issues Tracking Activity for Current Period

**Summary Table**

Total Number of Issues for Project	29
Number of Open Issues	6
Number of Closed Issues	23
Percentage Closed	79,3%
Issues Opened This Reporting Period	29
Issues Closed This Reporting Period	23

**3.4 Unanticipated Environmental Impacts or Risks**

112. Uncontrolled spills of bitumen to the soil became an unanticipated environmental impact during the construction works. A large amount of bitumen was delivered to the plant in plastic packaging. Packages with bitumen were placed directly in the soil without placement of waterproofing membrane. Affected by high air temperatures and mechanical damage of the packaging, bitumen spread over the territory, posing a threat of groundwater pollution. A team of workers was organized, that was engaged in the collection of bitumen from the soil. Bitumen leaks were collected from the soil and stored in barrels. After melting in a special equipment, bitumen was used for waterproofing in the construction of culverts. After using of all bitumen reserves in plastic packaging and cleaning the area from leaks, a special concreted platform was prepared for bitumen storing in the future. Currently, bitumen is delivered to the plant in metal barrels that are installed in the constructed platform. In addition, two bitumen pits are rented, from where bitumen is delivered to the plant by bitumen carriers.



Before

After

Figure 48 Bitumen storage area



## 4. RESULTS OF ENVIRONMENTAL MONITORING

### 4.1 Overview of Monitoring Conducted during Current Period

113. In order to conduct monitoring of environmental components such as air quality, surface water quality, noise impact, vibration impact, existing heavy metal content in the soil in the construction period at the Bishkek – Kara-Balta road section in 2018, requests were sent to several laboratories and tariffs for laboratory studies were analyzed.

114. Based on the analysis of the cost of laboratory studies, the following laboratories were selected:

**Air Quality:** Environmental Monitoring Department of SAEPF under the KRG;

**Surface Water Quality:** Laboratory of the Department of disease prevention and state sanitary and epidemiological control of the KR;

**Noise impact:** Private laboratory LLC «ProfiLab»;

**Vibration impact:** Private laboratory LLC «ProfiLab»;

**Soil:** Department of environmental monitoring of SAEPF under the KRG.

#### 4.1.1 Air Quality Monitoring

115. On July 4-5, 2018, the Environmental Monitoring Department of the State Agency for Environmental Protection and Forestry conducted air quality monitoring. Sampling points have been identified at the sites where construction work was carried out.



Figure 49 Air quality monitoring

116. According to the results of the air quality monitoring, dust content was exceeded in almost all samples.
117. The Contractor was informed that more effective measures should be taken to control dust generation.
118. It should be noted, that the excess dust content in the air was also noted in 2013 -2017 before the start of road construction works, in this regard, it could not be argued that the reason for this excess is only construction work.



Figure 50 Air quality monitoring

Table 16 Current air quality within 100 m of the impact corridor in July 2018 (mg / m<sup>3</sup>)

No.	Location	Distance from Bishkek (km)	SO <sub>2</sub>	NO <sub>2</sub>	CO	TSP
	Name					
1	Poltavka village, building of Poltavka a/o	54.5	0.003± 0.0008	0.02± 0.005	0.7± 0.14	<b>2.3±</b> <b>0.58</b>
2	Petrovka v., 504 Central'naya st. Control point	51 km	0.002± 0.0005	0.036± 0.009	0.6± 0.12	<b>1.1±</b> <b>0.28</b>
3	Petrovka v., «Moskva» store, north side of the road		0.002± 0.0005	0.02± 0.005	0.4± 0.08	0.46± 0.12
4	Petrovka v., «Azat» store, north side of the road		0.003± 0.0008	0.058± 0.015	0.4± 0.08	<b>0.61±</b> <b>0.15</b>
5	Kyzyl-Tuyskiy a/o, north side of the road	19	0.003± 0.0008	0.039± 0.01	0.4± 0.08	<b>1.23±</b> <b>0.31</b>
6	Kyzyl-Tuyskiy a/o, south side of the road	19	0.003± 0.0008	0.071± 0.018	0.8± 0.16	<b>1.84±</b> <b>0.46</b>
	Standard (Max. permissible concentration)		0.5	0.085	5.0	0.5

Note: figures in italics indicate the excess of state standards of the Kyrgyz Republic

#### 4.1.2 Surface water quality monitoring

119. In July 2018, with the appearance of water in rivers, the laboratory of the Department of disease prevention and State Sanitary and Epidemiological Surveillance of the Kyrgyz Republic conducted monitoring of the quality of surface water in rivers, where bridges are being constructed, upstream and downstream. These are Sokuluk and Ak-Suu rivers; there was no water in the Jelamysh river during the construction period. Monitoring was conducted on the following indicators: BOD<sub>5</sub>, oxygen content, oil products, and suspended solids.

Table 17 Monitoring data on surface water quality in the Bishkek-Kara-Balta road section, July 2018

Sampling point	Date and time of sampling	Oil-products, mg / l	Oxygen, mgO/l	BOD <sub>5</sub> , mgO/l	Suspended solids, мг/л	Increase in suspended solids in %
Sokuluk r. before the bridge	17.07.2018 11:20 am	Not detected	8,5	0,6	245	
Sokuluk r. after the bridge	17.07.2018 11:50 am	Not detected	8,6	1,0	297	<b>21.2</b>
Ak-Suu r. Before the bridge 44+500	17.07.2018 12:50 pm	Not detected	7,0	0,5	249	
Ak-Suu r. After the bridge 43+500	17.07.2018 1:04 pm	Not detected	7,9	0,5	288	<b>15.7</b>
Max. Permissible Concentration		0,3 мг/л	At least 4 mgO/l	No more than 4 mgO/l	Increase no more than 5%	

120. The monitoring results showed that there is an increase in the level of suspended solids in both rivers, in the samples taken after the bridges over Sokuluk and Ak Suu rivers. It is not quite true to say that this is due to the restoration work in the bridge, since at the time of sampling all work was suspended due to the large amount of water in the rivers. Most likely, the increase in suspended solids is caused by erosion of the banks. The increase was about 21.2% for Sokuluk river and 15.7% for Ak-Suu river. The flood season was caused by a large amount of precipitation. This occurrence was temporary, lasted about 15 days. Later, water did not flow into the rivers and was sorted out for irrigation. Water in the rivers appeared in October, it was a small flow of water.

121. The Contractor was informed that it is necessary to take more effective measures to control clay sedimentation and that better erosion protection would be implemented during construction in open cuttings in the soil.





Figure 51 Surface water quality monitoring



Before the bridge



After the bridge

Figure 52 Water sampling in Ak-Suu River





Before the bridge

After the bridge

Figure 53 Water sampling in the Ak-Suu River

#### 4.1.3 Topsoil monitoring

122. On July 30, 2018, at sections 2-1, 2-2, 2-3, 2-4, where it is planned to remove the top soil, the environmental monitoring department of the SAEPF under the KRG took samples of the top soil. Samples were taken to conduct top soil monitoring for the content of lead and oil products. The soil is one of the main concentrators of chemical pollutants, including heavy metals, which in case of excessive content exert their toxic properties. They are genetic poisons, because after getting into the body, they accumulate with a long-term effect. One of the most toxic metals is lead; this element belongs to the first class of danger. Lead and other heavy metals accumulating in the top soil change the chemical composition of the soil, worsen the living conditions of microorganisms in it and penetrate into plants, creating a danger to human health. At high concentrations, lead accumulates in the soil, posing a danger to the person using the plant products of these soil areas.



Figure 54 Topsoil sampling

123. Soil monitoring was conducted in order to determine the possibility of its further use. Samples were taken from the top layer of soil from a depth of not more than 10 cm. Background samples were taken at sites remote from the road. According to the results of the monitoring, excess lead content and high content of oil products were identified. The soil was contaminated as a result of the road operation. The contaminated soil will be removed in places where expansion of roadbed is provided by project. In future, this soil can be used for backfilling slopes, if necessary. When using such soils for the purposes of lawn making



or as a ground for tree planting, it is necessary to mix the contaminated top soil with uncontaminated soil.

Table 18 Results of top soil monitoring in 2017 and 2018  
2017

Name ingredients	Unit of measurement	Section (Points Data)					MPC (max. permissible concentration) mg / kg	Regulation document
		1-1	1-2	1-3	1-4			
1	2	3	4	5	6	7	8	
Oil products	mg/ kg		520		620	Not rated	РД 52.18.647-2003	
Lead	mg/ kg	13,83	7,52 6,60	7,54	5,40 16,39 8,92 9,02 8,30 8,78	6.00	М-МВИ-80-2008	

2018

Name ingredients	Unit of measurement	Section (Points Data)						MPC(max. permissible concentration) mg / kg	Regulation document
		2-1	2-2	2-3	2-4	Back ground values			
1	2	3	4	5	6	7	8	9	
Oil products	mg/ kg	230			2010	90 110	Not rated	РД 52.18.647-2003	
Lead	mg/ kg	10,1 4,9	10,9 61,0	3,3 5,9	6,1	2,89 2,1	6.00	М-МВИ-80-2008	

Soil samples in 2017 and 2018 were taken respectively, in 2017 at the sites where construction work was allowed in 2017. In 2018, soil samples were taken at sites where construction work was allowed in 2018.

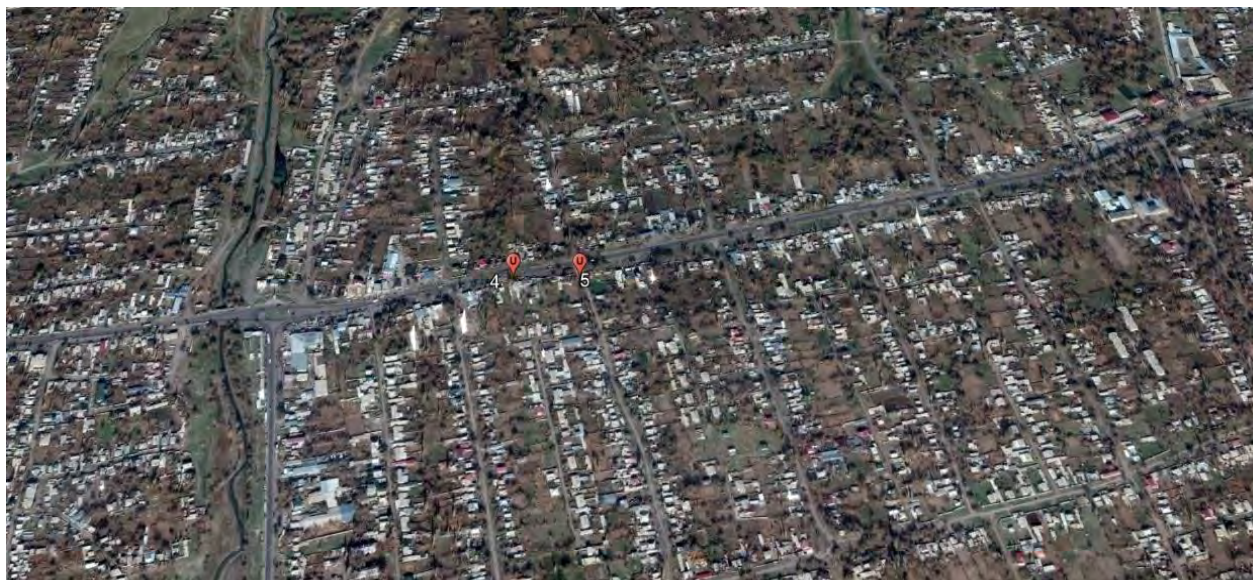






Figure 55 Soil quality monitoring

#### 4.1.4 Noise and vibration related to the earth and road works

124. During the construction period of 2018, noise and vibration monitoring was conducted twice on June 8 and September 19, 2018 by the private laboratory LLC "Profilab". Measurements were carried out using a digital integrating noise meter 1 class OCTAVA-101A. Measurements were carried out according to GOST 23337-2014 Interstate standard. Noise "Methods of noise measurement in residential areas and in the premises of residential and public buildings".
125. On 8 June, noise and vibration monitoring was conducted in the area of the bridge construction in Sokuluk river, where pile driving works were carried out, what could cause vibration in the nearby houses. The laboratory measured noise and vibration in a nearby house, as well as in the surrounding area.
126. The noise level during the operation of construction equipment (perforator) exceeded the sanitary norm by 6 dBA, while, at the time when the perforator was not operating, the noise level was within the sanitary norms of the Kyrgyz Republic. At the time when the jackhammer and perforator operated simultaneously, the noise level exceeded the MPL to-16 dBA. The noise level measured in the bedroom of the house in 231 Frunze Street, during the operation of equipment, did not exceed the sanitary norm. At 23 meters from the source, noise levels ranged from 74 to 84 dBA. At the same time, it is necessary to take into account background noise from passing vehicles and the noise of water in the river.
127. On September 19, noise and vibration monitoring was conducted in constructions sites, as well as in the workers ' camp at the territory of the plant. Background noise and background vibration were measured at 4 control points.





Figure 56 Vibration monitoring



Figure 57 Vibration monitoring at the construction sites

128. According to the results of the monitoring, the background noise level at all control points in Petrovka village - section 1-3, in Poltavka village - section 2-3, in Petropavlovka village - section 2-3, Novo-Nikolaevka village - section 2-4 does not exceed the maximum permissible levels (MPL).



129. A small excess of the MPL (2 dBA) was recorded during the operation of drum roller in Petrovka village. In workers' camp at the asphalt plant, during the operation of the concrete mixing plant, exceedances of the noise level are not identified.

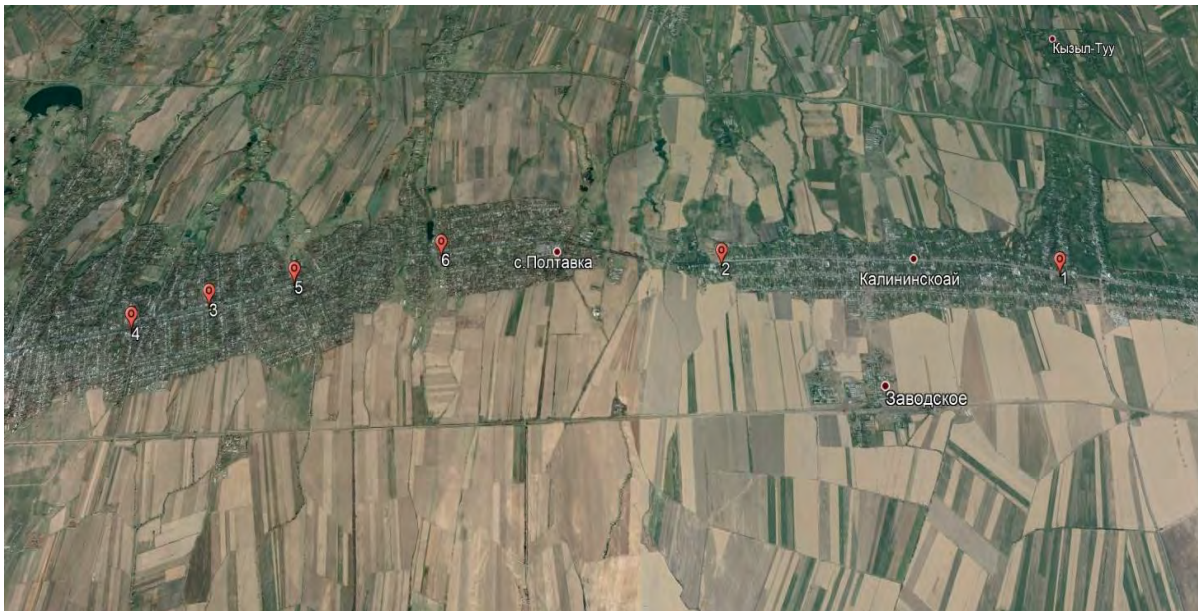


Figure 58 Noise monitoring



Figure 59 Noise monitoring at the construction sites

130. Vibration measurements were conducted in areas of soil compaction with rollers without vibration in Petrovka village at section 1-3, in Novo-Nikolaevka village at section 2-4. Background vibration was measured at 4 control points.

131. According to the results of instrumental measurements, the vibration level during the operation of the roller is from 83 to 101 dBA, and when it is off is from 78 to 82 dBA. Background vibration is between 76 and 79 dBA. *Note:* vibration level except residential and workplaces is not standardized.

#### 4.2 Trends

132. During the construction period of 2019, it is planned to conduct monitoring of the air quality, surface water quality, noise impact and, if necessary, vibration in the areas where construction work will take place.

### 4.3 Summary of Monitoring Outcomes

133. Analyzing the monitoring results, it is necessary to take into account that the project road section is located in a densely populated area with a large traffic flow. Therefore, when analyzing the impact of construction works on the environment, it is necessary to consider the indicators of background levels.
134. After analyzing the data of the monitoring results, it can be noted that given the data of background levels, construction works do not have a significant environmental impact.
135. Insufficient number of laboratories in the region is a problem for organization and conducting monitoring. For the conclusion of contracts for the monitoring of environmental components, the same state laboratories are proposed, that perform both private and state orders, with an insufficient number of personnel. In this regard, before each site visit for sampling, it is necessary to agree in advance with laboratory and sometimes we need to wait for several weeks. It was easier to work with a private laboratory LLC "Profilab", whose employees were always available.

### 4.4 Material Recourses Utilisation

136. The utilisation of electricity, water and any other materials were not included in the CEMWP for monitoring.

### 4.5 Waste Management

137. During the construction, a large amount of waste is generated, including construction and household waste.

#### *Construction waste*

138. Construction reinforced-concrete waste is generated during the dismantling of bridges and culverts. Since the beginning of construction work in 2017, almost 3,000.0 m<sup>3</sup> of reinforced concrete waste has been generated.



Figure 60 Construction reinforced concrete waste

139. Initially, construction waste was promptly taken out to areas for storage of old concrete products allocated by RMU-9. With the increase in the volume of construction work, there was a problem with the definition of storage for reinforced concrete waste. Currently, RMU-9 takes out only used reinforced-concrete pipes that can be reused.

#### *Old Asphalt*

140. With the beginning of the road works in areas 1-1 and 1-3, there was a problem with the disposal of old asphalt. The problem of crushing the old asphalt remains unresolved on the Contractor's side the demands of crushing the old asphalt to pieces of size 20x20 are not



met. This issue is constantly discussed with the contractor. When sprinkling old asphalt onto rural roads, the contractor re-supplies the equipment to the backfill site and conducts the rolling and crushing of large pieces in place, which leads to incomplete crushing of large pieces of old asphalt. At the request of local residents (landlords), the old asphalt is partially removed to fill the existing holes in their private land. These sites are usually located along the road and are used for commercial purposes (construction of shops, gas stations, etc.). In this case, the site owners leveled the asphalt on their own. A letter has been received from ADB stating that in order to avoid harming the health of local residents; it is prohibited to transfer old asphalt to local residents for their own use. This requirement has been met and will be monitored in the current construction season. Asphalt was not removed to the wetlands.



Figure 61 Taking out of old asphalt for backfilling of private areas at the request of the residents

- 141. Partially old asphalt was taken out to the field roads. Prior to the commencement of work, approvals were obtained from the local authorities and environmental authorities for the use of removed asphalt on rural roads.
- 142. For backfilling of rural streets with old asphalt, local authorities initially proposed more than 200 secondary roads. The Contractor’s specialists conducted a preliminary analysis of all the proposed roads, taking into account their remoteness from the main road. Roads that did not meet these requirements were removed from the list. There are 89 roads left to be backfilled with old asphalt.
- 143. During the construction, the following volume of old asphalt was removed;
  - Section 1-1 - 12123 m<sup>3</sup>;
  - Section 3 -1 - 9684 m<sup>3</sup>;
  - Section 4-1 - 6010 m<sup>3</sup>.
- 144. The Contractor’s specialist, Mirbek Abirchoroyev, deals with the disposal of old asphalt.
- 145. The problem of old asphalt crushing remains unresolved. Currently, the old asphalt is taking out for backfilling of village streets. As in villages, there is no equipment for leveling of large pieces of old asphalt, the Contractor leveling asphalt by his own equipment. On the contractor’s side, the requirements for crushing old asphalt to small sizes are not complied with in accordance with the technical specifications of the contract. This issue will be further discussed with the contractor at the beginning of the next construction season.
- 146. During the reporting period, the streets of five ayil okmotu were backfilled. The list of streets is presented in Table19.



Figure 62 Taking out of old asphalt for backfilling of rural streets

Table 19 List of streets backfilled with old asphalt in 2018

Point	District name	Full name and position of the responsible person	Approval date	Road width	Road length
Name of road				m	km
Lugovaya	Moskovskiy district Petorvskiy a/o	D.A. Astarov	24.05.2018 г № 482	6	0,95
Zavodskaya				6	0,3
141 raz'ezd				6	2
Besh Terek				6	0,5
Lomonosova				6	1
Zheleznodorozhnaya				6	0,6
Gor'kogo	Jayilskiy district Poltavskiy a/a	V. Kerimov	22.06.18 №805	4	
Kominterna				4	
Partizanskaya				4	
Komsomolskaya				4	1,2
End of Orto Suu				4	0,7

village					
AVM area				4	
Klyuchevaya	Jayilskiy district Kyzyl- Duykanskiy a/a	A. Manapov	22.06.18 №805	4	
Frunze				4	
Sovetskaya				4	
Shevchenko				4	
Pogranichnaya				4	
Shkol'naya	Jayilskiy district Ak-Bashatskiy a/a	K. Umetaliev	22.06.18 №805	4	
Zelenaya				4	
Lugovaya				4	
Uzhnaya				4	
Krupskaya				4	
D.Bednogo				4	
Novosel'skaya				4	
Novosadovaya				4	
Moskovskaya				4	
Road through field	Sokulukskiy district Kyzyl-Tuyskiy a/a	Z. Nurmambetov		4	2,1

#### *Waste at the Asphalt Plant*

147. At the asphalt plant, waste is generated during the production of asphalt. Mainly it is a container from the used bitumen. The top cover from plastic pickings from bitumen is taken out to the places determined by Public Utility Company.

148. Inner polyethylene cover with bitumen residues is stored in concrete bin, constructed near the plant for the production of asphalt. After separation / removal of bitumen residues, residues of plastic bags will be exported to an authorized landfill, for subsequent disposal.



Figure 63 Waste from plastic packages of bitumen

149. Empty barrels from used bitumen are also stored at the asphalt plant and are gradually used during the execution of construction works on the road.



Figure 64 Empty barrels from the used bitumen

*Household waste*

150. Household waste is mainly generated in workers ' camps. Both solid and liquid household waste is generated.
151. Solid household waste consists of packaging materials made from paper and cardboard, dry waste, plastic and glass, as well as food waste, which are pre-collected in plastic bags.
152. Liquid household waste is wastewater from residential premises and kitchen. Solid and liquid household waste is taken out from the territory of the camps by specialized services with whom maintenance service contracts are concluded.

Table 20 Accounting list for disposal of household waste

Locality	Month	Quantity m <sup>3</sup>		Amount, KGS
		solid	liquid	
1	2	3	4	5
<b>2018</b>				
<b>January</b>				
Sokuluk	January	11.		<b>4532</b>
Belovodsk	January	2		<b>660</b>
		Total:		<b>5192</b>
<b>February</b>				
Sokuluk	February	5		<b>2060</b>
Belovodsk	February	1		<b>330</b>
		Total:		<b>2390</b>
<b>March</b>				
Sokuluk	March	26.		<b>10712</b>
Belovodsk	March	1		<b>330</b>
		Total:		<b>11042</b>
<b>April</b>				
Sokuluk	April	17	59,5	<b>35895,5</b>



Belovodsk	April	8 .		<b>2640</b>
		Total:		<b>38535,5</b>
<b>May</b>				
Sokoluk	May	53	143,5	<b>57731,5</b>
Belovodsk	May	17		<b>5610</b>
		Total:		<b>63341,5</b>
<b>June</b>				
Sokoluk	June	42	115,5	<b>46195,5</b>
Belovodsk	June	17		<b>5610</b>
		Total:		<b>51805,5</b>
<b>July</b>				
Sokoluk	July	27	133	<b>43100</b>
Belovodsk	July	21		<b>6930</b>
		Total:		<b>50030</b>
<b>August</b>				
Sokoluk	August	34	112	<b>42024</b>
Belovodsk	August	30 .		<b>9900</b>
		Total:		<b>51924</b>
<b>September</b>				
Sokoluk	September	24	70	<b>26600</b>
Belovodsk	September	26	42	<b>19380</b>
		Total:		<b>45980</b>
<b>October</b>				
Sokoluk	October	31	66,5	<b>28550</b>
Belovodsk	October	58		<b>19380</b>
		Total:		<b>47930</b>
<b>November</b>				
Sokoluk	November	23	63	<b>24500</b>
Belovodsk	November	58		<b>19380</b>
		Total:		<b>43880</b>
<b>December</b>				
Sokoluk	December	25	28	<b>23908</b>
Belovodsk	December	34		<b>11220</b>
		Total		<b>35128</b>
	<b>Total for 2018</b>	<b>591</b>	<b>833</b>	<b>457070</b>

## 4.6 Health and Safety

### 4.6.1 Community Health and Safety

153. During the reporting period, the following incident occurred, which led to health problems and temporary disability of the Contractor's employee. On July 2, 2018, the Subcontractor's driver on the Kamaz car (a private driver from a village near Jelamysh borrow-pit) hit with hull side the driver of a standing nearby car Niva - Sagynbaev Daniyar, and injured his leg. In the district hospital the injured was operated.

154. According to the results of the examination, the following degree of guilt of each participant of the incident was established: 40% - the guilt of the KAMAZ driver, 40% - the Contractor's guilt and 20% - the injured guilt. The injured was compensated for the damage to health, according to the established degree of guilt by responsible for the accident party and the Contractor.

155. Data on road traffic accidents caused by the Contractor was no longer reported.

There are cases of accidents, but it was the fault of the drivers themselves due to non-observance of speed, non-observance of distances between cars, etc. Because of this, we do not specify information on accidents, as this is not a consequence or conditions of the project.

For example, in the event of an accident for "our" reason, the traffic police send an official document which indicates our guilt and only in this case can we reflect this data.

### 4.6.2 Worker Health and Safety

156. During the supervision of construction works in the bridges, in Jantai channel and Ak-Suu r. mudflow, it was identified that workers violate Occupational Health and Safety requirements (work at heights without personal protective means, lack of protective helmets). The Contractor was recommended to check knowledge of workers on requirements of Occupational Health and Safety and, if necessary, to conduct re-training on OH&S.



Figure 65 Carrying out of works at height without personal protective means

157. As a result of visual inspection of construction sites it is established that the stone crushing plant operates without water sprinkling. Dust spread not only in the territory of the plant, but also beyond it, causing harm to the health of the plant workers and the environment. This situation is observed when the water spraying system breaks down. The contractor calls the cause of breakage, frequent clogging of the nozzles of the spray system and breakdowns on pipelines. The contractor is given instructions on the need to stop the operation of the crusher in the event of a failure of the water spray system.

158. In Ak-Suu 2 borrow-pit it was also noted that the equipment operates without the water sprinkling, with excess dust formation, causing harm to the health of the excavator operator.





Figure 66 Operation of equipment without water sprinkling, with causing harm to the health of workers

159. Hired by the Contractor Occupational Health and Safety Specialist does not have the necessary qualifications and does not perform his official duties.

#### 4.7 Trainings

160. A lecture on AIDS for Chinese and local workers was held on 27 July 2018. 52 people attended the lecture. The participants of the lecture receive information booklets about AIDS.



Figure 67 Lecture on AIDS for Chinese and local workers

161. In early August, the Contractor's OH&S specialist gave lectures on Safety among workers at all construction sites. Despite the repeated requests, the Contractor did not provide a report on the events held.

162. On September 19, 2018, Geza Teleki, an international Environmental Specialist, conducted a training with the Contractor's specialists. The training discussed the problems of implementation of EMP by the Contractor.

## **5.FUNCTIONONG OF THE CEMWP**

### **5.1 CEMWP Review**

163. CEMWP describes the various measures proposed within the Project, designed to prevent, minimize or compensate adverse environmental impacts that occur because of implementation of the Project. Mitigation measures provided in the CEMWP are sufficient, effective and acceptable.
164. The Contractor's Environmental Specialist - Myrsaliyev Narynbek, implements the construction mitigation measures. Eptisa's Environmental Specialist - Tatyana Volkova, supervises the Contractor's compliance with the environmental requirements. In case of any violations revealed, Eptisa warns the Contractor orally or in writing about the need to eliminate this violation within the specified period.
165. During the reporting period, the main problems in compliance with the CEMWP measures were:
- dust formation issue;
  - bitumen leakages from plastic packaging;
  - the problem of crushing of old asphalt;
  - the problem with the place for taking out reinforced concrete waste.
166. The works on the final levelling of shoulders, road slopes, bridges, chutes, pipelines and crossings in the streets adjacent to the road are not included in the CEMWP.
167. Currently, planting of seedlings instead of cut-down trees remains a problem. Given climatic conditions, seedlings are best planted in the autumn in November. However, by the scheduled time, the Contractor has not completed the construction of sidewalks and replacement of communications in the site planned for planting seedlings. Also, given the fact that the project road section passes through settlements, where, given the expansion of the road, there is little space for planting new seedlings.

## **6. GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT**

### **6.1 Good Practice**

168. Mitigation measures provided in the CEMWP are sufficient, effective and acceptable.

### **6.2 Opportunities for Improvement**

169. In 2017 at section 1-3 in Petrovka village, construction works were suspended by ADB due to the complaints from 17 householders on the use of vibration.

170. In order to apply best practices and to overcome the existing situation, the British company MRCL conducted a study of the intensity and propagation of vibration. A report was prepared in which various mitigation options were proposed, but none of the options proposed were feasible. Therefore, IPIG and EPTISA found that the most effective and least costly solution was to eliminate compaction with vibration in all road sections where any residential premises were located, with using of reasonable number of passes.

## 7. SUMMARY AND RECOMMENDATIONS

### 7.1 Summary

171. During the reporting period, the Contractor mainly implemented the necessary environmental measures during the construction work. However, there were cases when some Contractor's specialists ignored the recommendations of EPTISA.
172. Some measures, such as dust control, were insufficient. Despite the fact that the water sprinkling schedule in every 30 minutes was approved, the Contractor did not monitor its compliance. The problem of dust formation was constant in the stone crushing plant. It has been repeatedly found that the stone crushing plant operates without water sprinkling, polluting the territory of the plant and the territory adjacent to the plant, causing harm to workers' health and the environment. Several written warnings were sent to the Contractor, but violations continued. All warnings from EPTISA were ignored. The Contractor explained the situation by breakdowns on pipelines. EPTISA will further instruct the Contractor to ensure compliance with the schedule of road water sprinkling in the construction site and will require to continue water sprinkling from 06.00-20.00 in dry summer weather. This also applies to access roads to borrow-pit sites, to borrow-pits, to the territory of the asphalt plant.
173. Uncontrolled spills of bitumen to the soil became an unanticipated environmental impact during the construction work. A large amount of bitumen was delivered to the plant in plastic packaging. Packages with bitumen were placed directly in the soil without placement of waterproofing membrane. Affected by high air temperatures and mechanical damage of the packaging, bitumen spread over the territory, posing a threat of groundwater pollution. After using of all bitumen reserves in plastic packaging and cleaning the area from leaks, a special concreted platform was prepared for bitumen storing in the future. Currently, bitumen is delivered to the plant in metal barrels that are installed in the constructed platform. In addition, two bitumen pits are rented, from where bitumen is delivered to the plant by bitumen carriers
174. The problem of crushing of old asphalt remains unresolved. Currently, the old asphalt is taking out for backfilling of village streets. As in villages, there is no equipment for leveling of large pieces of old asphalt, the Contractor levelling asphalt by his own equipment. The problem is that the large pieces of unbroken asphalt remain in the shoulders of backfilled roads. During the reporting period, the streets of five ayil okmotu were backfilled.
175. Construction reinforced-concrete waste, generated during the dismantling of bridges and culverts, initially was promptly taken out to areas for storage of old concrete products allocated by RMU-9. With the increase in the volume of construction work, there was a problem with the definition of storage for reinforced concrete waste. Currently, RMU-9 takes out only used reinforced-concrete pipes that can be reused. Currently, it is necessary to find areas for storage of construction waste.
176. The Contractor's staff do not have qualified specialists for carrying out works on borrow-pit development (mining foreman, bulldozer operator, excavator operator). This is especially true for borrow-pits, the development of which is carried out in the mountain slopes.
177. Currently, planting of seedlings instead of cut down trees remains a problem. The Contractor underestimates the importance of these measures.
178. The riverbed of Ak-Suu and Sokuluk rivers, where the construction of bridges is carried out, should be cleaned from excess soil and residues of bentonite clay at the end of construction work.
179. In the course of supervision of construction works, violations of safety and health requirements by workers were identified, such as: work at height without personal protective means, the absence of protective helmets, respirators, and the absence of special footwear

during welding, and others. Hired by the Contractor, the Occupational Health and Safety Specialist does not have the required qualifications and unsatisfactorily performs his official duties.

## **7.2 Recommendations**

180. Given the fact that during the construction period, the Contractor does not always eliminate the violations in the specified time, and EPTISA is not able to take any measures other than suspension of work, it is necessary to develop additional penalties to force the Contractor to implement the necessary environmental measures without repeated warnings and to prevent negative consequences in advance. This will help to reduce the number of non-compliance letters and complaints from the community.
181. It is necessary to oblige the Contractor to hire a qualified Occupational Health and Safety Specialist and provide him with motor transport.
182. It is necessary to oblige the Contractor to solve the problem with crushing of old asphalt. Pieces of asphalt should not exceed the size of 20x20 cm, as specified in the Technical Specifications.
183. Before the start of the construction season, IPIG and EPTISA should find new sites for the storage of construction waste.
184. Taking into account the problems with dusting in the summer, as well as the planned increase in the volume of construction work, Contractor should purchase additional water transport vehicles.
185. At present, Tree Planting Plan is being prepared before the start of tree cutting, when the exact location of all communications is not yet known. It would be more rational to prepare Tree Planting Plan after the completion of all work and the final leveling of roadside bed (after construction of sidewalks, installation of chutes, relocation of electric and telephone poles).

**ANNEX 1 PBMC COMPONENT**

**Project Number:** PBMC/BO/Phase 4/1  
**Grant:** Credit 3056/grant 0366-KGZ:  
**Reporting period:** July 2018 - December 2018

**KYRGYZ REPUBLIC:**

**«REHABILITATION AND IMPROVEMENT OF THE CORRIDOR CENTRAL ASIAN REGIONAL DEVELOPMENT COOPERATION 3 (BISHKEK – OSH ROAD), PHASE 4, KARABALTA- SUUSAMYR (km. 61-129)»  
(Funded by Asian Development Bank)**

**The Contractor: LLC “Mostdorstroy”**

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## Abbreviations

ADB	- Asian Development Bank
EMMP	- Environmental Management and Monitoring Plan
ES	- Environmental Specialist
GKR	- Government of Kyrgyz Republic
MoTR KR	- Ministry of Transport and Roads of the Kyrgyz Republic
PBMC	- Performance-based Maintenance Contract
PC	- Public Consultations
PIC	- Project Implementation Center
PMC	- Project Management Center
SEE	- State Ecological Expertise
GCC	- General Contract Conditions
SHW	- Solid Household Wastes
IPIG	- Investment Projects Implementation Group
CEMWP	- Construction Environmental Management Work Plan

## INTRODUCTION

### 1. Preamble

1. This report presents a semi-annual review of environmental monitoring (SAEMR) for the rehabilitation and improvement of the Central Asian Regional Economic Cooperation Corridor 3 (Bishkek-Osh road), Phase 4, Performance-based maintenance contract, Kara-Balta-Suusamyр section (km. 61-129 km)
2. The purpose to sign a Contract is to ensure a physical condition of the roads that is acceptable to road users during the entire term of the contract.

### 2. Headline Information

3. CAREC Corridor 3 Improvement project, Bishkek-Osh road: Kara-Balta-Suusamyр section, km 61- км 129, financed by a loan from the Asian Development Bank (ADB) Kyrgyz Republic (KR).
4. The road plays an important role in transport system of Kyrgyzstan, being only road that is open for transport movement during the all year, and which connects the northern part of the country with the capital Bishkek and southern part of country with the second largest city Osh. Therefore, good maintenance and operation of the road section to ensure the free flow of vehicles at any time of the year is crucial for the political and economic life of the Kyrgyz Republic.
5. The project road section is located mainly in the Chui intermountain valley, at the bottom of the mountains. The Kara-Balta-Suusamyр road determines the location in the latitudinal direction. The height of the project road varies from 800 m above sea level in Kara-Balta to 3,300 m in Suusamyр, at the entrance to the tunnel.
6. The project road is located in a high-risk seismic zone (9-point) and in combination with high soil erosion on steep slopes and extensive grooves per km. 97 - km.129 represents a constant environmental problem associated with the sliding of slopes due to landslides and earthquakes.
7. The project road is in a semi-arid zone, with a protracted cold season. Frosts in the mountainous region starts in October and hold on until the end of May. Annual precipitation along the project area is about 450 mm. In the mountainous area of the project site, the number of winter events (snowfall) is 60 days.
8. Land utilization in the impact zone of the Kara-Balta-Suusamyр road section, in particular, at the beginning of the project road section has an agricultural purpose. In the area of Kara-Balta, such crops as wheat, fodder and industrial crops, various types of vegetables, such as potatoes, bell peppers, carrots, watermelons, eggplant, and fruit plantations like apple and apricot are mainly cultivated.
9. In the mountainous region, human activity is limited to breeding horses and sheep. The landscape is changing closer to the steppes, the soil is covered with grass and low shrubs, such as saxaul. Chia is a common grass with whitish reeds like a reed, it is also a common type of grass.
10. The road corridor covered by the PBMC (Kara-Balta-Suusamyр) does not interfere with any watercourses, wetlands or other sensitive areas.
11. Sensitive zones - The project road section does not pass over, through or near any established sensitive ecological zones. The existing road passes through the village of Sosnovka, whose population is about 5,000 people. Since the road does not create a new traffic flow, new security measures are not provided, except to improve compliance with speed limits and ensure road sections. A speed limit of 40 km / h has been established inside the village, which should be observed even after the completion of road repairs.

12. In the Kara-Balta town, Sosnovka village and until the end of the project site, the existing road crosses the Kara-Balta river 22 times. Crossings across the river are carried out by bridges. According to the Decree of the Government of the Kyrgyz Republic dated September 7, 2009 No. 561 "On Fishery Development and Use of Natural and Artificial Reservoirs in the Kyrgyz Republic", the Kara-Balta River belongs to fishery reservoirs. In other words, there is fish in the river and, most likely, the river is a place for recreational fishing. This category of river is assigned a level of protection that prohibits the maintenance of the development of aggregates near the river, the construction of obstacles, dams or the movement of water vehicles that hinder the movement of fish. Therefore, no work is carried out near the Kara-Balta River, except for works on erosion protection to minimize sediment load in the river.
13. In the course of rehabilitation of roadside drain ditches, the diversion of surface water, in order to prevent the entry into the river, is carried out on a roadside area covered with grass, which makes it possible not to pollute the river, which is a habitat for fish.

### 3.PROJECT DESCRIPTION AND CURRENT ACTIVITIES

#### 3.1 Project Description

14. Performance-based maintenance contract, the Kara-Balta-Suusamyр section to the Too-Ashuu tunnel (km 61 - km 129). CAREC 3 Transport Corridor Improvement Project (Bishkek-Osh Road), Phase 4. Engineering and construction supervision is carried out by EPTISA Servicios De Ingenieria S.L./ Eptisa Muhendislik / RAM.
15. To ensure the smooth passage of vehicles on this route as needed, year-round proper maintenance and minor repair works are carried out.
16. In the course of maintenance of the site, road pavement repair works are carried out, road safety is ensured, road signs are replaced, drainage structures are maintained, roadside plants are monitored, bridges are repaired, slopes are reinforced, winter maintenance is provided, and the road surface is maintained in different weather conditions.
17. The total budget for the implementation of this component is 296,914 350 KGS.
18. Outside the existing carriage way and shoulders, work is not carried out. New construction or modification of the plan is not envisaged.

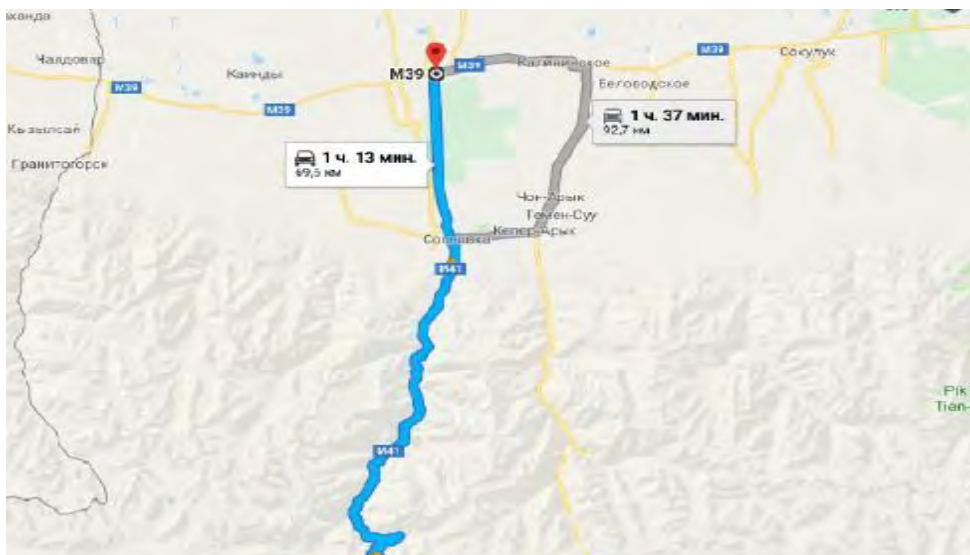


Figure 1 The Kara-Balta-Tunnel road section

19. Basing sites for workers and construction equipment are located in 2 places

Sosnovka village km 92 / number of workers - 8 people

Tunnel km. 129 / number of workers - 8 people.

20. Both on the 1st and 2nd bases the territory is rented from the Road Maintenance Unit №9 for the location of equipment and workers who will live in this territory, in rooms with the necessary conditions for living. In winter, preventive maintenance works are carried out to clean the roads from snow cover, as well as to fill the ice cover with sand and salt, the amount of material used is provided in the report on the fact.

**Supply of materials for construction and repair works.**

21. Asphalt and bitumen are supplied from the asphalt plant located in the Sokuluk district, Novopavlovka village, Vzletnaya rural settlement.

Sand - "Bashkarasu" Borrow-pit, PE Japaraliev

Concrete - Kara-Balta concrete plant

Table 1 Volume of main construction work

<b>Pavement works</b>				
<b>Type 1. Reconstruction(8 km.)</b>				
<b>№</b>	<b>Name of works</b>	<b>Unit</b>	<b>Quantity</b>	<b>Done</b>
1	Milling of existing asphalt layers (depth 5 + 8 cm)	M <sup>2</sup>	68000	64000
2	Scarifying the bottom part + compaction	M <sup>2</sup>	64000	64000
3	Drainage channel and pipe excavation	M <sup>3</sup>	250	0
4	Replacement of pipelines / culverts + backfilling	M	54	12
5	Reconstruction/repair of head walls of drainage canal	Unit.	12	0
6	Repair of concrete for pipes	m <sup>3</sup>	100	0
7	Repair of manholes	unit.	3	0
8	Development of earthen ditches	M	3000	0
9	Restore of profile excavation ditches	M	3000	0
10	Repair exterior drainage	M	200	0
11	Reconstruction/leveling of benches on the surface of concrete + shoulders	M <sup>2</sup>	16000	16000
12	Local reconstruction of skirting/subbase	M <sup>3</sup>	0	
13	Asphalt base 8 cm.	M <sup>2</sup>	64000	64000

14	Asphalt surface 5 cm.	M <sup>2</sup>	68000	64000
<b>Type 2. Resurfacing (9 km.)</b>				
1	Milling of existing asphalt layers (5 cm)	M <sup>2</sup>	81000	81000
2	Restoration of a ditch profile	M	18000	18000
3	Reconstruction / leveling of benches on the surface of concrete + shoulders	m <sup>3</sup>	18000	
4	Asphalt surface 5 cm.	M <sup>2</sup>	81000	81000
	Concrete parapet	unit.	546	315
<b>General construction work</b>				
	Gabion wall km. 89.9	m <sup>3</sup>	375	0
<b>Traffic signs</b>				
	Standard triangle sign a = 90cm	unit.	20	20
	Standard sign, circle and stop a=60cm	unit.	30	
	Standard sign rectangle 50 * 50 or 60 * 90	unit.	30	20
	Guide signs, rectangles	unit.	6	12
	Extra Table of Contents	unit.	8	
	Signpost	unit.	40	
	Guide pole	unit.	920	321
<b>Road markings</b>				
	Thermoplastic white mark with reflective materials, standard width, full or fragmentary	M <sup>2</sup>	24120	6500
	Cross or special markings	M <sup>2</sup>	6	6

### 3.2 Project Contracts and Management

#### 3.2.1 Project Contracts and Management

Table 2 Project Contracts and Management

Project	<b>Project to improve the CAREC transport corridor 3 (Bishkek-Osh road), Phase 4Result-based contract. Plot of Kara-Balta-Suusamyr (km.61-129,5)-CAREC/C3/P4/ICB/WC2 Component 2</b>
Contractor	<b>: LLC «Mostdorstroy»</b>
Section:	<b>: 61 km – 129,5 km, total length – 68,5 km</b>
Donor :	<b>Asian Development Bank</b>
Contract date	<b>18/12/2017</b>
Executive body	<b>: Ministry of Transport and Roads of the Kyrgyz Republic</b>
Notification of the start of work	<b>05/01/2018</b>
Date of completion	<b>: January,1 2021</b>
Time for completion-days	<b>: 36 months</b>
Extension-days	<b>: -</b>
Warranty period - days	<b>: 180 days</b>
Contract amount	<b>: Kyrgyz som 296,914 349.28</b>
Total prepayment amount	<b>: 10% of the accepted amount of the contract</b>
Performance Guarantee Amount	<b>: %15 of the accepted amount of the contract</b>

### 3.3 Project works during the current reporting period

22. During the reporting period, from July-December 2018, the work on road construction was carried out in following road section.

Table 3 Project works

<b>Resurfacing (9km) 5cm thick</b>		
<b>Section</b>	<b>Waste materials</b>	<b>Spoil area</b>
61+00 km 63+00 km	old milled asphalt	Sary Bulak
66+700 km 67+500	old milled asphalt	Kaiyrma
68+800 km 69+500	old milled asphalt	Bekitay
70+00 km 71+300	old milled asphalt	Bekitay
73+800 km 75+500	old milled asphalt	Bokso Jol
115+500 km 117+00	old milled asphalt	km 117
122+00 km 128+00	old milled asphalt	RMUNo. 9
<b>Resurfacing (8km) 13cm thick</b>		
<b>Section</b>	<b>Waste materials</b>	<b>Spoil area</b>
122+00km 128+00	old milled asphalt	RMU № 9
<b>Patching</b>		
<b>Section</b>	<b>Waste materials</b>	<b>Spoil area</b>
63+00km 121+00	Existing asphalt after cutting	Sosnovka village to the spoil area
<b>Replacement of road signs</b>		
<b>Section</b>		
61+00 110+00km	Replacing existing road signs. Poorly visible and mechanically damaged	
<b>Rough Surface Treatment (RST)</b>		
<b>Section</b>		
63+800km 64+800		
71+300km73+800		
82+00km84+00		

**Construction work included:**

23. Road maintenance works throughout the road section include the following:
- road maintenance 63 km -123 km (patching, pouring cracks, cleaning.





Figure 2 Current repair of the roadbed

- cleaning and repairing / replacement of road signs and ensuring road safety measures;

Installation of road signs at 121 km - 129 km



Figure 3 Installation of road signs

-cleaning and repair of drainage structures: grader and levelling of earth ditches for ensuring free flow of water; Cleaning work along the parapets and drainage channels at 81-129km.



Figure 4 Works along the parapets

- cleaning the road surface in winter, including sanding and a limited amount of salt. (Section 61 km-129 km)



Figure 5 Clearing of road surface during the winter period  
- minor repair of pipes.

24. Cleaning and repair drainage structures – In total, there are 69 culverts, which contribute to runoff and water drainage from one side to another, in the slope. In summer, these structures are free from water and there was construction without affecting the seasonal water flow. Pipes are precast concrete pipes that are manually cleaned. For the repair work of each construction requires a small amount of material (about 20-50 kg), which is mixed manually or using a small mixer, applied and finished completely by hand. All the pipes are in the ground/soil ditches. The work consists of removal of dirt and debris to ensure unobstructed flow of water. Cleaning of culverts 61-129 km (82 PCs)

25. Construction of new culverts is not expected.



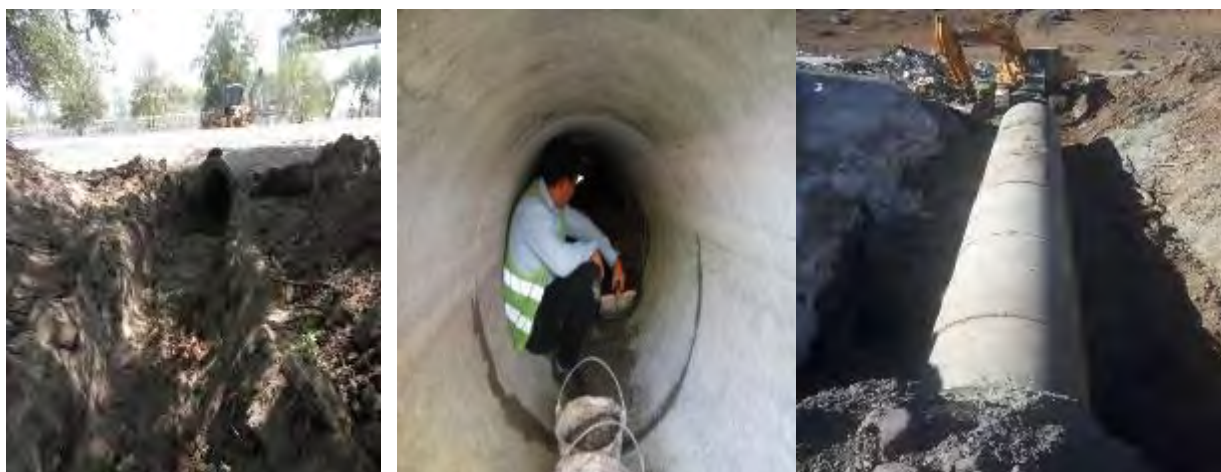


Figure 6 Clearing of culvert pipes

- cleaning and minor repair of structures; Clearing of waste 61-129,5 km.

26. Cleaning and minor repairs of bridges, culverts and retaining walls - In total, there are 26 bridges, 10 culverts and 5,500 meters of retaining wall on the 68.5 km project road. Bridges cross the Kara-Balta River; Culverts are drainage structures that direct the water flows on the road surface during the rainy season and the snowmelt season into the Kara-Balta River.

Table 4 Clearing of culvert pipes

Cleaning of culvert pipes		
Section		Amount
61+00km 129+00	Waste removal. Partly is completely clogged.	82PCs

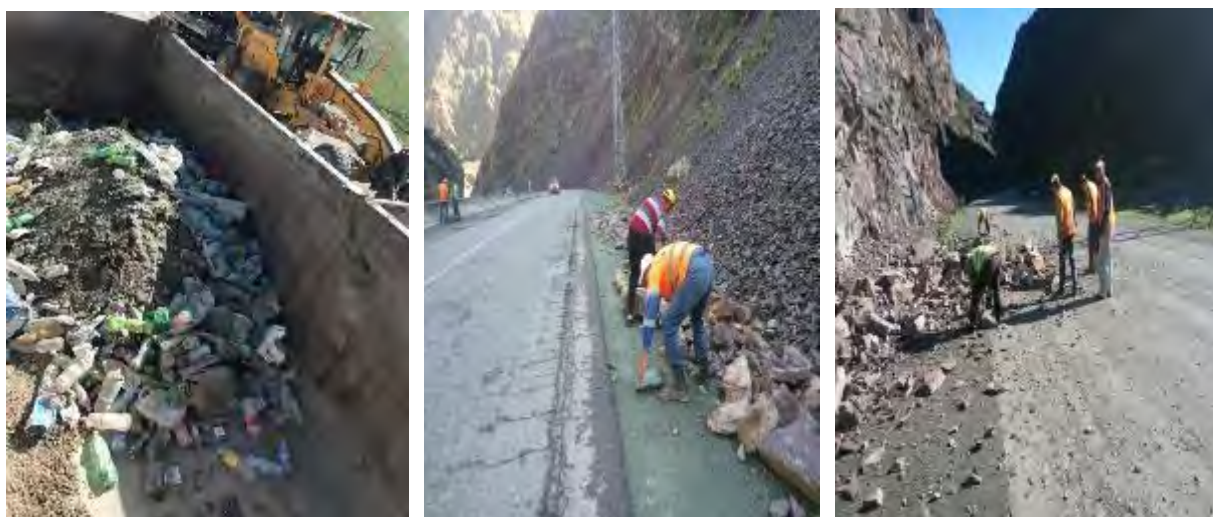


Figure 7 Waste collection along the road

27. Retaining walls - As part of the inspection / review of retaining walls, any cracks and defects are recorded, and repairs are carried out depending on the severity of the condition.

28. This work is carried out within the right of way; no work is carried out on the bridge deck or abutments. Works in the water is carried out to clean the bed of debris that prevents proper water flow.

Table 5 Repair of retaining walls

Repair of retaining walls		
Section		Amount
93+00km	Repair after the mechanical damage	12m <sup>3</sup>
98+00km	Repair after the mechanical damage	2m <sup>3</sup>
105+00km	Repair after the mechanical damage	2,5m <sup>3</sup>

29. Vegetation control - On the road sections along the road corridor with green spaces that interfere with the maintenance / service of the road or require their removal.
30. On flat roads between km 61 and km 85 (between Kara-Balta and Sosnovka) the road is on a small embankment about 0.5-1m high, next to agricultural land. There are dirt roads, berms and slopes covered with natural vegetation. Cause of the climate and types of mountain flora, vegetation, as a rule, does not grow above 30 cm, which does not require any intervention. In places where grass height exceeds this value, contractors or owners of adjacent fields mow grass by hand. Such vegetation is usually used as animal feed. Herbicides are not used there.
31. Repair works on bridges are mainly related to security, i.e. restoration of safety barriers after accidents or collisions. Work in riverbeds is limited to cleaning the drain of debris that entering the water stream can lead to congestion and erosion. Concrete repair works are not included in the scope of maintenance / road maintenance work.
32. Rehabilitation of bridges is not provided.

#### 4. ENVIRONMENTAL ACTIVITIES

##### 4.1 General description of environmental measures

33. In accordance with clause 24 of the General Conditions of Contract (GCC), the Work Execution Program includes a Health and Safety Management Plan. The aim of the Health and Safety Management Plan is to create a responsible attitude towards occupational health and safety and compliance with existing regulations.
34. During the reporting period, the local environmental specialist EPTISA, the environmental specialist of the Investment Project Implementation Group of the MoTR KR, and the environmental specialist of the Contractor carried out regular visual monitoring of compliance with environmental requirements during construction work in all road sections.

##### 35. ***The Contractor conduct relevant work on the health and safety management plan***

##### 4.2 Environmental safeguard measures

36. The EMP provides a description of the various measures proposed by the project, which are intended to prevent, mitigate or compensate for the negative environmental impacts that may arise as a result during realization of project. At the end of each month, a report is submitted according to the Construction Environmental Management Work Plan (CEMWP).

##### 4.3 Emergency procedures and contingency plan

37. The work program includes emergency procedures and the Contingency Plan, which establishes the roles, activities and procedures for specific types of emergencies presented in contingency plans that close roads. Emergency procedures and the Emergency Action Plan are prepared by the Contractor and agreed with the Project Manager and other stakeholders.

38. The Contractor presented the “Emergency Procedures and Contingency Plan”, which was approved by the consultant and the Contractor commenced work accordingly.

#### 4.4 Traffic management plan

39. The work program includes a traffic management plan. The traffic management plan determines the traffic management procedures at the work sites and during winter weather events. The traffic management plan was developed by the Contractor and agreed with the Project Manager. The traffic management plan is submitted by the Contractor and approved. The contractor has begun related work.

40. Contractor's camp is located at 81 km. Kara-Balta – Sususamy road. In the camp there is a dining room, office, and sleeping places for Contractor's employees. The camp is provided with clean drinking water, sinks and trash cans are installed. Fire-fighting accessories are installed in the required places. Opposite the camp there is a parking for cars and equipment of the contractor. Storage areas are located at the back of the camp and there is enough storage space.

#### 4.5 Construction work:

41. The main impact on the environment during the excavation was dust formation. Increased air temperature led to increased dust on the road. Dust formation was controlled by watering the road.

#### 4.6 Audit of Construction sites

Table 6 Audit of construction sites

No p/p	Date	Full name of auditors	Audit's purpose	Summary of any important audit notes
1	13.07	T. Volkova – Eptisa's ecologist	Construction sites monitoring	At km 86.9 - km 88.7 and km 98 due to heavy rains rockfalls occur. Boulders that fell on the road with parapet damage were noted. Also in this area there are large pieces of rock hanging over the road, representing the threat of spalling and falling to the road, representing a danger to passing vehicles.  A letter was sent to Mr. Hakan
2	20.07	M. Stamaliev – the Contractor's environmental specialist, together with the project manager, Maksat uulu Iskeder	Compliance with environmental regulations, road safety	It is noted that the summer maintenance of the road is respected. Dust generation was controlled by watering the road.
3	06.08.	Volkova T.I. – Eptisa's environmental specialist	Construction sites monitoring.	The presence of household waste in the roadside. The problem with the overhanging boulders is not solved.
4	21.09	B. Sydykbekova – the Contractor's	Compliance with environmental	It is noted that road signs are installed for road safety purposes.

		environmental specialist, together with the project manager - Maksat uulu Iskeder	regulations, road safety and compliance with the norms of the summer maintenance of the road.	It is noted that the summer maintenance of the road is respected. Dust formation was controlled by watering the road. Clearing of waste and stones is carrying out at section km 61-129,5
5	19.10	B. Sydykbekova – the Contractor’s environmental specialist, together with the project manager - Maksat uulu Iskeder	Compliance with environmental regulations	Clearing of waste and rockfalls was carried out at section at km 61-129,5
7	24.10	Volkova T.I. – Eptisa’s environmental specialist	Monitoring construction sites together with ADB's experts and MoTR specialists	Violations of environmental requirements are not noted.
8	23.11	B. Sydykbekova - the Contractor’s environmental specialist, together with the project manager - Maksat uulu Iskeder	Compliance with environmental regulations, compliance with the standards for winter road maintenance.	Road filling was performed mechanically and manually (81-129km)

#### 4.7 Unanticipated environmental impacts or risks

42. At sections km 86.9 - 88.7 and km 98, rockfalls occur due heavy rains. Boulders that fell on the road with parapet damage were noted. Also in this area there are large pieces of rock hanging over the road, representing the threat of spalling and falling onto the road, representing a danger to passing vehicles. A commission was created with the participation of the Ministry of Emergency Situations to survey this site in order to make a decision on eliminating this threat.





Figure 8 Danger of rockfall

## 5.RESULTS OF ENVIRONMENTAL MONITORING

### 5.1 Review of the monitoring conducted during the current period

#### Instrumental monitoring of the environment

43. According to the IEE/EMP instrumental measurements of water, air and noise parameters are not provided. Environmental impact of pollutants is not expected.

#### Water quality monitoring

44. According to the IEE/EMP, instrumental measurements of water quality are not provided for this Project. The project has no impact on water bodies, as all works will be carried out at a sufficient distance from water sources.

#### Air quality monitoring

45. According to the IEE/EMP, instrumental measurements of air quality are not provided for this Project.

46. There were no significant dust emissions during the reporting period. Emissions from trucks during the transportation of cement, gravel and concrete were minimal, the movement of trucks was limited (except for the transportation of equipment to the site).

#### Noise and vibration monitoring

47. Regular monitoring of noise and vibration is not envisaged for this Project according to the IEE/EMP. However, workers wear ear protectors if necessary.

### 5.2 Waste Management

48. Removed old asphalt can be reused for unpaved shoulders or as an embankment for other rehabilitation works. It can also be used for backfilling of borrow-pits and covered with a

layer of soil on top. Asphalt can be laid on adjacent roads as a surface layer or used as a material for patching with compaction. The resulting solid household waste (SHW) in the construction camp is disposed of in ayil okmotu of Sosnovka village, according to the terms of the contract.

49. Cleaning and repair of drainage structures - There are 69 culverts on the site, which facilitate water drainage from one side of the road to the other, in a slope. In summer, these structures are free of water, and here you can carry out repair work without affecting the seasonal water flow. Pipes that are prefabricated concrete pipes will be cleaned by hand. Small concrete repairs may be required at the pipe outlets (in case of scouring) or inside the pipes (at the joints between the links). For the repair work of each facility, a small amount of material (about 20-50 kg) will be needed, which will be mixed manually or using a small concrete mixer, applied and finally finished manually. All cuvettes are earth / soil cells. The job consists of removing dirt and debris and eventually leveling to ensure the unobstructed flow of water. If the culverts are not serviced, they can become clogged, leading to filling, flooding of the road surface, erosion and possibly road jams. Therefore, this work has a positive impact.
50. Cleaning and minor repairs of bridges, culverts and retaining walls - In total, there are 26 bridges, 10 culverts and 5,500 meters of retaining wall on the 68.5 km project road. Bridges cross the Kara-Balta River; Culverts are drainage facilities that direct the water flows on the road surface during the rainy season and the snowmelt season into the Kara-Balta River.
51. Repair works on bridges is mainly related to safety, i.e. restoration of safety barriers after accidents or collisions. Work in the river beds should be limited to clearing the watercourse from debris that, if released into the water stream, can lead to congestion, spillage and erosion. Concrete repair works are not included in the scope of work of a maintenance / maintenance contractor, however, they can sometimes be carried out after an emergency, if for example structures are damaged due to sudden floods or accidents.

### **5.3 Health and Safety**

#### **5.3.1 Community Health and Safety**

52. The traffic management plan has been agreed with the authorities of the Main Directorate for Road Safety of the Ministry of Internal Affairs of the Kyrgyz Republic. The recording will be kept at the construction camp office.

#### **5.3.2 Worker Health and Safety**

53. Workers are provided with all necessary equipment, as well as basic training on the use of protective clothing and personal protective equipment. Workers are provided with PPE such as: vests, hard hats, gloves, shoes. Safety Instruction held in the camp, there is a log of registration. No night work.
54. The camps are equipped with disinfectant sanitation and drinking water. The camp has a container for collecting MSW. Drawn up a contract for the export of solid wastes with local government. There are no hazardous materials on the territory of the construction camp.

## ANNEX 2 LABORATORY MEASUREMENT RESULTS

Certificate of Accreditation №KG 417/КЦА.ИЛ.065 dated «02» February 2018.



Valid before «02» February 2022. The scope of accreditation on the website: [www.kca.org.kg](http://www.kca.org.kg)

### THE PROTOCOL OF VIBRATION MEASUREMENT

№13 dated «24 » September 2018

1. Legal person, individual entrepreneur or natural person, where the measurements are conducted:

**«Eptisa» Company**

(name, registered address)

2. The object where the measurements are conducted: **Bishkek-Osh road**

(name, actual address)

3. The basis for the measurement: **Contract № 6**

4. Name of measuring instruments and information on state verification:

Name of measuring instrument	Number	Certificate of verification		Verified before
		number	date	
<b>Ecophysics - 110A</b>	<b>№AB 130044</b>	<b>№ 1895</b>	<b>10.05.2018</b>	<b>10.05.2019</b>

5. Regulatory documentation on measurement methods, according to which the measurements were carried out: **GOST 31191.1-2004 «Vibration. Measurement of total vibration and evaluation of its impact on humans. Requirements for conducting measurements in the workplaces».**

6. Regulatory documentation on norms: **SN 2.2.4/2.1.8.566-96 «Industrial vibration, vibration in rooms, residential and public buildings»**

7. The sources of physical factors and their characteristics: **drum roller**

8. Environmental condition: **Temperature 25° C**

**Humidity 54%**

9. Date of measurements: 19.09.2018

Measurement results:

№	Place of measurement	Type of vibration					axis	Sound pressure levels in dB in octave band centre frequencies in Hz								level of sound (dBA)	Permissible standards (dBA)	Excess (dBA)	
		general			local			1	2	4	8	16	31,5	63	125				
		Transport	Transport-technological	technological															
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
	<b>Petrovka village, near the house in 155 Frunze street at a distance of 27 m from drum roller latitude: 42° 50'23; longitude: 74°02'52.</b>																		
1																			
	During operation of drum roller without vibration																		
				+			X											90	
							Y											88	
							Z											81	
2																			
	During turned off mode of drum roller																		
				+			X											90	
							Y											83	
							Z											75	
3																			
	<b>Novo-Nikolaevka village, near the house in 180 Engel'sa street, at a distance of 18 m latitude: 42° 50'06; longitude: 73°54'36</b>																		
4	During operation of drum roller																		
				+			X											94	
							Y											104	
							Z											99	
																		96	
5	During turned off mode of drum roller																		
				+			X											87	
							Y											83	
							Z											77	



Position Environmental Specialist

Signature

\_\_\_\_\_

\_\_\_\_\_

	Position	Full name	Signature
<b>Measurements conducted by</b>	Quality manager	Amanova N.T.	

The protocol is drawn up in two copies, 1 copy is issued to whom it may concern, the 2 nd copy remains in the laboratory.

**Note: The results of the Protocol correspond to the time of measurements.**

**Reprint of the Protocol without the permission of the head of the laboratory is prohibited.**

**End of Protocol**

**Conclusion on the results of measurements:**

**According to the results of instrumental measurements, the level of vibration of the drum roller at the vibration off mode is from 78 to 82 dB.**

**Background vibration ranges from 76 to 79db.**

*Note: Vibration level other than residential and work places is not rated.*

**Sanitary inspector of LLC «ProfiLab»**

**Zh. T. Arzykulov**

signature

full name

Retention period 4 years  
page: 3 of 3



Certificate of Accreditation №KG 417/КЦА.ИЛ.065 dated «02» February 2018

Valid before «02» February 2022. The scope of accreditation on the website:  
www.kca.org.kg

## THE PROTOCOL OF NOISE MEASUREMENT

№30 dated «24» September 2018

1. Legal person, individual entrepreneur or natural person, where the measurements are conducted, address: «Eptisa» Company

2. The object where the measurements are conducted: Bishkek-Osh road  
(name, actual address)

3. The basics for measurement: **Contract №6**

4. Name of measuring instruments and information on state verification:

Name of measuring instrument	Number	Certificate of verification		Verified prior to
		number	Date	
<b>Ecophysics - 110A</b>	<b>№AB 130044</b>	<b>№ 1895</b>	<b>10.05.2018</b>	<b>10.05.2019</b>

5. Regulatory documentation, according to which the measurements were carried out:

**Sanitary norms 2.2.4/2.1.8.562 – 96 «Noise in the workplace, indoors, in residential public buildings and in the territory of residential buildings»**

6. Environmental condition: **Temperature 25° C**  
**Humidity 54%**

7. The sources of physical factors and their characteristics: **concrete batch plant, drum roller**

8. Date of measurements: **19.09.2018**

№	Place of measurement	Noise character						Sound pressure levels in dB in octave band centre frequencies in Hz										Sound level (dBA)			
		By spectrum			By temporary			broadband	Tonal	t oscillate	nt impulsive	31,5	63	125	250	500	1000		2000	4000	8000
		3	4	5	6	7	8														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18				
<b>Territory of asphalt plant, the Contractor's camp.</b>																					
1	During operation of batch plant.																				
																			45 fact		
																			70 MPL		
<b>Concrete batch plant</b>																					
2	During operation of concrete batch plant at a distance of 20 m																				
																			78 fact		
																			80 MPL		
<b>Petrovka village, near the house in 155 Frunze street, at a distance of 27m from drum roller</b> <b>latitude: 42° 50'23; longitude: 74°02'52.</b>																					
3	During operation of drum roller without vibration																				
																			72 fact		
																			70 MPL		
																			2 dBA		
4	During turned off mode of drum roller																				
																			55 fact		
																			70 MPL		
<b>Petrovka village, near the house in 504 Frunze street (control point)</b> <b>latitude: 42° 50'28; longitude: 73°59'33</b>																					
5	Background noise																				
																			63 fact		
																			70 MPL		

<b>Novo-Nikolaevka village, near the house in 180 Engel'sa street at a distance of 18 m latitude: 42° 50'06; longitude: 73°54'36</b>																	
<b>6</b>	During operation of drum roller																
																	64 fact
																	70 MPL

**Measurement results:**

**Measurement results:**

№	Place of measurement	The nature of noise						Sound pressure levels in dB in octave band centre frequencies in Hz										Sound Level (dBA)
		By spectrum		By spectrum				31,5	63	125	250	500	1000	2000	4000	8000		
		broadband	Tonal	Permanent	oscillate	intermittent	impulsive											
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
<b>7</b>	During turned off mode of drum roller																	
																	53 fact	
																	70 MPL	
<b>Novo-Nikolaevka village, near the school at a distance of 3 m from the road latitude: 42° 49'54; longitude: 73°53'56</b>																		
<b>8</b>	Background noise																	
																	55 fact	
																	70 MPL	
<b>Petropavlovka village, near the school at a distance of 6 m from the road latitude: 42° 50'18; longitude: 73°55'22</b>																		
<b>9</b>	Background noise																	
																	68 fact	
																	70 MPL	

