

# Environmental Monitoring Report

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July – December 2019  
March 2020

## KGZ: CAREC Corridors 1 and 3 Connector Road Project (Section “Epkin [Km 89] to Bashkugandy [formerly Dyikan] [Km 159]”)

Prepared by Gentek Consulting Muhendislik for the Ministry of Transport and Roads of the Kyrgyz Republic and the Asian Development Bank.

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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
SSEMP	-	Site-specific Environmental Management Plan
AP	-	Asphalt Plant
SCP	-	Stone crushing plant
CBP	-	Concrete batch plant

## **1. INTRODUCTION**

### **1.1 Preamble**

1. Kyrgyz Republic is a mountainous, landlocked country, regional commerce depends heavily on road transport, which dominates the Kyrgyz transport system and heavily dependent on road transport. The Government of the Kyrgyz Republic has requested the Asian Development Bank (ADB) to assist in funding for the realization of The Section «Epkin (Km 89) to Bashkugandy (km 159)» of the CAREC Corridors 1 and 3 Connector Road.
2. This report is the first semi-annual environmental monitoring report, covering the period from January to June 2019, within the ongoing CAREC Corridors 1 and 3 (Epkin (Km 89) to Bashkugandy (km 159) road section) Improvement Project, which contains environmental issues, mitigation and monitoring measures performed by the Contractor and reviewed by the GENTEK - Construction Supervision Consultant. During the reporting period, the road rehabilitation works included existing road maintenance, marking and cutting of trees, excavation of spoil unsuitable material from cuttings, removal of old asphalt, and embankment with cut material.
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 January to July 2019, wherein the focus was on monitoring of compliance with the environmental and safety requirements during execution of earthworks, tree cutting, noise impact and traffic management.

### **1.2 Headline Information**

4. The project road Section Epkin (Km 89) to Bashkugandy (km 159) is a 70-km east to west highway. Generally, this Section follows the existing alignment up to Bashkugandy (km159). The entire of this section is within Naryn Oblast and it traverses small western part of Kochkor District (Kochkor, as the capital); while the most part is in Jumgal District (ChaeK as the capital).
5. The road 70 km from Epkin (km 89) to Bashkugandy (km 159) runs over Kochkor valley through Kyzart mountain pass (2664m) to Jumgal depression. The Section proceeds westward to Bashkugandy village passing through a number of settlements interspersed by agricultural fields with a 2-line configuration of carriageway. These western parts of Kochkor District are vast tracts of agricultural lands devoted to farming and animal stock-raising. The road climbs to around 2,600 m which seem to be the highest point at Kyzart Pass after which it descends to Jumgal District. The high portion appears to be the boundary between Kochkor and Jumgal Districts, and also the delineation of the watersheds for the Chui and Jumgal Rivers. This high point on the road seems to be the saddle point between mountain ranges the run parallel east to west of Naryn Oblast. The terrain is characterized as undulating and mountainous and covered with grasses suitable for grazing.
6. CAREC Corridors 1 and 3 (Epkin (Km 89) to Bashkugandy (km 159) road section) Improvement Project 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 CAREC Corridors 1 and 3, 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.

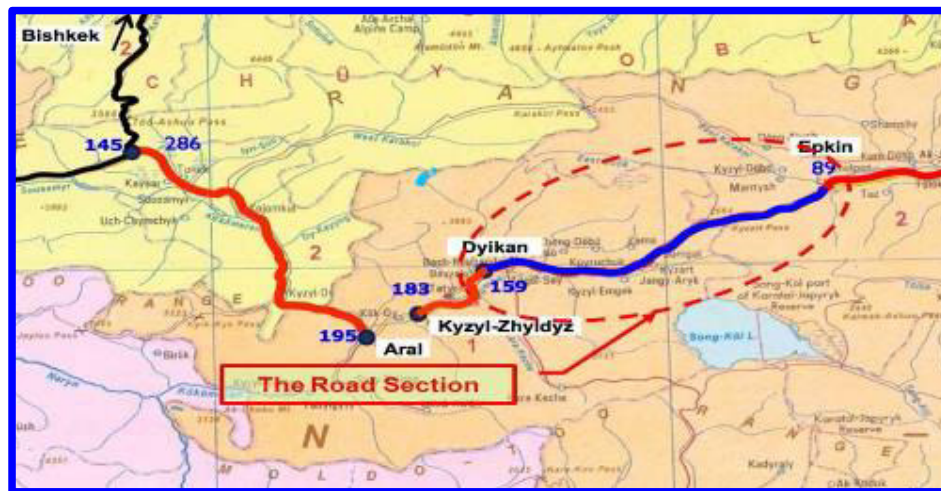


Figure 1. Location Map of the Epkin-Bashkugandy road section, of the CAREC Corridors 1 and 3 roads

## 2. PROJECT DESCRIPTION AND CURRENT ACTIVITIES

### 2.1 Project Description

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

7. 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 North-South alternative road. According to the classification of the ADB Safeguard Policy Statement, the project classified as B category for environmental safeguards.
8. The project road Section Epkin (Km 89) to Bashkugandy (km 159) is a 70-km east to west highway. This Section follows the existing alignment up to Bashkugandy (km 159). The entire of this section is within Naryn Oblast and it traverses small western part of Kochkor District (Kochkor, as the capital); while the most part is in Jumgal District (ChaeK as the capital).
9. The road is in poor condition; the surface is bumpy with numerous patches, covered with frequent transverse and longitudinal cracks, often with crack network. The road goes along the Jumgal River and crosses Tugol-Sai river as well as other many feed and irrigation ditches and low places.
10. Engineering-geological conditions of subgrade construction on the North-South Alternative road on the section between Epkin and Bashkugandy are favorable. Baseline with a length of 70 km is laid mainly on the existing roadbed with gravel envelope, in some spaces with asphalt coat. Coating is asphalt, mainly with a thickness of 5–6 cm, rarely 9–10 cm. Base of road pavement and is constructed from gravel, pebble and crushed-stone soils with sandy-loam, sandy fillers.

**Table 1. The Project details are summarized in below**

From	To	Total Road Length	
KM 89+500	KM 159+200	69.7 Km	
Excavations to dumpsite	406 818 m <sup>3</sup>	Unsuitable material from cuts	269 291 m <sup>3</sup>
		Rock material from cuts	136 860 m <sup>3</sup>
		Unsuitable material from dismantling	667 m <sup>3</sup>
Embankment	533 250 m <sup>3</sup>	Common fill material from cuts	174 697 m <sup>3</sup>
		Rock fill material from cuts	9 100 m <sup>3</sup>
		Common material from borrow	186 663 m <sup>3</sup>
		Selected material from borrow	157 290 m <sup>3</sup>
		Common material for road signs and backfilling	5 500 m <sup>3</sup>
Subbase Class C Grading 0/40	364 667 m <sup>3</sup>	Main Road Thickness = 25 cm	361 612 m <sup>3</sup>
		Ramp Thickness = 25 cm	3 055 m <sup>3</sup>
Lower Shoulder Class C4 Grading 0/70	71 063 m <sup>3</sup>	Main Road Thickness = 20 cm	70 648 m <sup>3</sup>
		Ramp Thickness = 15 cm	415 m <sup>3</sup>



Upper Shoulder Class C10 Grading 0/40	62 131 m <sup>3</sup>		Main Road Thickness = 15 cm		61 301 m <sup>3</sup>	
			Ramp Thickness = 5 cm		830 m <sup>3</sup>	
Base Course Class I Grading 0/30	149 681 m <sup>3</sup>		Main Road Thickness = 20 cm		148 771 m <sup>3</sup>	
			Ramp Thickness = 15 cm		910 m <sup>3</sup>	
Asphalt Pavement	103 963 m <sup>3</sup>		Binder Course Thickness = 9 cm		62 225 m <sup>3</sup>	
			Wearing Course Thickness = 6cm		41 738 m <sup>3</sup>	
Drainage	Open Drain		Subsurface Drain with PVC		Subsurface Drain without PVC	
	Excavation of 20 258 m <sup>3</sup>		1 363 m		3 000 m	
Culverts Sulphate resistant, B30	D = 1.0 m	D = 1.5 m	D = 2.0x1.5 m	D = 2.0x2.0 m	D = 1.0 m	D = 1.0 m
	1 130 m	898 m	25 m	27 m	10 m	11 m
Armature	42.91 t		Bridge		28.87 m	

**Table 2. Road sections where the construction work was carried out in 2019**

Type of Work	Planned Start Date	Actual Start Date	Within Report Period		
			Location		Length (m)
Cutting of Trees		02.04.2019	139+500	149+500	2 935
Clearing & Grubbing		02.04.2019	148+000	158+480	5 430
Cut Excavation		23.04.2019	150+940	158+100	2 060
Embankment	02.04.2019	11.05.2019	152+750	156+780	4 010
Asphalt Excavation		23.04.2019	152+500	152+740	240

The itemized progress of works is represented in the table 3 below

**Table 3. Progress of works in July – December, 2019**

Description	Unit	Quantity			%	
		BOQ	Actual	Remaining	Actual	Remaining
Clearing and Grabbing	Ha	80	26	54	32.50	67.50
Scarifying of existing pavement	M3	18877	6629.26	12247.08	46.82	53.18
Cutting	M3	406,818	292,776.26	114,041.74	71.97	28.03
Embankment	M3	375,960	125,152.00	250,808.00	33.29	66.71

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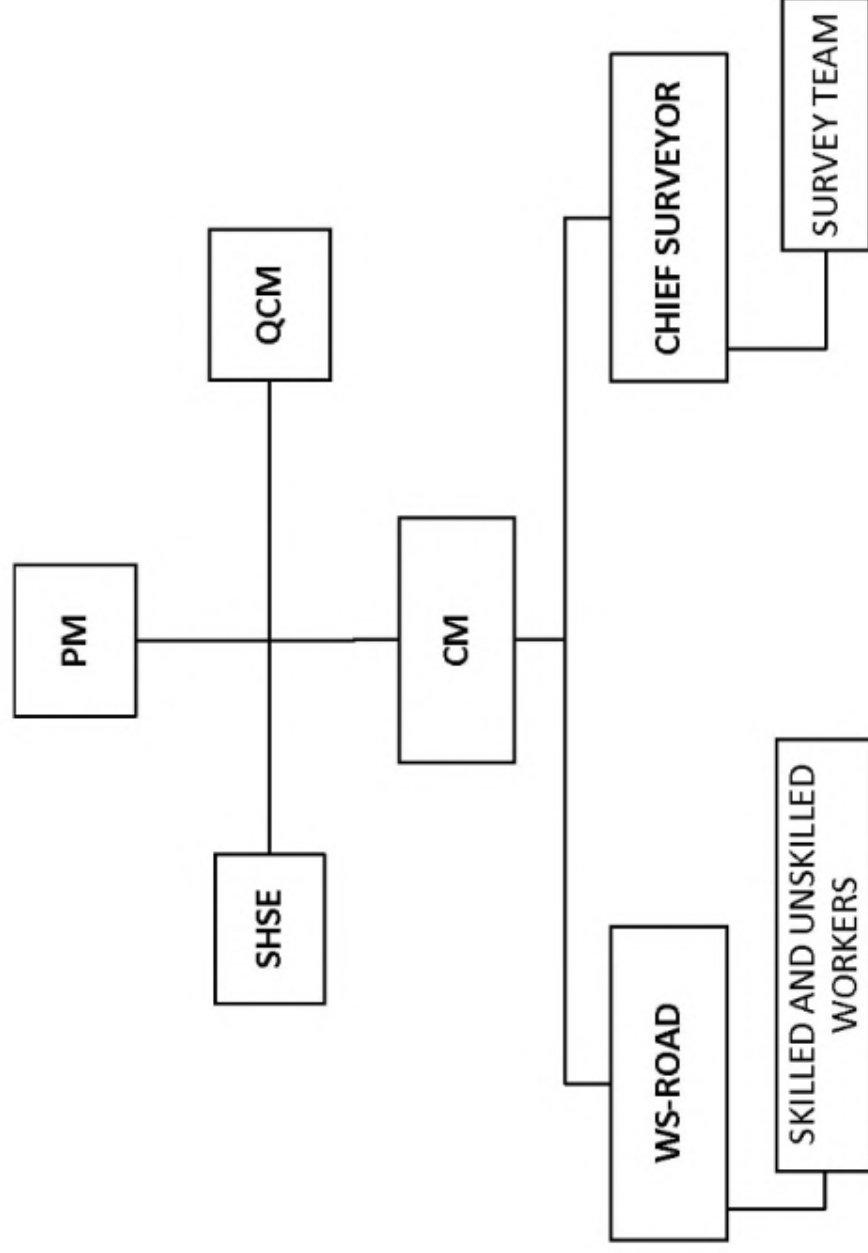
11. The construction work will be carried out mainly within the existing road right-of-way, thus keeping environmental impacts to a minimum. The Project will involve a number of consequential activities such as development of borrow pits, operation of asphalt plants and aggregate crushing plants, arrangement of contractor's worker camps and storage sites, etc.
12. 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 4. Project Contracts and Management**

<b>Project</b>	<b>Central Asia Regional Corridors 1 and 3 (Epkin-Bashkugandy Road Section) Improvement Project.</b>
Contractor	Todini Costruzioni Generali SPA
Road section:	89 km – 159 km, the overall length is 70
Donor:	Asian Development Bank.
Contract Sign Date:	28/03/2017
Executive Agency	Ministry of Transport and Roads of the Kyrgyz Republic
Notice to Commence	13/11/2018
Completion Date	12/11/2021
Time for Completion – Days	3 years
Extension of Time – Days	-
Defect Liability Period – Days	365
Contract Amount	USD 40,750,971.37
Minimum Amount of Interim Payment USD (3%)	
Total Amount of Advance Payment	Maximum 20% of the Accepted Contract Amount less Provisional Sums
Amount of Performance Security	%20 of Accepted Contract Price
Amount of Third Party Insurance	500,000 USD per occurrence with the number of occurrence unlimited
Periods for submission of insurance a) evidence of Insurance b) relevant policies	14 days 14 days
Delay damages for the Works	0.05% of the Accepted Contract Amount for each lot, which is in delay, per day in USD
Maximum amount of delay damages	10% of the Accepted Contract Amount
Repayment Amortization of Advance payment	10%
Limit of Retention Money	10% of Accepted Contract Amount
Percentage of Retention	5% of Value of Works certified for Payment

Figure 2. Project Organization Structure and Management



### 2.2.1 Main Organizations involved in the project

13. 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 (DDPSSES).
14. 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.
15. 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.
16. 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.
17. 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.
18. 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 5. 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	
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	Gentek	Consultant	Almaz Asipjanov	almaz.asipjanov@gmail.com
5	Todini Costruzioni Spa	Contractor	Nurlan Nurdinov	nnurdinov78@mail.ru
6	Howo Center	Subcontractor	-	
7	Enisey Stroy LLC	Subcontractor	-	

**Table 6. Consultant's staff**

<b>KEY EXPERTS (International)</b>	
Position	Name
Team Leader	Selcuk Mutlu
Pavement and Materials Engineer	Ersoz Yamak
Structural Engineer	Sadi Numan
Road Safety Engineer	Ercan Duymaz
Contract Specialist	Murat Kose
Social development and Resettlement Specialist	Saim Tuzlu
Environment Specialist	Serpil Ozcan Nazlioglu
<b>KEY EXPERTS (National)</b>	
Highway Engineer/Deputy Team Leader	Zheksheev M. Sarychalovic
Pavement and Materials Engineer	Omorov Mirbek Boobekovich
Structural Engineer	Turdubaev Sherikbek Mailievitch
Quality Assurance Engineer	Umarov Muradzhan Ibragimovich

Quantity Surveyor	Kaparov Saadalbek Abdyl daevich
Road Safety Engineer	Ruslan Gasimov Musajanoviç
Social and Resettlement Specialist	Azamat Omorbekov
Environment Specialist	Almaz Asipjanov
Hydrological/Drainage Specialist	Batyrbekov Maksatbek Meymanbekovich

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

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

- Number of lanes: 2
- Lane width: 3.5–3.75 m
- Carriageway width: 7.00–7.50 m
- Width of shoulder: 3.25–3.75 m (of which 0.50–0.75 m is paved)
- Total road width: 15.00 m

20. 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.

#### Vegetation Planting

21. Most of trees planted on the road sides 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

22. The project site passes through populated areas. The project provides for the demolition of commercial services, pavilions, service 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 is planning to be paid to 143 affected persons, including owners and users of land, business owners, tenants and employees.

### 2.3 Project Activities During Current Reporting Period

23. During the reporting period from July to December 2019, construction works were carried out at road section 159km + 142km.

#### 2.3.1 Construction work included:

- Existing Road Maintenance
- Cutting of Trees
- Clearing and Grubbing
- Excavation to spoil unsuitable material from cuttings
- Existing asphalt payment brake up and dispose to spoil
- Embankment with Cut Material



**Figure 3. Old asphalt removal.**



**Figure 4. Excess soil removal**

### **2.3.2 Construction of bridges and culverts**

#### **2.3.3 Culverts**

24. Works on dismantling of old and installation of new culverts have not started yet.

#### **2.3.4 Borrow-pits**

25. At the project road (Epin-Bashkugandy road section, km 89 – km 159) 7 plots were allocated for borrow-pits. The Contractor received the necessary approvals for borrow-pits central and local authorities, the State Committee for Industry, Energy and Subsoil Use (SCIESU) and the State Agency for Environmental Protection and Forestry (SAEPF). Currently, the Contractor is in the process of negotiation with Cholpon village authority on receive of permits for Borrow pits 1 and 2.



26. Table 7 shows seven borrow-pits available and locations listed below.

**Table 7. Borrow-pits Description**

No.	Borrow-pit	Km	Approximate Distance (m)	RML	Volume, m <sup>3</sup>	Location	Notes
1	Borrow Pit №1	91+680.00	2220	R	450 000	Cholpon	No permission
2	Borrow Pit №2	100+850.00	850	R	150 000	Cholpon	No permission
3	Borrow Pit №3	133+000.00	320	L	150 000	Jany-Aryk	
4	Borrow Pit №4	135+280.00	2005	R	200 000	Jany-Aryk	
5	Borrow Pit №5	140+990.00	212500	L	97 250	Kuyruchuk	
6	Borrow Pit №6	145+070.00	1,2050	L	30 000	Kuyruchuk	Since August development of it stopped due to completion of materials.
7	Borrow Pit №7	148+630.00	15800	R	800 535	Tugol-Say	River bed

### 2.3.5 Asphalt plant territory

27. The production site is identified at the territory of Kuyruchuk Ayil Okmoty, close to Tugol-Say village. The area belongs to the industrial and communal zone.
28. The following buildings and structures are planned to be located in the site: console control building, stone-crushing plant (SCP), asphalt-bitumen plant (asphalt plant), concrete batch plant (CBP), silos - bin for cement. These objects are placed at an appropriate distance from houses (at least 500m), as well as water (at least 50 m), to avoid contamination of water.

### Workers camp

29. The camp site has been identified and established in August-September 2019.
30. The camp will only serve as office premises for contractor, supervision consultant, and laboratory building. The camp has two firefighting equipment stands. The camp has a kitchen unit, equipped place for eating, showers, sinks, toilets.
31. Currently, sub-contractors' workforce living in the rented houses. Regular explanatory conversations on the observance of the camp rules with the residents is carried out.
32. Fueling of the contractors' trucks are conducted at Partnerneft gas station, whereas Sub-contractor operating crushing plant has fueling tanks at crushing plant. Machinery and trucks are parked and maintained at contractor's and sub-contractors construction sites.



**Figure 5. Construction of office camp in progress.**

### **2.3.6 Soil Management**

33. Topsoil is removed and stored in special areas allocated by the local administration of Bash-Kugandy Ayil-Okmotu. After completion of the construction work, it can be used for backfilling slopes.
34. 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. Currently, topsoil is removed on an area of 5 hectares.



**Figure 6. The stored topsoil.**

### *Stone crushing plant*

35. Raw materials for production of crushed stone and sand is delivered from borrow-pit by dump trucks to the stone-crushing plant established near Kuyruchuk village. Crushing of ballast is carried out in crush lines of crushers.



**Figure 7. Stone crushing plant.**

36. The following buildings and structures are located in the site: console control building, stone-crushing plant (SCP), office, car parking; storage for fill materials - crushed stone and sand; transformer substation, garbage containers. Workers accommodation and eating room are located in the rented house adjacent to Crushing Plant. Parking for trucks and fueling tank are located on separately from the main crushing plant territory.
37. 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.
38. During the operation of the plant, all soil around the fuel tanks must be protected from leaks and spills of hazardous materials with an impermeable protective coating.

### **2.3.7 Tree management**

39. At sections km 91+846 and km149+500, 853 trees were marked, all documentation was prepared, permission for tree cutting was obtained from the local environmental authorities. Stems of the cut down trees were distributed among local authorities. The exact number of trees to cut was determined during the designing of the road by the contractor and it lead to discrepancy with IEE identified number of the trees, With further works movement, this number of trees may change.



**Figure 8. Cutting the trees.**

### **2.3.8 Workers camp**

40. The construction office camp site has been identified and established. The camp will only serve as office premises for contractor, supervision consultant, and laboratory building.
41. Household waste is timely removed; in general, all protective measures are respected.

**Table 8. Progress of construction work**

	Name of works	Unit	Scope per design	Total completed
				Volume
1	Cleaning and grubbing	ha	80	26
2	Tree cutting	pcs	3 348,00	853
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	18 877	6 629,26
6	G&S mixture (Subbase)	m3		
7	Base course	m3		
8	Black crushed stone (Organomineral layer)	m3		
9	Binder course (1 asphalt layer)	m3		
10	Wearing course (2 asphalt layer)	m3		

### **Staff information**

42. In 2019, the Contractor involved 567 persons (the total number including management, engineering staff and workforce).

#### **2.4 Description of Any Changes to Project Design**

43. The following changes were introduced to Project Design.

- Plan & Profile revised for km 144+500-146+700 at 30.09.2019
- Plan revised for km 146+520-146+640 at 19.09.2019
- Rock Filling decided in the swampy areas and sections with high ground water level (8 separate locations between Km:145+000 – 150+100) at 13.09.2019
- Subgrade layer decided for cut sections of the road at 13.09.2019
- To solve land acquisition between Km 128+920 – 130+440 (1520 m) shifting road horizontal alignment 5-8 m to left is needed and studies finalized

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

44. Not applicable during the reporting period.

### 3. ENVIRONMENTAL SAFEGUARD ACTIVITIES

#### 3.1 General Description of Environmental Safeguard Activities

45. 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 Gentek 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:

46. Dust formation has the main impact on the environment during the execution of earthworks. The increased air temperature led to increase of dust formation on existing road, which is currently on the Contractor's balance. However, dust suppression activities are exercised at sites where road construction works are taking place. 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 19 p.m. Currently, six watering trucks are allocated for this task and each of them do watering activity 3 times per day. However, still dust suppression measures are not sufficient, increase of dust leads to road safety issues and increased air temperature lead to water stress in the region and competition with local farmers over the water access.



**Figure 9. Increased dust formation at construction sites.**

47. With decreasing air temperature and increasing precipitation, dust formation in the roads decreased, but water sprinkling was carried out before the onset of frost.

##### 3.1.2 Bridge construction

*The Bridge over Tugol-Say River.*

48. Not applicable during the reporting period, no construction works has started on the bridge.

##### 3.1.3 Borrow-pits

49. Development of Kuyruchuk borrow-pit has been started in July. Works on excavating, sifting and stockpiling of material in the spoil areas were carried out.
50. Works on excavating, sifting and stockpiling of material in the spoil areas were carried out. During the reporting period no violations in works on development of borrow-pit were revealed.

### 3.1.4 Asphalt Plant Territory

51. Not applicable during the reporting period, asphalt plant has not constructed yet.

#### *Stone crushing plant issue*

52. It has been found that the stone-crushing plant operates without following good housekeeping practice with separate handling of construction and household wastes, burning some construction waste and no fire extinguishers arranged on site. Non-compliance letter was sent to the Contractor and issues were resolved by the sub-contractor.
53. Fuel and oil spillage detected during the walk around the plant and fueling station of the sub-contractor. Oil and Lubricants were stored on the ground and causing potential oil leaks to the ground.



**Figure 10. Oil spillages at fueling station of the Crushing Plant.**

### 3.1.5 Tree Management

54. In sections km 91+846 and km149+500, 853 trees were marked, all documentation was prepared, permission for tree cutting was obtained from the local environmental authorities. Stems of the cut down trees were stored in specially designated area at RMU and distributed among local authorities.

### 3.1.6 Construction waste

55. There no household and construction waste containers installed on site. It is recommended to install separate waste containers for household and hazardous wastes as per Waste Management Plan of SSEMP;



**Figure 11. Hazardous and construction waste at Crushing plant site.**

**Figure 12. Oil and lubricants stored without arranging impermeable platform.**

56. Construction waste in the amount of 6,629 m<sup>3</sup> was formed during the removal of old asphalt. The Contractor must determine in advance the place for the removal of construction waste. Stockpile sites between the sections 91+360 and 158+400 were identified by the contractor's Environmental Specialist and received permits from the local environmental and municipal authorities.

**Table 9. Stockpile areas**

№	Location of the subject		Village district	Notes
	Road Axis Km	Distance from road		
1	158+400	317 m. RHS	Bash-Kuugandy	
2	158+540	108 m. RHS	Bash-Kuugandy	
3	158+550	5 m. LHS	Bash-Kuugandy	
4	157+300	150 m. LHS	Bash-Kuugandy	
5	155+800	320 m. RHS	Bash-Kuugandy	
6	154+800	186 m. LHS	Tugol-Say	
7	152+760	940 m. LHS	Tugol-Say	Denied
8	152+760	87 m. LHS	Tugol-Say	
9	151+140	11 m. RHS	Tugol-Say	
10	150+960	66 m. LHS	Tugol-Say	
11	150+840	104 m. RHS	Tugol-Say	
12	149+000	RHS	Tugol-Say	Private land
13	147+540	LHS	Kuyruchuk	On the Epkin village road
14	143+610	421 m. – 694 m. RHS	Kuyruchuk	
15	140+990	122 m. LHS	Kuyruchuk	1,13 ha.
16	136+940	435 m. RHS	Dzhany-Aryk	
17	132+860	315 m. RHS	Dzhany-Aryk	
18	130+840	31 m. RHS	Dzhany-Aryk	
19	121+620	49 m. LHS	Dzhany-Aryk	
20	120+310	37 m. LHS	Dzhany-Aryk	
21	117+520	78 m. LHS	Dzhany-Aryk	
22	110+660	85 m. RHS	Cholpon	



23	100+940	91 m. LHS	Cholpon	
24	106+720	55 m. LHS	Cholpon	
25	106+540	49 m. RHS	Cholpon	
26	93+980	66 m. RHS	Cholpon	
27	91+360	45 m. RHS	Cholpon	

### 3.1.7 Workers camp

57. The workers' camp site has identified and established, but it will serve as construction office for Contractor and Engineer with dining premise and laboratory building.
58. The territory of the camp was cleaned from construction waste. All noted violations are eliminated. Garbage cans are installed. Worker's camp is not in operational mode yet, therefore, fire safety measures has not been yet put in place.



**Figure 13. Office area is cleaned up from garbage and waste**

### 3.2 Monitoring of Construction Sites

Table 10. Monitoring of construction sites in July – December 2019 period.

No.	Date of visit	Auditors Name	Propose of Audit	Summary of any Significant Findings
1	02-03.07.19	A. Asipjanov A. Abdygulov N. Nurdinov S. Bakirov	Environmental Monitoring of construction sites. Jointly with ADB, IPIG and Contractor's environmental specialists.	Road safety issues were raised.  Increased dust generation in the road was noted. Warning was given to the Contractor.
2	19.09.19	A. Asipjanov N. Nurdinov	Monitoring of construction sites. Jointly with the Contractor's environmental specialist.	Identification of the areas for stockpile of excavated subsoil materials.  No fire extinguishers and firefighting points detected at crushing plant.  Burning of construction waste (oil papers, filters). The resulting black poisonous smoke spread throughout the crushing plant and camp construction site, causing harm to health of workers.  Oil and Lubricants were stored on the ground and causing potential oil leaks to the ground;  Fuel and oil spillage detected during the walk around the plant and fueling station of the sub-contractor;  There no household and construction waste containers installed on site;  Road safety issues were raised.  Increased dust generation in the road was noted. Warning was given to the Contractor.
3	14.10.19	A. Asipjanov N. Nurdinov	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.  Road safety issues were raised.

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

Table 11. Report of non-compliance with the environmental requirements (July-December)

No	The issue of non-compliance	SSEMP Number and date of notification	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Results Inspection	of	Status as of current monitoring period
1.	Dust formation issue;	Date:19.10.2019		The increase in air temperature led to increased dust formation in the road. In connection with the current situation, it is necessary to increase the intensity of water sprinkling of the road. To do this, it is necessary to monitor the observance of the water-sprinkling interval by watering machines.	The schedule for six trucks 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.	Date:29.10.2019 REF.#: I<RI/493/2019		Resolved
2.	The road safety	Date:19.10.2019		The road safety measures are not implemented properly, as there is a shortage of traffic signs and marking. Therefore, the traffic management plan is subject to revisions to fully address those issues.	The Contractor should provide adequate signalization, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control.	Date:29.10.2019 REF.#: I<RI/493/2019		Resolved

3.	Crushing plant.	Date:19.10.2019		No fire extinguishers and firefighting points detected at crushing plant.	Fire extinguishers and firefighting points arranged at crushing plant.		
4.	Crushing plant and camp construction site	Date:19.10.2019		<p>Burning of construction waste (oil papers, filters). The resulting black poisonous smoke spread throughout the crushing plant and camp construction site, causing harm to health of workers.</p> <p>The resulting black poisonous smoke spread throughout the crushing plant and camp construction site, causing harm to health of workers.</p>	The Sub-contractor stopped this practice.	Date:21.10.2019 REF.#: KR11479 2019	
5.	Oil and Lubricants were stored on the ground and causing potential oil leaks to the ground;	Date:19.10.2019		<p>Oil and Lubricants were stored on the ground and causing potential oil leaks to the ground and therefore it is recommended to install lubricants covered storage with impermeable material to prevent soil pollution;</p>	Oil and lubricants are being stored in containers.	Date:21.10.2019 REF.#: KR11479 2019	

6.	Fueling station of the sub-contractor next to Crushing Plant.	Date:19.10.2019		During the walk around the plant and fueling station, fuel and oil spillage detected. It is recommended to protect the soil around the oil tanks from leaks and spills of hazardous materials with an impermeable protective coating.	Fueling station area was covered with milled asphalt material for the purpose of prevent spillage of the oil and saturation of oil to the ground.	Date:21.10.2019 REF.#: KRII479I2019	
7.	Crushing Plant	Date:19.10.2019		There no household and construction waste containers installed on site. It is recommended to install separate waste containers for household and hazardous wastes as per Waste Management Plan of SSEMP;	Trash-cans were made and put on the Site.	Date:21.10.2019 REF.#: KRII479I2019	Resolved
8.	New camp site	Date:19.10.2019		There are no safety tapes installed around sewage collection points.  Sewage collection point at new camp site without safety tape around it	Sewage collection points were covered with the decks	Date:21.10.2019 REF.#: KRII479I2019	Resolved

**Table 12. Summary of Issues Tracking Activity for Current Period**

**Summary Table**

Total Number of Issues for Project	12
Number of Open Issues	12
Number of Closed Issues	12
Percentage Closed	100%
Issues Opened This Reporting Period	8
Issues Closed This Reporting Period	8

**3.4 Unanticipated Environmental Impacts or Risks**

59. There has not been any unanticipated environmental impact during the construction works, since project works has not started in full steam and it is still expected to operationalize asphalt and crushing plant, workers camp.

## 4. RESULTS OF ENVIRONMENTAL MONITORING

### 4.1 Overview of Monitoring Conducted during Current Period

60. In order to conduct monitoring of environmental components such as air quality, surface water quality, noise impact and vibration impact in the construction period at the Epkin – Bashkugandy road section in 2019, requests were sent to several laboratories and tariffs for laboratory studies were analyzed.

61. 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:** Environmental Monitoring Department of SAEPF under the KRG;

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

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

#### 4.1.1 Air Quality Monitoring

62. On November 5, 2019, the Environmental Monitoring Department of the State Agency for Environmental Protection and Forestry conducted air and water quality monitoring. Sampling points have been identified at the sites where construction work was carried out.

63. According to the results of the air quality monitoring, dust content did not exceed in all samples.

64. It should be noted, that the excess dust content in the air was also noted in 2016 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.

**Table 13. Current air quality within 100 m of the impact corridor in November 2019 (mg / m<sup>3</sup>)**

No.	Location	SO <sub>2</sub>	NO <sub>2</sub>	CO	TSP
	Name				
1	Zhumgal village (school)	0.001± <i>0.0003</i>	0.01± 0.0025	0.6±0.12	0.049± 0.0098
2	Kuiruchuk village ("Automobile spare parts" shop)	0.002±0.00 03	0.021±0.0053	0.9±0.18	0.065±0.013
3	Tugolsai village ("Kutman" shop)	0.001± 0.0003	0.034± 0.0085	0.7± 0.14	0.065±0.001 3
4	Bashkuugandy (school)	0.003±0.00 08	0.025±0.0063	0.065±0.0 013	0.079±0.016
	Standard (MPC)	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

65. On 5 November 2019, the Environmental Monitoring Department of the State Agency for Environmental Protection and Forestry conducted monitoring of the quality of surface water in rivers and water bodies. These are Tugol-Say River, Irrigation Canal and run-off pond.

Monitoring was conducted on the following indicators: pH, transparency, electrical conductivity, oxygen content, oil products, and suspended solids.

**Table 14. Monitoring data on surface water quality in the Epkin – Bashkugandy road section, November 2019**

Sampling point	Oil-products, mg / l	pH	Transparency, cm	Dissolved oxygen, mgO/l	Suspended solids, mg/l	Electrical conductivity, $\mu$ S/cm
Tugolsai river at km.148+874	<0.02	6.65	44.00	11.7	4.4	981
Irrigation channel at km.141+874	<0.02	6.84	46.00	8.72	7.4	865
Daily runoff pond at km.140+600	<0.02	7.00	48.00	8.6	9.0	889
MPC	0,3 mg/l	8.5		At least 4 mgO/l	Increase no more than 5%	

66. The monitoring results showed that there is an increase in the level of suspended solids in the samples taken from the water bodies. It is not quite true to say that this is due to the restoration works, since no works has started at the bridge on the Tugol-Say River at the time of sampling. Most likely, the increase in suspended solids is caused by erosion of the banks. Water in the rivers appeared in October, it was a small flow of water.
67. 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.

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

68. During the construction period of 2019, noise and vibration monitoring was conducted twice in October and November by the private laboratory LLC "Profilab".
69. On 5 November, noise and vibration monitoring was conducted in constructions sites along the settlements, as well as at the territory of the plant. Background noise and background vibration were measured at 12 control points.



**Table 15. Monitoring data on noise measurement in the Epkin – Bashkugandy road section, November 2019**

No.	Place of measurement	Noise parameters						Levels of noise pressure, dB in octave band centre frequencies, Hz										Level of sound (dBA)
		Spectrum-wise		Time-wise														
		Broad-band	Tonal	Permanent	Oscilating	Intermitting	Impulsive	31,5	63	125	250	500	1000	2000	4000	8000		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Zhumgal village next to the school at km 129+400, eastern part of the road																		
Latitude: 42° 42'33; longitude: 75°50'44"																		
1	Leq																58	
	Slow max																91	
Zhumgal village next to the school at km 129+340, eastern part of the road, next to mosque																		
Latitude: 42° 42'33; longitude: 75°50'44"																		
2	Leq																54	
	Slow max																94	
Zhumgal village next to the school at km 129+400, western part of the road																		
Latitude: 42° 42'33; longitude: 75°50'44"																		
3	Leq																63	
	Slow max																98	
Kuiruchuk village next to "Azamat" shop at km 144+000, southern part of the road																		
Latitude: 42° 1'30; longitude: 74°58'35"																		
4	Leq																60	
	Slow max																96	
Kuiruchuk village next to "Azamat" shop at km 144+000, nothern part of the road next to busstop																		
Latitude: 42° 1'30; longitude: 74°58'35"																		
5	Leq																62	
	Slow max																81	
Kuiruchuk village next to "Azamat" shop at km 144+050, nothern part of the road next to busstop																		
Latitude: 42° 1'30; longitude: 74°58'35"																		
6	Leq																64	
	Slow max																83	

No.	Place of measurement	Noise parameters						Levels of noise pressure, dB in octave band centre frequencies, Hz									Level of sound (dBA)
		Spectrum-wise		Time-wise													
		Broad-band	Tonal	Permanent	Oscilating	Intermitting	Impulsive	31,5	63	125	250	500	1000	2000	4000	8000	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Tugolsai village next to "Kutman" shop at km 151+000, southern part of the road																
	Latitude: 41° 58'56; longitude: 75°49'49"																
7	Leq																44
	Slow max																71
	Tugolsai village next to "Kutman" shop at km 151+000, southern part of the road																
	Latitude: 41° 58'56; longitude: 75°49'49"																
8	Leq																41
	Slow max																73
	Tugolsai village next to "Kutman" shop at km 151+050, southern part of the road																
	Latitude: 41° 58'56; longitude: 75°49'49"																
9	Leq																43
	Slow max																81
	Daily Pondage Basin zone, near the crushing and screening enterprise, next to the wall of private house, eastern part																
	Latitude: 41° 58'38; longitude: 74°52'11"																
10	Leq																46
	Slow max																62
	Daily Pondage Basin zone, near the crushing and screening enterprise, next to the gates of private house																
	Latitude: 41° 58'38; longitude: 74°52'11"																
11	Leq																44
	Slow max																65
	Daily Pondage Basin zone, near the crushing and screening enterprise, next to the wall of private house, western part																
	Latitude: 41° 58'38; longitude: 74°52'11"																
12	Leq																44
	Slow max																63

70. According to the results of the monitoring, the background noise level at all control points do not exceed the maximum permissible levels (MPL).

**Table 16. Monitoring data on vibration measurement in the Epkin – Bashkugandy road section, November 2019**

No.	Place of measurement	Kind of vibration					Axis	Levels of noise pressure, dB in octave band centre frequencies, Hz								Level of sound (dBA)	Maximum sound (dBA)	Tolerant pro rata (dBA)
		General			Local			1	2	4	8	16	31,5	63	125			
		Transportational	Transportational-technological	Technological														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		18	19
1 Zhumgal village next to the school at km 129+400, eastern part of the road																		
Latitude: 42° 42'33; longitude: 75°50'44"																		
		+					X									97		
							Y									86		
							Z									90		
																95	115	
2 Zhumgal village next to the school at km 129+340, eastern part of the road, next to mosque																		
Latitude: 42° 42'33; longitude: 75°50'44"																		
		+					X									94		
							Y									86		
							Z									84		
																93	116	
3 Zhumgal village next to the school at km 129+400, western part of the road																		
Latitude: 42° 42'33; longitude: 75°50'44"																		
		+					X									92		
							Y									88		
							Z									90		
																92	121	
4 Kuiruchuk village next to "Azamat" shop at km 144+000, southern part of the road																		
Latitude: 42° 1'30; longitude: 74°58'35"																		
		+					X									102		
							Y									99		
							Z									98		
																100	118	
5 Kuiruchuk village next to "Azamat" shop at km 144+000, northern part of the road next to busstop																		
Latitude: 42° 1'30; longitude: 74°58'35"																		
		+					X									95		
							Y									98		
							Z									88		
																96	111	
6 Kuiruchuk village next to "Azamat" shop at km 144+050, northern part of the road next to busstop																		
Latitude: 42° 1'30; longitude: 74°58'35"																		
		+					X									99		
							Y									87		
							Z									90		
																101	115	

71. Vibration measurements were conducted in constructions sites along the settlements, as well as at the territory of the plant. Background vibration were measured at 12 control points.

72. During the construction period three observational monitoring has been conducted by Consultant's environmental specialist to monitor implementation of EMP by the Contractor.

## 4.2 Trends

73. During the active phase of the construction period of July-November, 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

74. Analyzing the monitoring results, it is necessary to take into account that the project works just started and road section is located in a densely populated area with a large traffic flow. Therefore, current environmental impact issues were related to dust suppression, community safety issues with proper installation of the signs and utilization of old asphalt.
75. 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.
76. 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 laboratory is proposed, which performs both private and state environmental monitoring orders, with an insufficient number of personnel and equipment. 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

77. The water for dust suppression is taken from the following water bodies: Jumgal river, Tugol-Say river and Irrigation canal at km147+540 LHS.

## 4.5 Waste Management

78. During the construction, a large amount of waste is generated, including construction and household waste. Construction Company "Todini" use "PartnerNeft" gas station for refueling its machinery refueling, whereas sub-contractor arranged fueling station next to Crushing Plant. During the site visit, spillage of the fuel was detected around the fueling station and it was cleaned up after the Consultant's request for corrective action.

### *Construction waste*

79. Initially, construction waste was promptly taken out to areas for storage of old concrete products allocated by RMU-24 and permits have been obtained by the local authorities in Bashkugandy, Kuyruchuk villages for the dump location in the areas: Km 151 + 140 - 151 + 400, Km 158 + 540 - 158 + 400.

### *Old Asphalt*

80. With the beginning of road works at sections 152+500 and 152+740 there was a problem with the getting the permission from Bash-Kuugandy Ayil Okmotu disposal of old asphalt, since Municipality was proposing the site not-suitable for disposal of old asphalt, since it was located close to water body. The Contractor's environmental specialist, Nurlan Nurdinov, dealt with the disposal of old asphalt and the old asphalt was taken out for backfilling of rural streets and without leveling of large pieces of old asphalt in villages, since RMU and village inhabitants will do it on their own, as per their letter of request. The old asphalt was not taken out to any nearby wetland areas.

81. Local authorities proposed secondary roads for backfilling of rural streets with old asphalt. The Contractor's specialists conducted a preliminary analysis of all the proposed roads.
82. During the reporting period, the streets of two Ayil Okmotus: Kuyruchuk and Bashkugandy were backfilled.



**Figure 14. Taking out of old asphalt for backfilling of rural streets.**

#### *Household waste*

83. No household waste is generated, since workers camp has not operationalized yet.

### **4.6 Health and Safety**

#### **4.6.1 Community Health and Safety**

84. During the reporting period, there were not any incidents which resulted in or could have resulted in Community Health and Safety issues. However, the Safety Inspector of Gentek Consult Ltd. issued 9 prescriptions on safety and road safety from which 7 items have been executed. The following road signs are installed at construction site to ensure road traffic safety: - Warning signs – 93 - Prohibitory -59 - Information board – 48 of 90cm by 180cm in size Signal and barrier devices as well (cones, reflecting tapes). Additionally, contractor use flag-men with whistles and signal sticks to ensure road safety activities on project sites as part of Traffic Management Plan.



**Figure 15. Implementation of road safety measures.**

#### **4.6.2 Worker Health and Safety**

85. The Contractor hired Occupational Health and Safety Specialist with necessary qualifications to perform his duties. The OH&S Specialist conducted H&S briefings to the employees.
86. No incidents which have occurred during the reporting period which resulted in or could have resulted in Workers Health and Safety issues.

#### **4.7 Trainings**

87. No training has been conducted during the reporting period.

### **5. FUNCTIONONG OF THE SSEMP**

#### **5.1 SSEMP Review**

88. SSEMP 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. Initially provided Mitigation measures in the SSEMP were not sufficient, effective and acceptable, so the Engineer's Environmental Specialist revised it and accepted by IPIG with additional information to be provided on Borrow pits, Worker's Camp and Asphalt Plant.
89. The Contractor's Environmental Specialist – Nurlan Nurdinov, implements the construction mitigation measures. Gentek's Environmental Specialist – Almaz Asipjanov, supervises the Contractor's compliance with the environmental requirements. In case of any violations revealed, Gentek warns the Contractor verbally or in writing about the need to eliminate this violation within the specified period.
90. During the reporting period, the main problems in compliance with the SSEMP measures were:
  - dust formation issue on the roads;
  - implementation of road safety measures;
  - housekeeping issues on sites;

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

### **6.1 Good Practice**

91. Mitigation measures provided in the SSEMP are sufficient, effective and acceptable.

### **6.2 Opportunities for Improvement**

92. In order to apply best practices and to overcome the existing situation, the road safety and traffic management plans are needed to be improved. The Contractor should provide adequate signalization, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control.

## **7 SUMMARY AND RECOMMENDATIONS**

### **7.1 Summary**

93. 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 were not reactive to the recommendations of Gentek.
94. 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 existing roads and on construction sites. Gentek 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 07.00-20.00 in dry weather.
95. The road safety measures are not implemented properly, as there is a shortage of traffic signs and marking. Therefore, the traffic management plan is subject to revisions to fully address those issues.
96. During the reporting period, there were no grievances recorded by the Contractor and if any are related to environment.

### **7.2 Recommendations**

97. Given the fact that during the construction period, the Contractor does not always eliminate the violations in the specified time, and Gentek is not able to take any measures other than suspension of work.
98. Dust control measures should adequately be provided on the sections which are handed over to the Contractor for maintenance and in other construction sites as well.
99. The traffic management plan is subject to revisions to fully address the road safety measures, like a shortage of traffic signs and marking. The Contractor should provide adequate signalization, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control. MOTR and the Engineer will follow up those road safety concerns, implement mitigation measures described in EMP/SSEMP, and provide sufficient training to the Contractor's staff.
100. The Contractor is also need to hold regular public consultations with local communities on road safety issues during construction and should regularly submit road safety reports to MOTR for a monitoring purpose.