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Semi-Annual Environmental Monitoring Report

January 1 - June 30, 2018, Including 2017 Reporting.

Kyrgyz Republic:
CAREC Transport Corridor 3 (Bishkek-Osh Road) Improvement Project, Phase 4

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List of Abbreviations

ADB	-	Asian Development Bank
CAREC	-	Central Asia Regional Economic Cooperation
CSC	-	Construction Supervision Consultant
EMP	-	Environnemental Management Plan
IPIG	-	Investment Project Implementation Group of MOTR
IEE	-	Initial Environmental Examination
IFC	-	International Finance Corporation
IPIG	-	Investment Projects Implementation Group
Km	-	Kilometer
KR	-	Kyrgyz Republic
MPC	-	Maximum Permissible Concentration
MOTR	-	Ministry of Transport and Roads of the Kyrgyz Republic
RAP	-	Resettlement Action Plan
RoW	-	Right-of-Way
TA	-	Technical Assistance
TOR	-	Terms of Reference
CEMWP	-	Construction Environmental Management Workplan
MPC	-	Maximum permissible concentration

1 Introduction

1. This is the second “semi annual” environmental monitoring report, presenting the environmental issues, mitigation and monitoring activities triggered by the contractor and addressed by the construction supervision consultant EPTISA. Since construction, other than preparation of the contractor’s office site, did not start until June 2017 the first report focused on the period from late May through December 2017 while this report covers the period of January through June 2018.

2. This report includes the finding for 2017 and added 2018 updates, in that was providing a record or progress and change in relation to the environmental impact prevention and management by both the contractor EPTISA and IPIG. The findings are based on dozens of field visits between June 2017 and June 2018 by the international and national environmental specialist focusing on monitoring compliance with the tree cutting operations, noise, vibration, borrow site operations, traffic management, bridge and culvert construction occupation and environmental health and safety.

3. The contractor, China Railway No. 5 Engineering Group Ltd., began preparing its field office in late April 2017 on an abandoned industrial site in Sokuluk at around km 45 of the project road. Cutting in sections 1.1, 1.2, 1.3, 1.4 was completed in 2017. During the current construction season, it is planned to cut down the cuttings in the remaining sections (2.1, 2.2, 2.3, 2.4). Since then, work has been ongoing and as of June 30 2018, the subgrade for the two additional lanes has been largely completed for Sections 1.1, 1.3 and old asphalt has been removed from this sections and three major bridges are under construction (Jelamysh, Sokuluk, Ak-Suu).

4. The work starting April of 2018 focused on reconstruction of three bridges, culvert replacement, removal of old asphalt, preparation of new lanes on both East and West directions, putting into operation the aggregate crushing plant, asphalt batch plant and concrete batch plant at the Ak Suu location.

1.1 Project Location and Basic Design

5. The project site is located between Bishkek and Kara-Balta and lies between 15.5 km and 61 km of the Bishkek-Osh road. The existing road is asphalt-concrete; the width of the pavement is between 15-20 m, with a median of 2-4 m. The shoulder widths vary from 1.5 to 3.0 m. The project road section stretches to the west from Km 15.9 to the outskirts of Kara-Balta, is four then three-lane, which around km 24 reduce to two-lanes. The pavement width of the two-lane section is between 8-12 m, with shoulders another 1.5-3.0 m. At km 61, at the traffic roundabout, the Bishkek-Osh road turns to south, and marks the end of the project.

6. 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.

7. The road re-design will be in compliance with KR laws and norms, becoming a 4-lane highway for the entire length to Kara Balta. This design will bring the geometric parameters of the road to the required KR category, increasing the radii of curvatures in the plan and longitudinal profile.

8. In order to improve drainage, the work includes reconstruction of the degraded culvert system and addition of new cross drainage structures. Existing bridges and most of the culverts are being totally replaced. Finally, more the 64 km of sidewalks, 95 new at-grade pedestrian crossing,12 new signaled pedestrian crossings, and six pedestrian underpasses will be built.

9. Between June and December 1st 2017 construction was underway start in the following three sections:

- Section 2: km 35.5-40.58 (5.08 km)
- Section 3: km 45.6-51.6 (7 km), and

- Section 4: km 54.20-59.35 (5.15 km)

10. In May 2018 the naming convention of the roads was revised, and now all 2018 road sections under construction were given the prefix of 2., Therefore, between January and June 30th 2018 construction is underway along the following road sections:

No of Sites	Start of the site km	End of the site km	Length of the site km
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

11. This work has included, tree clearing and preparation of the subgrade surfaces for the additional lanes, replacement of culverts, as well as the start up and operation of the aggregate processing asphalt and concrete batch plants as well as the prefabrication yard at the Ak Suu 2 borrow site area. The new bridge across the Jelamysh River, located in Section 1.1, nearing completion and the work on the Ak Suu River bridge is under way.

1.2 The Road Sections

12. Due to serious resettlement issues and the need to address these before commencement of construction the sequence of construction activity was planned such that areas with no or minor resettlement issues would be worked on first. The sequence of work between June and Dec. 2017 was Sections 3, 4, 1 and 2 (Figure 1). Construction on Section 3 began in late June with tree removal followed by the preparation of the subgrade for two new lanes on either side of the existing road plus the replacement of most culverts in that section. The culvert replacement remains ongoing.

13. Further the bridge across the Jelamysh River, located in Section 1 is being replaced with construction 65% completed (by a subcontractor).

14. In addition a further four sections were delineated and are being worked on in 2018; but only after all resettlement issues have been addressed (Table 1)

Table 1. Bishkek-Kara Balta Road Sections and Sensitive Receptors

Construction 2017-onward	**Sensitive Receptor No. where Noise and Air Quality Measurements are being collected**
1.2.1.1 Section 1-1 Km 15.900 - 21.300	1.2.1.2 4
1.2.1.3 Section 1-2 Km 35.500 - 40.580	1.2.1.4 11
1.2.1.5 Section 1-3 Km 45,600 - 51,600	1.2.1.6 13
1.2.1.7 Section 1-4 Km 54.200 - 59.350	1.2.1.8 14, 15
Construction 2018-onward	

1.2.1.9	Section 2-1 Km 21.300 - 35.500	1.2.1.10	5,6,7,8,9,10
1.2.1.11	Section 2-2 Km 40.580 - 45.600	1.2.1.12	12
1.2.1.13	Section 2-3 Km 51.600 - 54.200	1.2.1.14	None
1.2.1.15	Section 2-4 Km 59.350 - 60.926	1.2.1.16	16

1.3 Sections 1.1 through 1.4

1.3.1 Section 1.1: Km 15.9 - Km 21.3

15. The section passes through the territory of Gavrilovsky and Shopokovsky districts (ayil okotu) and reaches the Gavrilovka village, Shopokov town and Romanovka village.

16. There are 43 culverts crossing the road and all will be replaced. There are 14 1.5m Ø 1.5m units and 29 0.8 Ø units. Sixteen bus stop points and 14 at-grade pedestrian crossings.

17. There is a reinforced-concrete road bridge on the section across the Dzhelamys River located outside the village at change 17.9 km. Length of the bridge is 17.95 m. The main design solution for the reconstruction of this bridge is the reconstruction of the existing buried abutment the sides and the reinforced concrete deck sitting on a reinforced concrete skirt (unburied abutment instead of asphalt).

18. To prevent the pollution from the roadway of the bridge, the project provides for the diversion of water beyond the bridge, by means of a drainage device with a sediment basin for cleaning surface runoff (Annex 14 for detailed guidelines). However, this waterway has water for only about 2-3 months of the year and work is planned only when the waterway is dry.

19. Around 762 trees where scheduled to be cut, but due to minor sidewalk realignments 18-20 trees were saved leaving around 742 trees to be removed.

1.3.2 Section 1.2: Km 35 - Km 40.5

20. The section passes through the territory of Sadovoe village and Sadovoe district (ayil okotu). There is only one sensitive receptor in this section, namely SR-11 the Miroshnichenko Secondary School and numerous roadside tree plantings.

21. 19 culverts crossing the road will be replaced on the section: Ø - 0.8 m - 15 units; Ø 1.5 m - 4 units, Ø 2.0 m - 1 unit. Twelve new bus stops and 10 pedestrian crossings.

22. The tree count resulted in 621 trees scheduled for cutting and with careful planning of the sidewalks on both the north and south side of the road, around 64 trees were saved bringing the number to be cut to 557.

1.3.3 Section 1.3: Km 45 - Km 51

23. The section passes through Petrovsky District (ayil okotu) in the Petrovka village. In this section there is the Petrovskaya secondary school, a sensitive receptor-SR-13. This section has a large number of trees scheduled, which will be cut down. The roadside tree count indicated that about 1105 trees were to be cut (Annex 10 for replanting specifications). All trees were marked on a road alignment map. Further, tree cutting for the sidewalk alignment was reduced marginally.

24. Twenty large culverts with diameters of 0.8 m - 14 units; 1.5 m - 6 units; and 2 m - 1 unit; and 38 0.5 m diameter culverts need to be replaced at the side ramp from the road.

25. Fourteen bus stops and 15 at-grade pedestrian crossings consisting of amber lights and road painting will also be installed.

1.3.4 Section 1.4: Km 54 - Km 59

26. This section of the road passes through the villages of Novonikolaevka, Petropavlovka and Poltavka of the At-Bashatsky, Kyzyl-Dyikansky and Poltavsky Districts (ayil okotu). In terms of sensitive receptors there is SR-14 and SR-15 the Petropavlovskaya (Km 57.1) and Novo-Nikolaevskaya (Km 59.55) secondary schools respectively. Also, along the entire length of the section, there are about 739 trees to be cut, reduced by 24 trees due to the realignment of the sidewalks All trees to be cut were marked with a blue X and recorded on a tree alignment map.

27. Twenty-one culverts are to be replaced in the section: Ø - 0.8 m - 11 units; and Ø 1.5 m - 9 units. In addition, 46 culverts Ø 0.5 m at the side ramps from the road are going to be laid.

28. Twelve bus stops, 9 at-grade crossings with amber flashing lights and 2 underground pedestrian crossings are going to be installed.

29. A site for temporary storage of trees being cut and root remains is located in Petropavlovka Village away from the road and is there by permission of the district officials.

Figure 1. Bishkek-Kara Balta Road Section

1.4 Sections 2.1 – 2.4

1.4.1 Section 2.1: Km 21.300 - Km 35.500

30. The site passes through the densely populated territory of Gavrilovsky, Sokuluk, Krupsky and Aleksandrovskiy districts (ayil okotu). From the sensitive receptors in the section, there are Sokuluk Secondary School No. 2 (27.5 km), a market (25, 8), a story house (25.6 km), a "Tatiana" store (27.15 km), as well as numerous roadside tree plantings. At the boundary of Romanovka village and Sokuluk village passes the Zhantai canal (22.2 km), beginning upon a water intake structure on the Sokuluk river, in the foothill zone. The channel is designed for water volumes passage for watering homestead lands and agricultural fields of villages located below the road.

31. The canal was also designed for the passage of mudflows formed in the foothill zone as a result of storm. The canal capacity is up to 6-8 m^3/s. However, at present, the canal's functions are severely limited due to the fact that the canal bed is filled with mud by debris, and below the road is built up with residential buildings.

32. In the center of the Sokuluk village (27.7 km) there is a bridge structure across the Sokuluk river. The length of the bridge is 25.3 m. the Complete dismantling of the structure and the construction of a new bridge at this place is provisioned by the project.

33. Twenty culverts are being replaced as follows:

- Ø 1,5m – 9 units., Ø 0,8 m – 11 units. In addition, it is planned to lay 173 culverts with a diameter of 0.5 m at road intersections.
- On the interval of the section, it is planned to install 24 bus stop points, 18 overground pedestrian crossings and to reconstruct three and to build two new underground pedestrian crossings.
- At 28 km to the left of the road there is a construction camp.

1.4.2 Section 2.2: Km 40.580 - 45.600

34. The section passes through the territory of Belovodsk village, in a densely populated place, especially in the central part (the market and a lot of commercial facilities), close to the roadway. Separate housing construction, the market and commercial objects with the expansion of the road have to be demolished.

35. Canal crossing the road - this is the canal of the Krepostnaya (40.39 km), at the entrance to the Belovodskoye village can be noted on the section. The canal is intended not so much for watering agricultural land, subjacent villages, as for the discharge of the area (mudflow) runoff, formed in the foothill zone during hailstorm.

36. The canal is heavily overgrown with tree and shrub vegetation, half filled with mud by sediments. The canal capacity is about 18 m^3/s. Bridge passage through the canal is required to be completely replaced. At the exit from Belovodskoe village, on the boundary of Petrovka village, there is a bridge structure, which serves to pass a part of the maximum flood passing along the Aksu river (43.5).

37. The water flow, passing through the culvert under the railroad bed located above the road, is divided into two streams, forming, as it were, the second mudflow channel of the Aksu river (44.1 km). The maximum costs here can reach up to 20 m3 / s.

38. The maximal mud flood, which passed along the Aksu river was fixed on July 30, 1988 and its discharge was 64.3 m^3/s. The reason for the flood is heavy rainfall in the foothill zone and drains north.

- 14 pipelines crossing the road on the section have to be replaced:
- Ø 1,5 – 6 units, Ø 0,8 m – 8 units.
- On the interval of the section it is planned to install 12 bus stop points, 8 over-ground pedestrian crossings, to build one underground pedestrian crossing.

1.4.3 Section 2.3: Km 51.600 - Km 54.200

39. The section passes through the territory of Poltavka district (ayil okotu). From the sensitive objects on the section, there is the Poltavka Secondary School (55 km) and numerous roadside tree plantings. 18 pipelines crossing the road should be replaced on the section:

- Ø 1.5 m - 9 units, Ø 0.8 m - 9 units.
- On the interval of the section, it is planned to install 8 bus stop points, 6 overground pedestrian crossings and to build one underground pedestrian crossing.

1.4.4 Section 2.4: Km 59.350 - Km 60.926

40. The section passes through the territory of Novo-Nikolaevka village, At-Bashat district (ayil okotu). From the sensitive objects on the section, there is Novo-Nikolaevskaya secondary school (59.55 km) and numerous roadside tree plantings. Basic information of the section is shown on the section km 54-59.

1.5 Project Objective, Rational and Environmental Classification

41. The objective of this project is to provide an improved roadway, permitting traffic to flow from Bishkek to Kara-Balta and beyond without serious capacity related delays, and achieve this without significant negative environmental and social impacts.

42. The ADB's classification of this project was B, and as such an Initial Environmental Examination was prepared, the first time in 2014, minimally revised in 2015, and with a major revision and updating in 2017.

1.6 Project Status

43. While this project has been around since at least 2013 it was restarted in 2015, stopped in 2016 and reactivated in March 2017 and fully implemented in May of 2017. As of June 30th 2018 approximately 45% of the construction work has been completed. Preconstruction environmental work involved converting the IEE's Environmental Management Plan (EMP) into a Construction period work program defined as the Construction Environmental Management Workplan (CEMWP) and providing training on CEMWP implementation and monitoring to the contractor and IPIG. Weekly and monthly compliance monitoring has been ongoing since June 2017, with written weekly and monthly reports on file with EPTISA and MOTR. Since March 2018, bi weekly environmental monitoring reports have been prepared by EPTISA (see latest report attached; others are available with EPTISA and IPIG).

44. The project is considerably delayed due to various issues involving mostly social and environmental safeguard non-compliance matters and the contractor's inability to implement environmental clauses in the contract specifications and the CEMWP. The record of this non compliance through June 2018 is provided as Table 13 this report

45. As of the start of the 2018 construction season the contractor was approximately one construction season behind, with the major work of removing 45.5 km or asphalt and sub-base material the old road surface underway only in April of 2018 (Figure 2).

1.7 Environmental Mitigation and Monitoring Requirements and Responsibilities

46. This project involves the upgrading of 45 km of a heavily used national highway and ADB classified it as B, requiring an IEE. This was prepared, approved and was updated through April 2018. For this project, three years of data have been collected and two more are likely. Noise modeling for the entire 45.5 km of road has also been completed and a report has been approved by ADB.

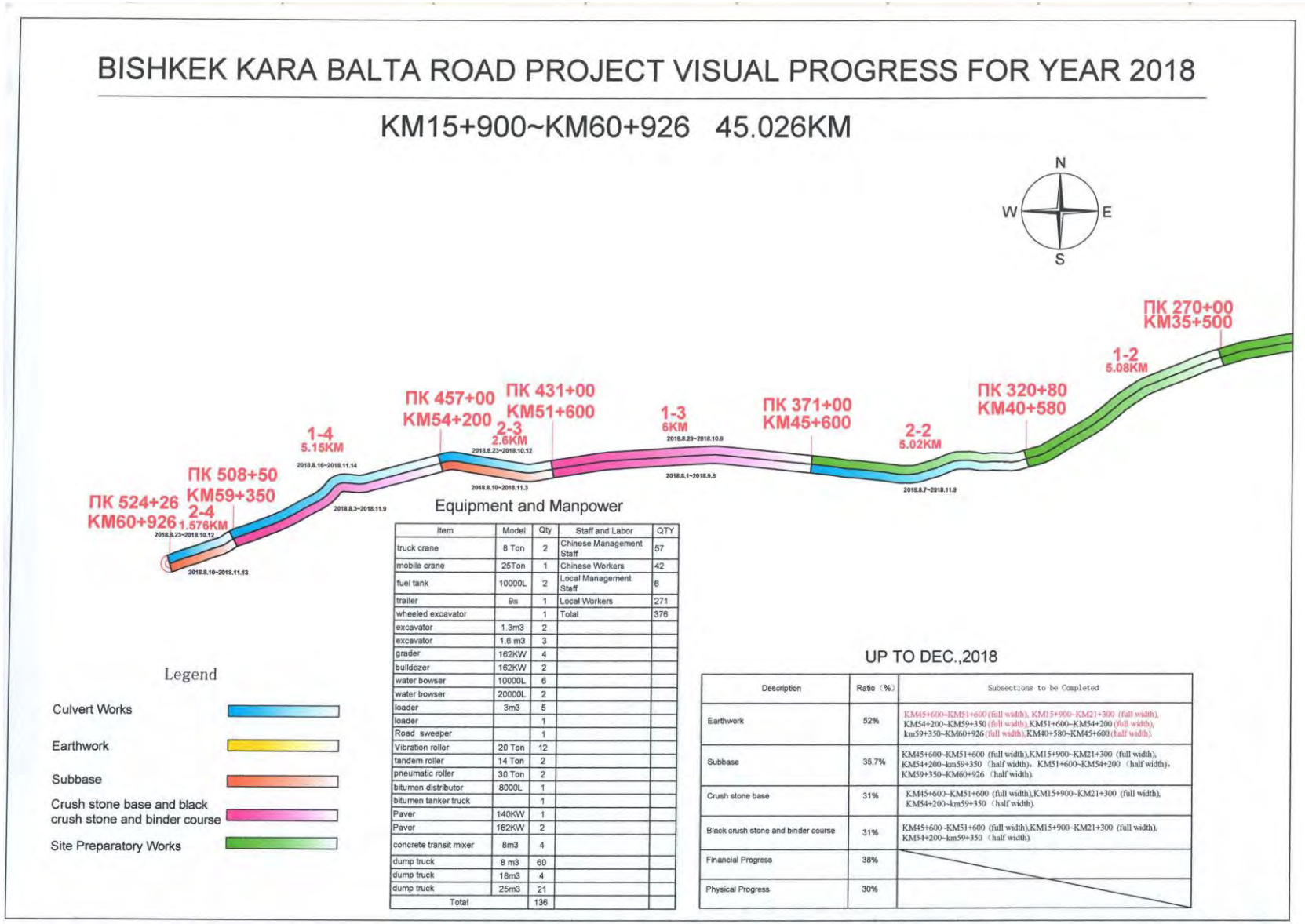
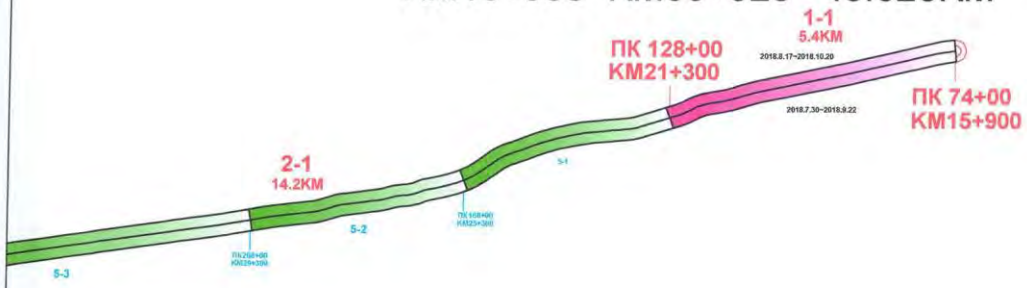


Figure 2. Diagram showing construction activity for 2018

Визуальный ход работы Проекта дороги Бишкек-Кара-Балта на 2018 год

KM15+900~KM60+926 45.026KM



Условные обозначения

- Работы по трубам
- Земляные работы
- Подстилающий слой
- Слой щебня и черный щебень и связующий слой
- подготовительные работы участка

Ведомость по распределению ресурсов персонала

Пункт	Модель	Кол-во	Классификация персонала	Кол-во
Манипулятор	8 Ton	2	Китайский управляющий персонал	57
Автокран	25Ton	1	Китайский рабочий	42
Автоцистерна	10000L	2	Местный инженер	6
Платформа	9m	1	Местный рабочий	271
Колесный эксковатор		1	Итого	376
Экскаватор	1.3m3	2		
Экскаватор	1.6 m3	3		
Грейдер	162KW	4		
Бульдозер	162KW	2		
Водовоз	10000L	6		
Водовоз	20000L	2		
Погрузчик	3m3	5		
Погрузчик		1		
Дорожная убор. машина		1		
Виброкаток	20 Ton	12		
двухвальцовый каток	14 Ton	2		
Пневмокаток	30 Ton	2		
Битум.распредел.	8000L	1		
Битумовоз		1		
Укладчик	140KW	1		
Укладчик	162KW	2		
Бетоновоз	8m3	4		
Самосвал	8 m3	60		
Самосвал	18m3	4		
Самосвал	25m3	21		
Итого		136		

До дек. 2018

Описание	Коэффициент (%)	Участки для выполнения по плану
Земляная насыпь	52%	KM45+600~KM51+600 полная ширина , KM15+900~KM21+300 полная ширина , KM54+200~KM59+350 полная ширина ,KM51+600~KM54+200 полная ширина , km59+350~KM60+926 полная ширина ,KM40+580~KM45+600 полуширина.
Подстилающий слой	35.7%	KM45+600~KM51+600 полная ширина ,KM15+900~KM21+300 полная ширина , KM54+200~km59+350 полуширина , KM51+600~KM54+200 полуширина , KM59+350~KM60+926 полуширина.
Базовый слой	31%	KM45+600~KM51+600 полная ширина ,KM15+900~KM21+300 полная ширина , KM54+200~km59+350 полуширина.
Черный щебень и связующий слой	31%	KM45+600~KM51+600 полная ширина ,KM15+900~KM21+300 полная ширина , KM54+200~km59+350 полуширина.
Финансовый ход работы	38%	
физический ход работы	30%	

1.8 The Construction Environmental Management Work Plan

47. The Contractor's contract specifications state that a work plan, based on the IEE's EMP must be prepared and approved by the Construction Supervision Consultant (CSC- or EPTISA) prior to the start of work. This work forms the basis of all mitigation and monitoring activity, taking place during the construction and operating period.

48. The CEMWP (see example in Report Annex) is being implemented by the contractor's environmental monitoring specialist. Six such reports have been submitted, and EPTISA is using these reports to monitor the contractor's progress.

1.8.1 Topic-Specific Guidelines

49. In addition to the CEMWP, the IEE and its EMP, EPTISA prepared additional specific guidelines/plans the contractor was required to use and about which training sessions were provided. These SSEMP best practice guides were approved by ADB in 2017 and are as follows:

Annex 1 Emergency Management Plan

Annex 2 Grievance Redress Mechanism

Annex 3 Plan For Safety, Health And Hygiene

Annex 4 Management Plan For The Life Of The Construction Camp

Annex 5 Waste Management Plan

Annex 6 Noise Management Plan

Annex 7 Old Asphalt Management Plan

Annex 8 Water Quality Management Plan

Annex 9 Air Quality Management Plan

Annex 10 Tree Management Plan (Separate Report)

Annex 11 Dust Suppression Plan

Annex 12 Land Protection Management Plan

Annex 13 Environmental Protection Plan For The Construction And Reconstruction Of Bridges

Annex 14 Borrow Pit Management Plan

50. All 14 annexes have been cross-referenced to specific CEMWP actions and are used as additional guides when issues concerning this topic arise. For example there are existing issues concerning the bridge construction over the Jelamysh River and at least one major non-compliance issue is that construction is taking place over the river when there is flowing water. This is restricted in the CEMWP and additional guidance on best practices is provided in Annex 13. The contractor's environmental monitor has been guiding the contractor using this guideline. The contractor's use of these guidelines is improving but regular reminders are being provided by EPTISA.

51. **Tree Cutting and Replanting Plans**- ADB also required that Tree Management Plans (SSEMP-Annex 10) be prepared for each of the four 2017 road sections. These included maps showing every tree to be cut, a tree inventory, species identification and a replanting scheme for each section. Four Tree planting plans approved by the ADB for the remaining road sections of the plans will be prepared as necessary

52. It is planned to continue work on cutting down trees in the decayed sections (2.1, 2.2, 2.3, 2.4), preliminary "Tree planting plan" will be prepared and sent to ADB for approval. This year it is planned to start planting new trees on section 1.3 (preliminary planned landing time

September-October 2018). At this site, the contractor plans to complete the asphalt laying works, which will enable the planting of new trees.

2 Monitoring Work Completed to Date

2.1 Updating the IEE's background data on air, water and noise quality

53. The IEE was updated as of April 9th, 2018, however, information was not included on the secondary roads where the old asphalt. The issue surrounding the placement of crushed waste asphalt on 89 local roads arose after that date and supplemental text will be added to the ESSEMP on Waste Asphalt Management (Annex 7), including a special mitigation and monitoring table addressing all relevant issue related to the preparation transport, local approvals and placement of the crushed asphalt. The contractor repeatedly requested a list of streets from local ayil okmotu. This information was provided to the Consultant in the appropriate format. The contractor must provide information in accordance with the required format, which will complete the update of the IEE

2.2 The Contractor's Construction Environmental Management Work Plan (CEMWP)

54. In June 2017 EPTISA received a partially written environmental management plan which, although containing a number of useful bits of information and sections prepared by the contractor's environmental monitor, was considered non compliant. The information provided was used to prepare the CEMWP. A separate social impact management plan was also prepared, but is summarized in the CEMWP.

55. This CEMWP, approved by ADB, is included as Annex 1 to this report.

56. Starting in June 2017 (the start of physical work), construction monitoring was initiated by EPTISA and the contractor's environmental monitor, by applying the CEMWP and addressing each relevant mitigation action. This work has continued with both weekly and monthly inspection from July-through December 2017.

57. For the January-June 30th 2018 period, monitoring has continued. Starting in early April, the beginning of the 2018 construction season (Figure 2), monitoring has included, first weekly then bi-weekly site inspections by EPTISA's national and international monitors. Each inspection was recorded in a photo-record report and submitted to EPTISA and IPIG. In addition, Compliance Monitoring Checklists were filled in monthly by the contractor's environmental monitor and submitted to EPTISA for use in the inspections.

58. Since January 2018 EPTISA has completed 8 inspection reports, at least 16 site visits and direct discussions with the contractor on compliance issues. EPTISA has provided three training sessions in CEMWP implementation and monitoring. During these first 6-months of 2018 EPTISA has addressed (and attempted to resolved most) 37 non-compliance issues (Table 13).

59. Issues remaining unresolved are: dust management proper handling of the bitumen plus another seven listed at the end of this report.

2.3 Baseline Measurements

60. Baseline measurements were conducted in 2013 2015 and 2017. A full round of surveys was completed in 2017 including air, noise and water quality testing 7. Starting in May 2018 the season's air, noise, vibration and water quality testing implemented. These test results have been added to the text in this report and for each parameter.

2.3.1 Air quality Measurements

61. Air quality was measured at 16 sites (Table 2)[1] along the route, identified as being sensitive to air pollution, due to the proximity of schools, outdoor markets and other special facilities.

Table 2. Air Quality Sampling Stations, 2015, 2017

#	Station No (2013/2015). And Location
1	203/1 – Novopavlovka village (school #2)
2	204/2 – Novopavlovka village (market)
3	205/3 – Voenno-Antonovka village (school, no number)
4	206/4 – Voenno-Antonovka village (mosque)
5	New 5 - Gavrilovka village (kindergarten)
6	207/6- Gavrilovka village (dwelling house, 50, Frunze street)
7	New 7 – Shopocov town (school #2)
8	208/8 – Sokuluk village (market)
9	209 /9– Sokuluk village (school #2)
10	New 10 – Sokuluk village (housing estate)
11	210/11– Alexandrovka village (school #3)
12	211/12 – Belovodskoye village (market)
13	212/13 – Petrovka village (dwelling house)
14	213/14 – Poltavka village (school, no number)
15	214 /15– Petropavlovka village (school, no number)
16	215/16– Novonikolaevka village (school, no number)

62. The results for 2013 (Table 3) showed that KR standards for sulfur dioxide were exceeded in all locations and for carbon monoxide at eight of the 16 sampling sites, Had only 2013 data been used serious air pollution alarm would have been raised. Given the high level of traffic and commercial activity along the corridor, TSP for both 2013 and 2015 should be much higher than the highest concentration measurement of 0.0028 mg/m^3. Nitrogen oxide levels were within standard requirements for 13 of the 16 monitoring stations.

63. In 2017 four parameters were again monitored at the 16 stations sampled in 2015. Samples were taken at the same locations and approximately at the same time as in 2015. A listing of all numerical data collected is presented in Table 3.

64. **Between January and June 2018 -**Monitoring of atmospheric air quality was carried out at the construction sites in sections 1.1, 1.3, 1.4 (sites where the contractor carried out active construction work).

65. **Carbon Monoxide (CO)-** Carbon monoxide levels as measured in 2013 exceeded maximum permissible concentrations (MPC) at eight of 16 stations, whereas in 2015 (the year EPTISA began monitoring) only the Poltavka School station had a high CO concentration of 13 mg/m^3 with a variation of only 0.25 mg/m^3, especially alarming as this was a school site. (Table 3). IPIG was made aware of this reading in the IEE. However, 2017 measurements at the same locations and at approximately the same time resulted in quite different results since all 16 stations had readings well below the 5 mg/m^3 MPC.

66. Between January and June 2018 CO levels were below the Kyrgyz MPC.

67. **Nitrogen Dioxide (NO_2)-** NO_2 is a by-product of the combustion of petrol from vehicles and any internal combustion engine. Therefore, roadside levels are generally at or exceeding the MPC levels for Kyrgyzstan, which is 0.085 mg/m^3. The 2013 levels were all recorded as < 0.01 mg/m3. The 2015 results showed that none of stations had levels exceeding the MPC.

68. For 2017 seven of the 16 stations had NO_2 levels exceeding the MPC with the Novopavlovka Village market recording a 0.30 mg/m^3 reading. The market sees a great deal

[1] The sampling station numbers are confusing in that field measurements were taken at 16 sites when in fact only 13 are in the study area. In 2017 the project road length was reduced by about 10 km, but after the air quality-testing plan was adopted, thus eliminating these stations. However, IPIG requested that the 3 stations be included in the dataset.

of slow moving traffic transporting goods to and from the market, blocked wind from the north, and therefore higher NO_2 level would not be unusual.

69. Between January and June 2018 NO_2 levels remained within the MPC levels

70. **Sulphur Dioxide (SO_2)-** For 2013 SO_2 levels exceeded the MPC limit at all 13 stations, while for 2015 and 2017 levels were all below 0.005 mg/m^3 (Table 3). Such a very large variation suggests sampling or analytical errors. The data collected for 2015, 17 and 2018 where S)2 levels were all below MPC, supports that notion that analytical problems likely resulted in such unusually high readings..

71. Between January and June 2018 SO2 levels remained within MPC levels.

72. **Total Suspended Particulate Matter (TSP)-** TSP levels during the three sampling years varied enormously, with the most consistent being 2015 where all but the Voenno-Antonovka Village mosque site exceeded the MPC level of 0.5 mg/m^3. These data suggest that background levels of TSP exceed Kyrgyz MPC and that dust control will be an important construction period mitigation measure.

73. The sampling completed through June 30th 2018 indicated that there were a number of exceedances in TSP levels

74. **Summary-** Overall the 2017 data suggested a reduction in emission for these four parameters. However, given the wide variation of the results for the three collection years, there is strong chance that sampling and analytical errors may be giving false results.

75. **For 2018, and a**side from TSP, all ambient air quality measures were within the MPC level for Kyrgyzstan.

Table 3. Existing ambient air quality within 100 meter of impact corridor, measured in 2013, 2015 and 2017 (mg/m^3)

Station Number	Location**			CO			NO2			SO2			TSP		
	Name	Dist. From EOP (m)	Chainage From Bishkek (km)	2013	2015	2017	2013	2015	2017	2013	2015	2017	2013	2015	2017
1	Novopavlovka village (school)	33	9.9	*6.5± 1.6*	1.2± 0.24	0,4±0,08	<0.01	0.070 2017 0.018	*0,023± 0,0058*	*3.2± 0.8*	0.004± 0.001	0,004± 0,001	<0.1	1.6± 0.4	0,4±0,1
2	Novopavlovka village (market)		11.0	3.8± 0.95	2.3± 0.46	2,9±0,58	<0.01	0.079± 0.020	*0,3± 0,075*	*2.3± 0.6*	0.007±± 0.0018	0,009± 0,0023	<0.1	2.2± 0.6	0,5±0,13
3	Voenno-Antonovka village (school)	50	12.86	*4.9± 1.2*	1.2± 0.24	0,8±0,16	<0.01	0.018± 0.0045	*0,22± 0,055*	*1.2± 0.3*	0.002± 0.0005	0,007± 0,0018	<0.1	2.3± 0.6	0,5±0,13
4	Voenno-Antonovka village (mosque)	10	14.2	*6.2± 1.6*	1.6± 0.32	2,4±0,48	<0.01	0.041± 0.010	*0,22± 0,055*	*1.2± 0.3*	0.002± 0.0005	0,006 ±0,001 5	<0.1	0.24± 0.6	*0,7±0,18*
5	Gavrilovka village (kindergarten)	30	21.5	*6.4± 1.6*	1.0± 0.2	0,4±0,08	<0.01	0.002± 0.0005	*0,037± 0,009*	*1.5± 0.4*	0.002± 0.0005	0,003± 0,0008	<0.1	2.8± 0.7	*0,8±0,2*
6	Gavrilovka village (dwelling house, 50, Frunze street)	20	20.95		1.6± 0.32	0,4±0,080		0.063± 0.016	*0,034± 0,0085*		0.003± 0.0008	0,003± 0,0008		3.5± 0.9	*0,5±0,13*
7	Shopokov town (school)	20	22.33		1.6± 0.32	0,5±0,1		0.060± 0.015	*0,18±0, 045*		0.006± 0.0015	0,004± 0,001		1.6± 0.4	*0,5±0,13*
8	Sokuluk village (market)	10	27.15	*10.4± 2.6*	3.6± 0.72	0,9±0,18	<0.01	*0.084± 0.021*	*0,042± 0,011*	*1.1± 0.3*	0.009± 0.002	0,003± 0,0008	<0.1	2.0± 0.5	0,15± 0,038
9	Sokuluk village (school)	15	27.5	*5.5± 1.4*	2.1± 0.42	0,4±0,08	<0.01	0.057± 0.014	*0,039± 0,01*	*1.1± 0.3*	0.004± 0.001	0,004± 0,001	<0.1	2.0± 0.5	0,4±0,1
10	Sokuluk village (housing estate)	10	25.6		1.5± 0.3	0,5±0,1		0.055± 0.014	0,13± 0,033		0.003± 0.0008	0,004± 0,001		1.8± 0.5	0,3± 0,075
11	Alexandrovka village	80	*30.5*	*5.6± 1.4*	1.6± 0.32	0,4±0,08	<0.01	0.060± 0.015	*0,034± 0,0085*	*1.6± 0.4*	0.003± 0.0008	0,003± 0,0008	<0.1	1.8±0.5	0,4±0,1
12	Belovodskoye village (market)	10	43.0	*9.9± 2.5*	4.2± 0.84	1,2±0,24	<0.01	*0.081± 0.020*	*0,12±0, 03*	*1.1± 0.3*	0.003± 0.0008	0,004± 0,001	<0.1	0.8± 0.2	0,3±0,075
13	Petrovka village (dwelling house)	10	51.0	2.5± 0.6	1.7± 0.34	0,6±0,12	<0.01	0.042± 0.011	*0,042± 0,01*	*0.8± 0.2*	0.002± 0.0005	0,003± 0,0008	<0.1	1.2± 0.3	*0,9±0,23*
14	Poltavka village (school)	30	55.0	2.6± 0.7	13± 0.26	0,3±0,06	<0.01	0.018± 0.005	*0,038± 0,01*	*0.6± 0.2*	0.001± 0.0003	0,004± 0,001	<0.1	1.6± 0.4	*1,00,25*
15	Petropavlovka village (school)		57.1	2.3± 0.6	1.5± 0.3	0,1±0,02	<0.01	0.040± 0.01	*0,032± 0,008*	*0.8± 0.2*	±0.003	0,003± 0,0008	<0.1	1.3± 0.3	0,3±0,075
16	Novonikolaevka village (school)		59.53	*7.3± 1.8*	1.1± 0.22	1,3±0,26	<0.01	0.030± 0.008	*0,13±0, 033*	*1.2± 0.3*	0.002± 0.0005	0,003± 0,0008	<0.1	1.4±0.4	*0,7±0,18*
Standard (MPC)				**5**	**5**	**5**	**0.085**	**0.085**	**0.085**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**

Source: Consultant Measurement via Kyrgyz National Laboratory, 2015, 2017.
Note: numbers in italics indicate KR standard exceeded

2.3.2 Surface Water Quality Measurements

76. Surface water quality measurements were taken in July 2013 and April-May 2015, and again May 2017. In July 2013, the water quality measurements were conducted on only one stream (Table 4) in Belovodskoe village since the rivers and channels in the places of intersection with the road had no flow as the water was taken for irrigation purposes.

77. Sampling was done according to GOST P 51592-2000 «Water. General sampling requirements», WSS 33-5.3.01-85 «Instruction on sampling for wastewater analyses». Legislative requirements were observed.

Table 4. Water quality of the Belovodskoye Village stream

Parameter	**Unit of meas.**	**July 5, 2013 Analysis data**	**MPC***	**Regulatory document**
pH		7.71	6.5-8.5	Economic Relations Council, p.1, M.1977
Clarity	cm	0.0	-	Economic Relations Council, p.1, M.1977
Conductivity	µs/cm	383	-	Economic Relations Council, p.1, M.1977
Total Suspended solids	mg/l	2346**	30-USEPA, no restriction in many EU countries	
Oil and grease	mg/l	Not measured	0.3	ERD F 14.1:2:4.128-98
Copper	mg/l	<0.0006	1.0	Methodical Instructions 08-47/091
Zink	mg/l	<0.0005	1.0	Methodical Instructions 08-47/091
Cadmium	mg/l	<0.0002	0.001	Methodical Instructions 08-47/091
Lead	mg/l	<0.0002	0.01	Methodical Instructions 08-47/091

***** NR 2.1.5.1315-03, MPC of chemical substances in water bodies of public and cultural general water use, Ministry of Health Protection, Russia, Moscow, 2003.; ** likely a reporting error but no raw data are available from the previous consultant.

78. Except for the TSS data, the 2013, 2015, 2017 surveys (Table 6) showed that the water in the rivers remains relatively unchanged over time, and meets the KR Minimum Permissible Concentration (MPC) for non-potable water, i.e.water used for irrigation/industrial purposes only. TSS values in snowmelt runoff waters, passing though overgrazed highly erodible steppe and pasture lands, and at a relatively steep gradient, can very widely, depending on the extent and severity of rainfall and snowmelt. KR does however try to control TSS levels in these rivers to a standard of no more than 5% increase over the highest baseline measurement. IFC's standard of 50mg/L for treated sewage effluent (IFC-EHS guideline Table 1.3.1), applies to potable water sources and cannot be applied in this case.

79. Although these tests indicated that the rivers and canals had non-potable water suited for irrigation and the flowing water was present for 2-4 months a year, 2018 construction period monitoring at upstream and downstream stations at the two river crossings (Sokuluk and Ak Suu Rivers) was undertaken. At the time of testing the Jelamysh River had no water. Monitoring was carried out on the following indicators: BOD5, oxygen, oil products, suspended solids.

Table 5. Surface water quality monitoring data for the Bishkek-Kara-Balta road section; 2018

Place of sampling	**Date and time of sampling**	**Oil products mg / l**	**Oxygen mgO /l**	**BOD5, mgO /l**	**Suspended solids, mg/l**
Sokuluk R. before the bridge	17.07.2018 11:20 am	Not detected	8,5	0,6	245

Place of sampling	**Date and time of sampling**	**Oil products mg / l**	**Oxygen mgO /l**	**BOD5, mgO /l**	**Suspended solids, mg/l**
Sokuluk R. after the bridge	17.07.2018 11:50 am	Not detected	8,6	1,0	297
Ak-Suu R. Before the bridge 44+500	17.07.2018 12:50 pm	Not detected	7,9	0,5	249
Ak-Suu R. after the bridge 43+500	17.07.2018 1:04 pm	Not detected	7	0,5	288
KR MPC		*0,3 mg/l*	*Not less than 4 mg/L*	*Not more than 4 mg/L*	*The increase is not more than 5% above background*

80. The date indicated that TSS levels at both the Sokuluk and Ak Suu downstream stations had elevated TSS levels, due most probably to the ongoing bridge reconstruction work. The increases were in the order of 30mg/L, an increase well within the range of background level variations recorded for previous years and with little if any negative environmental impact

81. That being said the contractor has been notified that better sediment control measures are needed and that better during-construction erosion protection for exposed cuts in the soil be implemented.

Table 6. Surface water quality monitoring data for Bishkek-Kara-Balta (km.15.9 – km.61), 2015 and 2017

Sampling location	St. No No/Yr./Rep	Date and time of sampling	Weather conditions	Coordinates	pH	BOD 5, mg /l	Conductivity, (µs/cm)	Suspended solids, mg/l	Oil and grease, mg/l	Copper, mg/l	Zinc, mg/l	Cadmium, mg/l	Transparency, cm
Orto-Suu village, km.55, pond 2015	1-'15	28.04.2015 10.50	sunny	N 42^0 42/ 27,5// E 0,75 ^{0}50/ 29.8 //	8.72	3.0	564	6.4	0.23	<0.0006	<0.0005	<0.0002	
Orto-Suu village, km.55, pond 2015	1-'15-1	22.05.2015 09.40	sunny	same	8.73	2.8	511	10.6	0.03	<0.0006	<0.0005	<0.0002	
Orto-Suu village, km.55, pond 2017	1-'17	27.04. 2017 10.50	sunny	same		3.6		12.8	0.014				20
Ak-Suu river* in front of a bridge, km.43+500 -'15	2-'15	28.04.2015 11.15	sunny	N 42^0 49 /49,3// E 0,74 ^{0} 04/ 55,1 //	8.32	0.7	383	52.8	0.04	<0.0006	<0.0005	<0.0002	
22.05.15	2-'15-1	22.05.2015 09.57	sunny	same	8.07	1.2	299	1178.0	0.05	<0.0006	<0.0005	<0.0002	
27 04-17	2-'17	27.04. 2017 11.25	sunny	Same		2.2		236.0	<0.013				4.5
Sokuluk river** in front of a bridge	3-'15	28.04.2015 12.05	sunny	N 42^0 51/ 22,3// E 0,74 ^{0}16/ 36,2 //	8.43	0.2	325	9.0	0.14	<0.0006	<0.0005	<0.0002	
	3-'15-1	22.05.2015 10.44	sunny	Same	7.98	1.0	214	256.8	<0.02	<0.0006	<0.0005	<0.0002	
	3-'17	27.04. 2017 11.55	sunny	Same		0.8		59.2	<0.013				10
"Krepostnoy" narrow bridge at km.27+150	4-'15	28.04.2015	dry bed	N 42^0 50/ 02,0// E 0,74 ^{0}07 / 20,2 //	-	-	-	-	-	-	-	-	
	4-'15-1	22.05.2015	dry bed	same	-	-	-	-	--	-	-	-	-
	4-17	27.04. 2017	Dry bed		-	-	-	-	-	-	-	-	-
"Zhantay"canal** Vostochnaya street km. 24+110	5-'15	28.04.2015	dry bed	N 42^0 51/ 52,6// E 0,74 ^{0}20 / 08,9 //	-	-	-	-	-	-	-	-	
	5-'15-1	22.05.2015 10.55	sunny	same	7.85	0.2	252	3859.2	0.08	<0.0006	<0.0005	<0.0002	
	5-'17	27.04. 2017	dry bed										

Sampling location	**St. No No/Yr./Rep**	**Date and time of sampling**	**Weather conditions**	**Coordinates**	**pH**	**BOD 5, mg /l**	**Conductivity, (μs/cm)**	**Suspended solids, mg/l**	**Oil and grease, mg/l**	**Copper, mg/l**	**Zinc, mg/l**	**Cadmium, mg/l**	**Transparency, cm**
Zhalamysh river * bridge at km.17+850	6-'15	22.05.2015 11.06	sunny	N 42^0 52/ 10,7// E 0,74 ^{0}23 / 18,1 //	8.03	0.6	263	809.2	<0.02	<0.0006	<0.0005	<0.0002	
	6-15-1	28.04.2015	dry bed	Same	-	-	-	-	-	-	-	-	
	6-17	27.04. 2017 13.05	sunny	Same		2.2		268.6	0.020				0.0
*** MPC for fishery water ponds category**					**6.5-8.5**	**3**			**0.05**	**0.001**	**0.01**	**0.005**	
**** MPC for general use category**					**6.5-8.5**	**3**			**0.3**	**1**	**1**	**0.001**	
***Alternate International Standard: TSS-IFC-EHS = 50 mg/L; USEPA =30 mg/L, several EU countries have no restriction for waters designated for irrigation purposes								See ***					
	Normative legal acts which were complied with while doing measurements				ERC p.1 M. 1977	MP 2-85	ERC p.1 M. 1977	ERC p.1 M. 1977	ERD F 14.1:2:4 .128-98	MI 08-47/091	MI 08-47/091	MI 08-47/091	

2.4 Noise Measurements 2013-2017

82. Existing ambient noise levels within the road section from Bishkek to Kara-Balta are generally attributable to vehicular traffic and to a lesser extent construction. Baseline measurements taken at 16 sensitive receptor sites exceeded national standards for both day and night at most of the locations. Nearly all residential structures located along the 45.4 km road have noise levels exceeding Kyrgyz standards.

2.4.1 Noise Between 08:00 and 11:00 Hours

83. For 2013 four of the 13 sensitive sites had measurements that exceeded the MPC level. For 2015 14 of the 16 stations had noise readings at or above 70 dBA. In 2017 all but the Voenno-Antonovka Village mosque and Sokuluk city dwelling sites had levels below 70 dBA (Table 7).

2.4.2 Noise Between 17:00 and 19:00 Hours

84. For all three years of sampling only the 2013 Petropavlovka Secondary School site measurement had a noise level below the 60 dBA MPC for nighttime in a commercial zone. Existing nighttime noise levels along this roadway are excessive and almost all exceed MPC, reflecting the very high traffic volume stretching into the evening until 2100 hours.

85. The 2015 results for the 16 sampling sites showed that the noise level in the project road section exceeded the MPL for every reading. It is under these conditions that the construction will take place. These high reading in no way reduce the effort needed by the contractor to minimize construction period noise. In fact the contractor must adhere to the requirements set in the CEMWP.

86. For the 2017 field measurements only 3 of the 16 stations had noise levels below 60 dBA, although MOTR considers the area a commercial zone and as such daytime limits are 70 dBA. However given that ADB/IFC standards apply, the concern over excessive noise does not change and mitigative actions are needed!

87. The field measurements (Table 7) showed that the noise level near the residential development areas exceeds the maximum permissible level and do not comply with the requirements of SanPiN (Sanitary Regulations and Standards) 2.1.8.562-96 “Noise at workplaces, in dwelling rooms, in public buildings and at the area of residential development”.

Table 7. Existing noise levels determined along the road sections

Noise sensitive sections: Sampling Station No. used on 2013 survey and again in 2015 and 2017 No.		Km from Bish-kek	Distance from carriage-way to receptor (m)	Measured Noise level, dBA.							
				2013	2015			2017			Day
				Field Measurement	Aver-age	08.00 to 11.00	17.00 to 19.00	Aver-age	08.00 to 11.00	17.00 to 19.00	MPL
1	Novopavlovka village, School No. 2	9.9	33	69	70.5	71	70	58.5	61	56	**70**
1a	Novopavlovka village, Market	11.0	10	62							**70**
2	Voenno-Antonovka village, school (50 m from the road)	12.86	50	70	61	61	61	64	67	61	**70**
3	Voenno-Antonovka village, mosque	14.2	10	61	74.2	73.4	75	71	72	70	**70**
4	Gavrilovka village House along the road,	20.8	30		71	71	71	63	45	81	**70**
5	Gavrilovka village, Kindergarten	21.5	20		75.5	75	76	66	63	69	**70**
6	Shopokov city, School No. 2	22.330	20		75	75	75	67	67	67	**70**
7	Sokuluk city, Dwelling houses (shop “Tatyana”)	27.150	10		75	78	72	73	70	76	**70**
8	Sokuluk city, School No. 2	27.5	15	72	71.5	71	72	64.5	61	68	**70**
9	Sokuluk city, Multi-storied dwelling buildings	25.6	10		76.15	73.3	79	67	63	71	**70**
10	Alexandrovka village, School No. 3	30.5	80	72	60.5	61	60	57	54	60	**70**
11	Sadovoye village School, no number,	37.4	10		77.75	74.5	81	62	63	61	**70**
12	Belovodskoye, Market	43.0	1	72							**70**
12A	Belovodskoye, Dwelling house (201 Frunze St.)	42.45	10	63	77.25	80.5	74	69	68	70	**70**
13	Petrovka village, Residential district, 504 Tsentralnaya St	51	8		75	78	72	70	63	77	**70**
14	Poltavka village, Secondary school, no number	55	30	62	71.5	71	72	69	69	69	**70**
15	Petropavlovka village, Secondary school	57.1	8	58	73.5	75	72	60	56	64	**70**
16	Novonikolaevka village, Secondary school	59.5	22	62	71.15	71	71.3	63	63	63	**70**
Avg.: 0700 to 2300 -70 dB Avg.: 2300 to 0700 -- 60 dB											

Sources: Consultant’s field measurement, 05/2015; Traffic volume data are consultant’s counts and estimates. Note: It is standard practice to add 10dBA as a nighttime annoyance factor due to low ambient noise levels. The data in the table have not been adjusted.

2.4.3 Noise Measurements Jan. - June 2018

88. On 8 June, noise and vibration monitoring was carried out in the area of the bridge construction on the Sokuluk River (Table 8). In the area of construction of the bridge on the Sokuluk River work of driving piles is being conducted, which causes vibration in the nearby of the houses. The laboratory made measurements of noise and vibration in a nearby house, as well as the surrounding area.

89. The noise level during the operation of the compactors exceeded the sanitary norm by 6 dBA, but when not operating noise levels at the construction site were within KR sanitary norms. With the pile driver and compactor operating at the same time noise level exceeded the MPC by 2-16 dBA. The noise level measured in the bedroom of the house at 231 Frunze Street with equipment operating did not exceed the sanitary norm. At 23 m from the source compactor noises levels ranged from 74 to 84 dBA.

2.4.4 Noise Modeling

90. To better understand the noise environment along the road, a noise modeling study was commissioned in November 2017. That report was completed in April 2018 and results indicated that construction related noise, with the equipment in operation as indicated by the contractor, at the 13 sensitive receptors along the road remained within the IFC baseline + 3 dBA guideline. The noise levels at all homes along both sides of the road were subsequently modeled and no construction period issues were documented. The noise modeling work determined that by using a low noise-asphalt formulation, operating period traffic noise could be kept at or below the IFC's baseline +3 dBA guideline. A speed limit of no greater than 60 kph was also a part of that solution.

2.5 Vibration

91. The vibration specialist completed a study of the impact of construction-related vibration on dwellings along the 45.4 km length of the Bishkek Kara-Balta Road. The focus was on quantifying the effects of vibratory compaction on nearby houses and recommending practical mitigation measures to avoid these impacts and reduce the risk of damage.

92. Existing vibration monitoring data obtained by KR experts at dwellings alongside the road were reviewed and additional field measurements of ground borne vibration from the roller compactor equipment were obtained. A review of the literature on existing methods for calculating vibration from ground preparation and compaction, and on how vibration damage threshold levels for low, medium and high risk building classes were set, based on recognized international standards, were documented.

93. The special vibration study suggested various mitigation options, most notably the restriction of vibratory compactors to pre-established road sections with high sensitivity dwellings and the use of deep ditches to shield sensitive structures from vibratory compaction. While this report provide useful bounding parameters for cosmetic and structural damage due to ground vibration, IPIG and EPTISA agreed that the most effective and least-cost solution was to eliminate vibratory compaction from all road sections were there were any dwellings along the road.

94. In this way the issue of vibration as related to construction was eliminated.

Table 8. 2018 Noise measurements at varying distances from the Sokulul bridge construction site

№	Place of measurement	The nature of noise						Sound pressure levels in dB in octave band centre frequencies in Hz									
		By spectrum		By temporary													
		broadband	Tonal	Permanent	oscillate	Intermitte	impulsive	31,5	63	125	250	500	1000	2000	4000	8000	Sound Level (dBA)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
	Near the fence at a distance of 32 m from the bridge, 12 m from the road, 9[15]																
1	During the operation of the jack hammer and the perforator																
																	85 measured
																	70 MPL
																	15excess
2	During the operation of perforator																
																	78 measured
																	70 MPL
																	8 excess
3	No machinery operating																
																	76 measured
																	70 MPL
																	6 excess
	Near the house Frunze street 231 at a distance of 57 m from the bridge, 14m from the road, 9[45]																
4	During the operation of the jack hammer and the perforator																
																	65 measured
																	55 MPL
																	10excess
5	During the operation of perforator																
																	62 measured
																	55 MPL
																	7 excess
6	No machinery operating																
																	61 measured
																	55 MPL
																	6 excess
	In the bedroom of the house on the street. Frunze 231, 10[10]																
7	During the operation of the jack hammer and the perforator																
																	39 measured
																	40 MPL
																	No excess
8	During the operation of perforator																
																	37 measured
																	40 MPL

№	Place of measurement	The nature of noise						Sound pressure levels in dB in octave band centre frequencies in Hz									
		By spectrum		By temporary													
		broadband	Tonal	Permanent	oscillate	Intermitte	impulsive	31,5	63	125	250	500	1000	2000	4000	8000	Sound Level (dBA)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
																	No excess
9	No machinery operating																
																	36 measured
																	40 MPL
																	No excess
	Near the fence at a distance of 36 m from the road, 10^{45}																
10	During the operation of the jack hammer and the perforator																
																	72 measured
																	70 MPL
																	2 excess
11	During the operation of perforator																
																	71 measured
																	70 MPL
																	1 excess
12	No machineryoperating																
																	71 measured
																	70 MPL
																	1 excess
	Near the house at a distance of 69 m from the road, 11^{20}																
13	During the operation of the jack hammer and the perforator																
																	58 measured
																	55 MPL
																	3 excess
14	During the operation of perforator																
																	57 measured
																	55 MPL
																	2 excess
15	During the switched off mode of the jack hammer and perforator																
																	57 measured
																	55 MPL
																	2 excess
	Near the store "Tatiana" 8 m from the road, 11^{50}																
16	During the operation of perforator																
																	83 measured
																	70 MPL
																	13excess

№	Place of measurement	The nature of noise						Sound pressure levels in dB in octave band centre frequencies in Hz									
		By spectrum		By temporary													
		broadband	Tonal	Permanent	oscillate	Intermitte	impulsive	31,5	63	125	250	500	1000	2000	4000	8000	Sound Level (dBA)
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
17	During the switched off mode of the jack hammer and perforator																
																	81 measured
																	70 MPL
																	11excess

Vibration measurements were carried out during the June 8th noise survey, but units of measure were in dB instead of ppv-mm/sec, thus the data could not be compared.

2.6 Tree Cutting and Replanting

95. To date the total numbers are as follows – 3 524 trees;

- Section 1.1: km 15.9 - km 21.300 (5.4 km) - 746 trees.
- Section 1.2: km 35.5 - km 40.58 (5.08 km) - 621 trees.
- Section 1.3: km 45.6 - km 51.6 (6 km) -1105 trees.
- Section 1.4: km 54.20 - km 59.35 (5.15 km) - 1052 trees.

The original figure of trees falling under the cutting was larger. By changing the sidewalk project, 104 trees were saved. The difficulty in preserving trees is that when carrying electric poles, existing trees do not allow the conduct of electrical cables, and there is a "forced" measure to cut down these trees.

96. A before and after photo of part of Section 1.3 is shown to illustrate the severity of this logging operation, deemed necessary in order to provide a compliant road width.

97. A number of instructions by the IES in the IEE and repeated in the CEMWP items No. 1.8 and 2.5.3, specifying a re-inventory of trees to be cut and mapping of their locations was not carried out in advance but in parallel with the start of tree cutting in Section 1.4 around June 20th. The IEE contained considerable details on the tree cutting actions and provided photos showing fully mature trees scheduled for cutting[2].

[2] During the mission in June 2017, ADB voiced surprise about the tree cutting, yet this information was recorded in 2015 and mentioned in several; short reports prepared by EPTISA, which urged tree conservation.

Figure 3 Section1. 3: Scene Before (left panel) and after (right panel) tree cutting

98. The failure by the contractor to prepare the plan as specified in the IEE led to ADB requiring the contractor to prepare site specific tree management /replanting plans for Sections 1.1 through 1.4. However, this work was assigned to EPTISA. A specialist subcontractor was retained to prepare these plans and they are complete and have been approved by ADB, allowing with cutting in these sections to proceed.

99. To ensure that only trees needing to be cut were felled, all trees to be cut were marked with a blue X (Figure 4), and within Right-Of-Way boundaries defined be survey stakes in all four sections.

Figure 4. Example of tree marking

100. ADB required that all trees to be removed be identified and an example for Section 1.3 is shown. For Section 1.3, trees were not only counted but were identified be genus. Table 9 shows that a species assemblage is well suited to the area's dry conditions, and underscored the need to replace removed trees with a similar assemblage of native species.

Table 9. Section 1.3 tree count by species

Species	Count on North Side	Count on South side
acacia	25	23
poplar	136	23

elm	386	251
maple	67	17
willow	2	3
mulberry	16	14
apple	3	4
pear	1	0
cherry plum	2	0
apricot	7	3
Juniper	2	0
oak	3	0
misc.	41	73
Total	690	415

101. As shown in the 2017 photos (Figure 5) the tree logs were taken to a municipally approved storage area to be distributed at a later time. Logs were not stacked, as is the standard practice, but rather dumped, resulting in dangerous conditions with logs, sometimes weighing many tons, potentially rolling onto workers or people playing in the area. This problem was corrected in 2017 and logs are stored in fenced areas. Tree cutting is restarting in August 2018.

Figure 5. Logs and tree root storage sites along Section 1.3.

2.7 Compliance Issues with Tree Cutting

102. **2017-** During the field visit by the IES, a number of violations of the CEMWP and EMP specifications were noted and sent to the contractor on July 17th for immediate action (these concerns were also provided informally through email to the

contractor on June 26th). These on-compliance issues were fully addressed and were recorded in detail in the previous Semi Annual Monitoring report.

103. **Jan. - June 2018**- By June 2018 the Contractor had marked trees at the Sect. 2.1 but only along three of the >14 km of roadway, namely km 21+300 to km 24+300. As a result the request by the contractor to cut trees along the entire 14.2 km was not approved (Letter No. 202-011 of 25.06.2018). EPTISA indicated the procedures established by ADB were not being adhered to and therefore permission could not be given at this time.

104. As of the end of June 2018, this item remains unresolved.

Table 10. The road sections along which tree cutting is planned in 2018

No of Sites	Start of the site km	End of the site km	Length of the site km
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

2.8 Tree Replanting Plan

105. The government has already committed to preparing such a plan in the IEE and the CEMWP, and IPIG has retained EPTISA to enforce/monitor this action. It is fully understood by the government that this replanting must be done; and further, various KR standards and norms require it. EPTISA's environmental safeguard team is fully committed to enforcing this work with the contractor and will report on this monthly.

106. That being said, tree replanting should not begin until after major construction work in a section is completed so that plantings are not destroyed or damaged by the work, i.e., not until late 2019 or more likely 2020. The roadway will have new signage and other fixtures and trees must be planned to be compatible with landscaping and roadside features[3]. Landscaping is not scheduled until after a road section's major construction is complete. While technically not in synchrony with this schedule, the pressure to prepare a draft plan ahead of time was acknowledged, and MOTR instructed EPTISA to proceed[4]. Four separate plans were prepared and approved.

[3] Final tree species selection should be based in local conditions, and compatibility with other plantings and roadside structures being planned, e.g. pedestrian underpasses.
[4] Technically this was a task defined in the contractor's specifications

Given the size of the documentation these plans are presented in a separately bound SSEMP Annex 10 (of 14) of the site-specific guidelines, with the CEMWP.

107. These tree-planting plans will be one component of the roadside revegetation work, which will include a complete landscaping program. The contractor will not be placing topsoil or have the area ready for planting until the fall of 2018 at the earliest.

2.9 Management of Topsoil

108. The area along the shoulders where the trees and trunks were removed was exposed to the elements and all topsoil was removed and stored at secure sites where it was readily available for reuse (

109.

110.

111. Figure 6). The contractor's and EPTISA's national environmental specialists have been carefully documenting this activity

Figure 6 Topsoil Storage Areas Section 1.1

112. Permits for the removal of topsoil in the construction corridor are not required. However, the contractor has obtained permission to store up to 6,000 m^3 of topsoil at several sites along the Section 1.3 road alignment. Topsoil mounds are being kept to below 1.5 m high and protected, as best as possible, from the elements; mainly wind

during the dry construction season. CSC has instructed the contractor to seed the topsoil mounds with natural grass seeds in an effort to reduce erosion.

113. The contractor's environmental monitor as well as EPTISA's environmental specialists are monitoring topsoil management and are reporting on this monthly.

Figure 7. Subgrade preparation and topsoil storage Section 1.3.

2.9.1 January-June 2018 Compliance Issues

114. Due to concerns of potentially contaminated topsoil being used for food crop agriculture such as potatoes, etc., the topsoil removed from the roadsides was tested for petroleum residue content and lead levels. For both 2017 and 2018 tests for both parameters showed alarmingly high soil contamination, especially lead levels (Table 11).

Table 11. Soil laboratory survey results in 2017 and 2018

Name ingredients	**Unit of measurement**	**Site (Points Data)**					**Normative document**
		1-1	**1-2**	**1-3**	**1-4**	**MPC mg / kg**	
Petroleum products	mg / kg		520		620	0.00	**РД 52.18.647 -2003**
Lead	mg/ kg	13.83	7.52 6.60	7.54	5.40 16.39 8.92 9.02	**6.00**	**М-МВИ-80-2008**

					8.30 8.78		
		2-1	**2-2**	**2-3**	**2-4**	**MPC mg / kg**	
Petroleum products	mg/ kg	230			2010	0.00	**РД 52.18.647 -2003**
Plumbum	mg/ kg	10.1 4.9	10.9 61.0	3.3 5.9	6.1	6.00	**М-МВИ-80-2008**

115. These findings were given to MOTR for actions with a recommendation that topsoil use not be allowed for garden soil enhancement etc.

116. **CEMWP NO. 2.7.1 and Annexes 12 and 13.** The contractor is required to preserve the topsoil protect it from erosion and reuse it when landscaping of the shoulders takes place. During the 2017 site inspections it was recorded that the topsoil mounds were disappearing and that topsoil storage areas are being graded in preparation for development of local sports fields, etc. It is likely that the contractor has agreed with the Ak Suu municipality to allow them to use the topsoil for their purposes and the topsoil required for landscaping would obtained elsewhere, at the Contractor's cost.

117. **For the 2018 construction season**, the issue of topsoil management has not been resolved and the contractor needs regular reminding of the need to stockpile topsoil for reuse during the landscaping and control over its use as garden soil

2.10 Bridges and Culverts

118. **CEMWP No. 2.4.2 and 2.4.3- and SSEMP Annex 12-**The project calls for the full reconstruction of three bridges of natural rivers (Dzelamysh, Sokuluk and Ak-Suu) plus three irrigation canals (Novo-Pavlovka, Zhanatay 2 and Krespostnoy).

2.10.1 Culverts 2018

119. In addition, almost 300 culverts will need replacement given their age and the need for almost doubling their length.

120. The general method being applied is the maintain traffic flow by blocking1/2 of the road and reconstructing the bridge or culvert then repeating the same process on the other lanes (Figure 8).

121. On the site 1.3, on the south side of the road, work on dismantling of old and installation of new culverts has been started.

Figure 8. Site 1.3 Culvert Replacement

122. On the Site 1-3 RK 371+00 – 431+00 (Petrovka village 45,6-51,6 km) works on dismantling of old and installation of new culverts, on the south side of the road were continued. On the North side of the road on the section 1.3 (Petrovka village 45,6-51,6 km) the construction of pipes was completed. In this site, the problem, during installation of new pipes, is created by wedged ground water.

Figure 9. Culvert construction site in Section 1.3 showing standard diversion signage

123. Now the following culverts are installed (Table 12).

Table 12. Culverts installed 2018

Section	Round r / concrete pipes with a diameter of 1.5 m	Rectangular overlapped r / concrete pipes	Rectangular r/ concrete pipes 2,0x2,0 m
Section 1.1	7 completed pipes 5 to half of the road	1 completed pipe	
Section 1.3	7 completed pipes 5 to half of the road	14 to half of the road	1 completed pipe
Section 1.4	7 completed pipes 5 to half of the road	1 completed pipe 9 to half of the road	

Figure 10. Retaining wall construction site

124. Also, in places where there are steep slopes, work was carried out to install 165m of retaining walls. In order to ensure the safety of traffic, the site of work is fenced; barriers and signs of traffic safety are installed. New night lighting devices have been installed.

Figure 11. Construction area roadside signage

2.10.2 Bridges-2018

125. **The Bridge over Jelamysh River**.-In April 2018, construction work continued on the construction of the bridge over the Jelamysh River on the north side of the road, which began in the autumn of 2017 and was completed in May, and the north side of the bridge was opened for traffic.

126. In May, work on the construction of the south side of the bridge has been started. There is no water in the Jelamysh River.

The road in the area of bridge construction is constantly irrigated with water.

127. **The Bridge over Sokuluk River-** In May, on the construction of a bridge over the Sokuluk River on the north side of the road has been started. The flow of water into the river was blocked. Construction waste was not allowed to enter the riverbed.

128. The method of construction of the bridge - is drilling and piling. Betonies is used as drilling mud. Hydrous solution with betonies, remaining after use is taken out in a special pit and after dewatering is transported to the designated place (the pit), agreed with the local authorities. In June, the installation of piles was completed. The bypass road during the construction of the bridge over the Sokuluk River was not built. The construction of the bridge did not affect the traffic. Traffic is carried out on the main road.

Fabrication of rebar framework for bridge piers and piers being poured-in-place in dry riverbed.

Pit for dehydration of bentonite clay to be removed to secure landfill site for burial.

129. Currently, bridge piles have been erected. Pier construction is currently stopped.

130. **The Bridge over Ak-Suu River-** In May construction works on the bridge on the Ak-Suu River have been started. A bypass bridge across the river is being built. Construction was overseen by the road safety specialists. With the beginning of the rains, water appeared in the river.


131. Currently, the bridge width has been extended from 7 to 15 meter, based on EPTISA's instruction. But during the construction provision for pedestrians was not provided. The contractor is undertaking this work now.


132. The construction company building the bridge has stored old asphalt in the riverbed, which is a flagrant violation of environmental legislation, about what the letter of non-compliance was sent to the Contractor No.EP-CR5-HN-576 of 06.07. 2018.


133. The riverbed is also filled with excess construction soil, which is currently not possible to remove due to the large volume of floodwaters (lower right photo).

134. The contractor has received a written warning and all material will be removed from river bed as soon as floodwaters recede.

2.11 Management of Surface Drainage and Flooding-2017

135. **CEMWP 2.4.2 and SSEMP Annexes 8, 12 and 13-Surface drainage and Flooding.** On examining the diameter of the larger culverts and then the conveyance provided for drainage of the runoff two did not match and there would appear to be serious danger of flooding, especially at one location where the drainage from the culvert seemed to go upstream. This same suspicion was noted at several locations, but has not been documented during the weekly inspections.

136. To address this, the design and sizing of culverts will be reviewed by the national Environmental Specialist and the contractor's drainage specialist and a results checklist prepared confirming the drainage on the downstream side of each culvert has been properly sized to prevent flooding.

2.11.1 Jan.- June 2018

137. To date, the issue of the culvert sizing and discharge channel seeming mismatch has not been addressed by the engineers or the contractor.

2.12 Borrow Pits

2.12.1 Establishment and Operation

138. The contractor plans to use six borrow pits. These are described in detail in the **CEMWP SSEMP Annex No. 12 and 13** and are:

- No. 1 Jelamysh located 11 km south of the road at km 18 of the road,
- No.2 Sokuluk No.1 south about 3.3 km from the main road at km 23m,
- No.3 Sokuluk 2 at km 27.5 and 7.7 km from the road,
- No.4 Ak-Suu 1 located in the old Ak Suu river bed 2.2 km from the road and at Km 44 along the alignment.
- No.5 Ak Suu 2 is the 5th borrow area located further upstream in the old dry riverbed and is 8.6 km from the Project road.
- No.6 Kara Balta, located at Km 61 of the road about 4 km from highway, in an industrial factory zone with abandoned as well as operating facilities.

139. With the exception of borrow pits No.4,5 all sites are decades old extraction areas located in old river beds and very large (stretching for many km) where hundreds of thousands of m^3 have been mined. In both Ak Suu 1 and 2 existing small aggregate-processing facilities are in operation.

140. Mitigation for these sites has been addressed in SSEMP Annex 14 of the CEMWP as well as the CEMWP Activity No. 2,2, 2.7.3, 3.3 and the contractor has been reminded to adhere these requirements.

141. The CEMWP also states that the contractor must rehabilitate, including contouring and vegetating site, and deal with this issues in the areas in the existing pits where new extraction 'faces created by the contractor' have been established.

2.12.2 Status Jan.- June 2018

142. Since the start of the construction season the Jelamysh, Ak Suu and Sokuluk are in operation and the materials processing facility is fully operational. occupational

the non-compliance with health and safety issues at work camps and construction sites have required constant attention by EPTISA.

143. **At the Jelamysh Borrow Site** the height of bench is approximately 10 m, while the project provided that the development will be done in layers with the height of bench of 5 m, starting from the top platform. It is also established that the base of the borrow-pit side goes beyond the established boundaries and went to the country road, threatening with a rockfall. The border of the dumps of sifted inert materials, also beyond the contour of the borrow-pit site. After the violations were reported on May 3, the work at the borrow-pit was stopped №ER-CR5-HN-397 to remedy the situation.

The Jelamysh Borrow site

144. The contractor performed Stripping works, cutting 4 benches 5 m high and 10 -15 m wide, starting from the top platform. The road to the upper bench has been laid. The letter №ER-CR5-HN- 461 dated 24.05. 2018 was allowed the Contractor to continue development of borrow-pit subject to development from the upper bench.

145. **The Jelaymysh and Ak Suu 2 site -** OHS issues continue to be a problem, including unsafe operation of heavy equipment. Dust control remains a major problem and is resulting in a growing number of complaints.

2.13 Dust Control

146. **CEMWP Activity No. 2.2.1-2.2.3 and SSEMP Annex 11** specify that dust must be attenuated at the work sites, along construction roads, the aggregate processing facility and where machinery is operating. To that end the contractor has been instructed to use at least two watering trucks continuously. This is being done.

147. **2018** The implementation of dust control measures at construction sites continues to be an issue since while being undertaken, it has not been adjusted in relation to higher air temperatures and reduced precipitation. Complaints are being received orally by EPTISA's monitor. Despite preparing watering schedule water tanker drivers are not adhering to this and therefore very dusty conditions persist.

148. In view of the situation, the Contractor was instructed to increase the intensity of watering the road, including the roadside, in the construction site from 6 am to 20 pm, without a break for lunch. This new schedule is now being implemented

2.14 Materials Processing

149. **CEMWP No. 2.7.1, 2.7.3 and SSEMP Annexes 12 and 14**- The contractor has contained all materials processing activities in a large and remote (8 km) area of the Ak Suu 2 borrow site (Figure 12). That area houses the aggregate processing and crushing facility, the concrete batch plant as well as the asphalt production plant.

150. As a prerequisite to initiating the installation of any equipment the contractor must complete a special environmental assessment, known at an Ecological Passport, of these three facilities. To develop an environmental passport for the operation of the stone crushing plant (SCP) of the asphalt concrete plant (ACP) and the concrete batch plant (CBP), the Contractor engaged a specialist. A draft version of the document was submitted at the end of December. But there were problems due to the fact that the key performance indicators of the equipment were not provided in time, which led to a delay in the analysis of impacts. Currently, all the necessary data is provided to the designer. After the revision of the Ecological Passport report, it was submitted to the State Environmental Expertise in the state Agency for environmental protection; and approved on April 12th, 2018.

151. Based on limits defined in the Ecological Passports, applications for permits and for the actual operation of the equipment, pavement for the use of natural resources were made.

Figure 12 Ak Suu2 site for the materials processing operation-Dec. 2017.

152. **Water Supply**- To supply the Ak Suu materials processing plant with water, a well was drilled and a pipeline was laid to the plant. Currently, there are no problems with water at the plant and all necessary permits have been obtained from the local authorities.

153. **Bitumen**- Large amounts or bitumen are being delivered to the ATP site and bags are breaking and the bitumen spills are increasing.

154. Bags of bitumen are breaking open and material is spilled on the ground without the observance of environmental measures and immediate clean up. Visual inspection

established that some of the packages when unloading were torn open, but never repaired. As a result, the contamination continues and compliance letter No. EP-CR5-HN-439 of 17.05 2018 was sent on May17th.

155. The bags of bitumen are stored directly on the ground. It is urgent to collect all the bitumen that has been spilled, prepare a weather proof platform with a hard surface (concrete) and a canopy for storing the bitumen.

156. The Contractor has started construction of a canopy for storage of unused bitumen and bitumen packaging. But despite that the leakage has increased as air temperatures rise. All this continues to contribute to the pollution of soil and groundwater. In addition to several direct warnings a second non-compliance letter (no. EP-CR5-HN-540 of 22.06.2018) was sent on late June.

157. According to the information received from the contractor, in the future bitumen will be delivered to the site in iron barrels. A special place for storage of barrels with bitumen.

2.15 Waste Management

2.15.1 2017

158. **CEMWP 2.3, 2.6.2; SSEMP Annexes 4,5 & CEMWP No. 2.6.2 and SSEMP Annexes 5 & 7** Waste on this project consists of used or broken construction equipment building materials and paper and cardboard products scattered around the contractor's yard, as well as unsorted garbage namely dry waste, plastic and glass as well as wet food scraps dumped in overflowing bins at the entrance to the contractor's site, attracting flies vermin and dogs.

159. During the inspections of Nov. 29 and 31st 2017, large amounts of plastic drink bottles were mixed in with kitchen wastes

2.15.2 Jan. - June 2018

160. In the workers' camps, food waste is thrown into the open metal trash containers as is and becomes an ideal environment for parasites growth and in the heat creates a serious odor and threatens the health of the workers. Food remains must be disposed of daily in the summer but it not done, as waste contractors have not been asked to do this. But given that the daily export of food waste is not it was recommended to food waste be stored in a special plastic bins with lids allowing for the material to be disposed of after a few days***.***

161. Considering that many of the workers smoke, cigarette butts and matches are thrown away indiscriminately. Basic project-site fire safety requires that smoking must not occur in the camp living facilities/premises. Smoking is allowed only in designated areas, and metal urns for cigarette butts must be installed.

162. A special meeting was held with the contractor on May 30, 2018 to explain these requirements. This was initiated with a non-compliance letter No. ER-CR5-HN-397 dated 4.05.2018), but not acted on by the contractor until May 30th, 2018.

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Illegal waste burning and food waste bins and cigarette butt receptacles at contractor offices

Contractor's camp at Sokuluk and the Belovodskoe

163. At the Sokuluk and Belovodskoe work camp living quarters household and construction garbage was removed and cosmetic repairs/painting of residential premises was carried out, thus significantly improving health and safety conditions for residents. Garbage cans have been installed. In the kitchen and living areas there are fire extinguishers, and fire shields have been installed. Explanatory conversations were held (letter № ER-CR5-HN-397) with residents about the rules and the need to keep the premises clean.

2.16 Occupational Health and Safety

2.16.1 2017

164. **CEMWP No. 2.9.3 and SSEMP Annex 3 and 4-** The implementation of occupational health and safety (OHS) specifications is to be delivered by the safety engineer retained by the Contractor[5]. The CEE should be working with the safety engineer to define the necessary steps to prevent accidents and keep the workforce healthy. A detailed list of OHS actions is presented in the CEMWP, and should be implemented principally by the safety engineer.

165. Under the 2017 organization and reporting system, the safety engineer was not by the contract. The social sector specialist was been given this double duty which is not feasible.

166. **Jan.-June 2018-** To date no OHS specialist has been retained by the contractor.

[5] To date there is no safety engineer as these duties has been given to the contractor's social sector specialist, who is 100% occupied by the resettlement issues. A safety engineer is urgently needed.

2.16.2 Worker Accommodation Hygiene, Safety and Basic Comforts

167. **CEMWP No. 2.9.3 and Annex 4**-Worker accommodations, hygiene and provision of basic services are an integral part of contract specifications and are defined in the project IEE and it EMP. The contractor is responsible for providing at least the basic accommodations as define in the International Labour Organization's (ILO) guidelines[6]. Even though the accommodations will be for less than 120 workers, many basic provisions are already not provided or there is marginal compliance. Most important being proper lighting, separate toilet and washing facilities and a modicum of privacy in sleeping quarters, It has been observed that there are up to 4 people per room. Correction to these poor conditions must be implemented. A recent inspection highlighted somewhat unsanitary conditions in the kitchen facilities, most important being the presence of cooking oil and oily waste on the floor and around the cooking stoves.

168. **Update Jan. - June 2018**- Workers are living in the ACP quarters according to World Health Organization standards, namely only two workers in a 8.5 m^2 space. The kitchen is be equipped with a refrigerator and all necessary household appliances. A summer dining area, shaded from the sun has been prepared for workers, allowing them to spend leisure time outside. Women's and men's shower rooms and toilets should be fully equipped with standard hygiene and sanitation products. In the kitchen and living areas there are fire extinguishers, 2 fire shields. The room is prepared to accommodate the kitchen, according to the Contractor, sheathed with non-combustible plastic. Gas cylinders are no longer in the kitchen, but in a special cabinets on the mostly shady side of the structure.

169. It is necessary to request workers properly dispose of waste and to refrain from spitting and smoking.

The Belavodskoe work camp and outdoor dining area

170. According to the recommendations of the Consultant, cosmetic repairs have been carried out in residential premises. The walls are whitewashed, electrical wiring is insulated, and lighting lamps are replaced with more powerful. Shower room, wash stands were made. Toilets are whitewashed, lighting was upgraded. Also the kitchen is white washed, refrigerators have been installed, and purchased the white coats for chefs was completed. The territory of the camp is cleared of garbage. Garbage cans are installed.

[6] http://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---multi/documents/publication/wcms_116344.pdf

A washable plastic non-combustible coating on kitchen wall at Sokuluk Construction Camp

171. Between January and June 2018 many of these issues were brought, more or less, into compliance.

2.17 Road Traffic and Safety Management

172. **CEMWP No. 2.9.2 and SSEMP Annex 4-Road traffic management and worker safety** at the work site while active traffic is passing is the prime responsibility of the safety engineer working with the project chief engineer and site engineer.

173. More than 30 on-site inspections were conducted along the project corridor between April and the June 30th 2018, and non-compliance letters were sent, specifying shortcomings concerning the organization of traffic along construction site. The concerns raised were;

- The road safety consultant repeatedly pointed the need to ensure safety in the conduct and organization of road works. However, the contractor's personnel do not ensure sufficient safety of traffic and works with a gross violation of safety standards, as well as methods and equipment.
- Many places on the road works have no protective barriers, limiters, signaling devices, lighting and other guiding devices in sufficient quantity and in the arrangement of drainpipes.
- A complex of works, organization and provision of road safety along the project road (km15.9 km to 61) is fully non-compliant . the existing road is not maintained road worthy. There is no patching to eliminate the resulting minor damage and faults along the edge of the carriageway that appeared during construction, as well as care for road signs; it is necessary to urgently undertake the work on cleaning from objects, to perform the profiling and planning of many blocked and almost impassible intersections degraded by the construction and left unpaved and not repaired.
- At the PK-77 + 900 near the traffic police post, the contractor’s employees worked under the electric power line in the bucket of the excavator. According to the safety regulations for the engine and the excavator, it is forbidden to use it in place of the aerial platform or for other purposes, and to ensure safety and the conditions of labor protection for employees, a letter was sent about taking measures to the head of this facility to prevent a repeated violation, as well as the need to appoint a responsible persons on occupational safety and health, from the number of engineering and technical workers.
- It was noted the formation of dust on the carriageway with a gravel cover due to the lack of adequate watering. Dusty conditions have worsened impacting driving visibility and traffic safety, and therefore it is necessary to constantly irrigate in places where dust is possible.

- Along the project corridor (km 15.9- to 61) there are 17 schools and children's institutions, in many places road markings "zebra" have worn off, and the road signs "Children" and "Pedestrian crossing" are absent or generally worn out and therefore schoolchildren and pedestrians are exposed to high risk, for the safety of schoolchildren and other road users, it is necessary to urgently install traffic signs and apply road markings.
- The letter was sent to the contractor to open traffic on the Ak-Suu bypass road, 44 + 030 km, that work for the bypass must be carried out in accordance with the requirements of the project documentation. The roadway must be asphalted and have two lanes, road signs, a pedestrian path, a continuous barrier barrier and must comply with all traffic safety standards. To ensure the safety of traffic on the bypass road across the Ak-Suu River, it is necessary to install guiding and guarding devices, signaling means, road signs and markings, in accordance with GOST-23457-86. A temporary detour along its entire width should provide allowing vehicle movement in both directions.

174. To carry out the consulting services of engineering and construction supervision a training session was held in the office of contractors on the organization of road traffic at the site of road works, with the participation of the international road safety consultant Mr. Part Parajuli.

175. There has been safety training with field training sessions provided to workers and then to schools to observe traffic rules. The contractor also provided crossing sign for the schools to use.

2.18 Management of Subcontractors

176. **2017 -** All subcontractors are bound by the same conditions as the contractor and as such it is the contractor's responsibility to enforce all measures as defined in this CEMWP and the contractor's specifications. It is the duty of the contractor's environmental monitor to instruct the subcontractors on environmental safeguard matters.

177. Two subcontractors were inspected and none are aware of the environmental safeguard requirements, e.g., workers were on site without proper protective gear, operation of heavy equipment in a dangerous manner, indiscriminate dumping of construction waste, failure to secure worksite at the end of the day or when work is not ongoing.

178. **January and June 2018 -** It was clear from the conditions at the Ak-Suu bridge site and the use of backhoe buckets as work platforms that subcontractors are not being managed and accidents are waiting to happen, despite repeated oral and written warnings. IPIG needs to act and apply stiffer penalties.

2.19 Project Reporting Relationships

179. In addition to the ADB missions, the two ADB-appointed regional environmental specialist, IPIG and EPTISA, providing instructions, plus having to follow 14 SSSEMP's the contractor needs continuous guidance about how to implement environmental safeguards, who to report to and what instructions to follow.

180. To address this it is urged that IPIG be the focal point for any major administrative recommendations or actions regarding environmental safeguards from external sources and that these requests or actions be transmitted to EPTISA allowing us to participate and have input as needed. For all standard issues such as traffic safety, subcontractor non-compliance, communication directly with EPTISA is recommended.

181. The contractor needs to know that for environmental monitoring, reporting is to EPTISA's team leader and the International and National Environmental specialists,

with copies, if needed to IPIG. Contractually, EPTISA should be addressing environmental compliance issues and should be receiving the contractor's notices on how non-compliance is addressed. EPTISA works closely with IPIG and will report and consult on all relevant matters.

182. IPIG should remind the contractor of this simple relationship. This will help with lines of communication and management of external instructions.

2.20 Capacity Building

183. **2017 -** Since June, EPTISA has provided three training sessions to the contractor IPIG and EPTISA's national environmental specialist on monitoring, the use of the CEMWP, the completion of the compliance monitoring checklist, the preparation of reports, and required responses to non-compliance notices to the contractor. A fourth training and briefing session on monitoring was delivered on Dec. 5th, 2017.

184. **2018 -** Since April 2018, EPTISA has provided two training sessions on EMP and CEMWP implementation and reporting. In addition, there have been sessions on OHS and work camp management.

2.21 Observed Mitigation and Monitoring Gaps

185. The contractor is not using the CEMWP properly and addressing each if the issues defined in the plan and implementing appropriate actions. This is one reason that ADB's recently appointed safeguards consultant found the issues he reported to ADB during the Nov. 24th inspection.

186. The CEMWP and the supplemental specific 14 SSEMP Annexes, cross-referenced in the latter, provide all necessary detail to complete a fully compliant monitoring cycle. All materials have been translated into Russian and two briefings on the CEMWP have been given the contractor. Training in the use of these material was provided to the contractor and IPIG in October, November and December 2017, and again twice in 2018.

187. All construction ceased during the last week of November 2017 and resumed in early April 2018.

188. The special vibration study resulted in IPIG informing the contractor that compaction would be completed without vibration, except in those few locations where there were no structures in danger of being damaged.

189. After taking up asphalt and sub-base material at locations where secondary roads intersect with the project road, the contractor is not reinstating these locations, allowing for safe access to local residents. Complaints are mounting.

2.21.1 Bringing Environmental Safeguard Issues Into Compliance

190. **2018** - Overall, the contractor remains non-compliant in a significant number of areas, witness the >35 written non-compliant letters between April and June 30th. 2018. Many of the issue relate to workplace health and safety and handling of construction materials, underscoring the urgent need to hire an OHS specialist and to take environmental safeguards seriously. This action has been recommended by EPTISA since 2017 to both IPIG and the Contractor.

191. EPTISA is ready to assist, but the contractor's environmental monitoring must be more pro-active in addressing issues. As of April 2018 (the start of the construction season) this interaction has improved considerably and Construction Environmental Work plan and monthly checklists are being consistently submitted.

192. The contractor should not lose this momentum and therefore EPTISA will prepare a list of candidates to replace for present environmental monitor who is leaving as of November 2018. Since the contract document specifies that EPTISA is to

approve the monitor prior to her/his appointment, the contractor will need to adhere to these steps. Finally, there must be an overlap period allowing the present monitor to train the replacement.

193. Table 12 is a summary of the important compliance issues identified the actions taken and a timing of these actions either having been completed or still needed. The contractor continues to view these notices as mere paper exercises and only acts when instructed by IPIG.

Table 13. Non-Compliance Items and Environmental Actions By EPTISA And Contractor Follow Up: March 1-June 30, 2018

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
1e	**The problem of disposal of old asphalt**	**CEMWP № 2.6.1.** EP-CR5-HN-303, from 22.03.2018	Annex 7. Old Asphalt Management Plan	Lack of coordination with environmental authorities. In many places pieces of asphalt are laid outside the road on private lands.	Approvals are received. The pieces of asphalt are removed from a private area	26.03.2018 02.04.2018	04.05.2018
2e		**CEMWP № 2.6.1.** EP-CR5-HN-407, from 04.05.2018	Annex 7. Old Asphalt Management Plan	The stock of asphalt piled on the roadway is not leveled by blocking the passage for vehicles. Road transport on this road is forced to travel around heaps of asphalt through private fields by damaging crops	No action taken		07.05.2018.
3e		**CEMWP № 2.6.1.** EP-CR5-HN-413, from 07.05.2018	Annex 7. Old Asphalt Management Plan	The road is blocked by the stock of old asphalt piled on the roadway. The situation only worsened, as the area of damaged crops increased.	Asphalt was leveled. The planning of the territory was carried out	9 -10.05.2018	10.05.2018
4e	**The problem of disposal of construction and household waste**	**CEMWP № 2.6.2.** EP-CR5-HN-303, from 22.03.2018г	Annex 5 Waste Management Plan	At the construction site of the bridge across the Jelamysh river there is construction waste- as well as at the contractor's site office and living quarters.	EPTISA has instructed the contractor to properly store and dispose of waste	26.03.18	28.03.18

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
5e		**CEMWP № 2.6.2**. EP-CR5-HN-303, from 22.03.2018	Annex 5 Waste Management Plan	On the territory of the camp in Sokuluk village found a lot of construction and household waste, empty barrels, old tires. Expired fire extinguishers are found	The territory of the camp is brought to the proper condition.	26.03.2018	29.03.2018 г..
6e		**CEMWP № 2.6.2**. EP-CR5-HN-303, from 22.03.2018	Annex 5 Waste Management Plan	On the territory of the camp in Belovodsk village, there are no garbage cans, waste containers are full, the wastewater storage is full, it is necessary to pump out sewage.	The territory of the camp is brought to the proper condition.	30.03.2018	02.04.2018
7e		**CEMWP № 2.6.2**. EP-CR5-HN-303, from 22.03.2018	Annex 5 Waste Management Plan	On the installation area of a stone-crushing plant, an asphalt-concrete plant and a concrete batch plant, the barrels with bitumen are stored on non-equipped site that is not concreted, without shelter. Empty barrels, construction waste were found.	Barrels with bitumen are installed on pallets, covered with waterproof canopy	27.03.2018	29.03. 2018
8e		**CEMWP № 2.6.2**. EP-CR5-HN-364, from 18.04.2018	Annex 5 Waste Management Plan	At the construction site of the bridge across the Jelamysh river surplus construction soil deposited on a slope on the north side of the road.	Soil removed from the slope side of the road	24.04.2018	25.04.2018
9e		**CEMWP № 2.6.2**.	Annex 5 Waste	On the north side of the road Section 3, the installation of	All reinforced concrete wastes	24.04.2018	25.04.2018

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
		EP-CR5-HN-364, from 18.04.2018г	Management Plan	culverts has been completed, but in many places, there were not removed reinforced concrete wastes formed during the dismantling of old pipes.	exported to a special site, allocated by the Road and Operational Enterprise.		
10e		**CEMWP № 2.6.2**. EP-CR5-HN-364, от 18.04.2018г	Annex 5 Waste Management Plan	The removed asphalt is transported to the country road (alternative), In many places pieces of asphalt are laid outside the road on private lands.	The pieces of asphalt that are located outside the road are removed. Slopes are planned.	9 - 10.05.2018	10.05.2018
11e	**Living Conditions for Workers**	**CEMWP № 2.9.4** EP-CR5-HN-364, from18.04.2018	Annex 4 Management Plan For The Life Of The Construction Camp	In the residential area of the ACP electrical wiring in many places is made with violations. In the shower room, electrical outlets are installed with violations, next to the shower mixer and sink, there are no hangers for personal belongings. The gas cylinder is located in the kitchen, which is dangerous. The living quarters are overpopulated. In a room of 8 square meters live 4 people. In the room there are no tables, cabinets for personal things, so personal belongings lie on the floor or on the beds.	Two workers live in residential premises with an area of 8.5 m. The kitchen is equipped with a refrigerator and all necessary household items. A summer playground for workers' meals is arranged, where workers can spend their free time after work. Women's and men's shower rooms are equipped. Made toilets, wash basins.	24.04.2018	25.04 2018

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
					In the kitchen and living areas there are fire extinguishers, 2 fire shields are installed.		
12e		**CEMWP № 2.9.4** EP-CR5-HN-364, from 18.04.2018	Annex 4 Management Plan For The Life Of The Construction Camp	Contractor's campintheBelovodskvillage Living premises for workers need cosmetic repairs. It is necessary to whitewash, additional lighting is also necessary. For local workers, it is necessary to arrange a room for eating. On the territory of the camp it is necessary to clean up the garbage.	It is established that cosmetic repairs have been carried out in the residential premises. The walls are whitewashed, the electrical wiring is isolated, the lighting lamps are replaced with more powerful ones. A shower room, wash basins are made. Toilets are whitewashed, lighting is replaced. Kitchen is also whitewashed, refrigerators are installed, white coat for cooks are purchased. The territory of the camp is cleared of debris. Trash bins are installed. In the	24.04.2018	25.04 2018

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
					kitchen and living areas there are fire extinguishers, a fire shield.		
13e	**Tree Management**	**CEMWP № 2.5.1**Tree management EP-CR5-HN-303, from 22.03.2018	Annex 10 Tree Management Plan for Sections 1-4	On Section 1 there are trees, the trunks of which are covered with construction materials.	Trunks of trees are cleaned of construction soil It is necessary to obtain all approvals for cutting down trees	26.03.2018	30.01.2018
14e		**CEMWP № 2.5.1** Tree management	Annex 10 Tree Management Plan for Sections 1-4	On Section 1, the Contractor plans additional cutting of trees. It is necessary to justify the reason for the additional tree cutting	Trunks of trees are cleaned of construction soil It is necessary to obtain all approvals for cutting down trees	24.04 2018	25.04.2018
15e	**Borrow pits**	**CEMWP № 2.7.4** EP-CR5-HN-384 from25.04.2018 EP-CR5-HN-397 from 03.05.2018	Annex 14 Borrow Pit Management Plan	The development of the Jelamysh borrow pit began with a violation of the project, which the Contractor repeatedly warned against in writing. Considering the fact that the borrow pit field of the Jelamysh borrow pit is located on a slope, the development of the field should have been done layer by layer with 5 m ledge starting from the upper area. In fact, the development of inert materials in the borrow pit was carried out	Contractor correcting problem, but slowly , requiring several visits by environmental monitor	05.05.2018	Site being inspected weekly

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
				from the lowest point with a height of the ledge of more than 10 m in violation of design decisions and safety precautions; - When preparing the site for storing the sifted material, the soil layer was not removed.			
16e	**Worker's camp on the territory of the Camp**	**CEMWP № 2.9.4** EP-CR5-HN-436 from 16.05.2018	Annex 4 Management Plan For The Life Of The Construction Camp	In the camp of workers' residence, food waste is thrown into the installed metal garbage containers in an open form, which becomes an ideal breeding ground for parasites and results a threat to the health of the living workers			05/21/2018 everything remained unchanged
17e	**Bridge on the Sokuluk river**	**CEMWP № 2.9.4** EP-CR5-HN-436 from 16.05.2018	Annex 13 Environmental Protection Plan for the Construction and Reconstruction of Bridges	Metal fencing during the construction of the bridge over the Sokuluk River, made of metal pipes does not ensure the safety of pedestrians	It is necessary to add to the fencing of the bridge an additional metal bars or metal mesh		30.05.2018 Fencing is done
18e	**Territory of construction of asphalt-concrete plant**	**CEMWP № 2.9.4** EP-CR5-HN-439 from 17.05.2018	Annex 5 WasteManagementPlan	In the territory of the asphalt-concrete plant construction, a large quantity of bitumen in plastic packaging was delivered. Bitumen was unloaded to the	It is necessary to remove the bitumen from the ground. Install packages with bitumen on a solid	№220-020 From 20.05.2018	05/21/2018 Packages with bitumen are partially removed to

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
				ground without observing environmental measures. At visual inspection it is established that some packages were damaged during unloading, as a result of this, bitumen was released to the ground. Approximate weight of leaked bitumen is more than 600 kg	foundation under a canopy		polyethylene litter and covered with polyethylene. The contractor plans to finish the work by 25.05.18
19e	The problem of transportation of a borrow pit material	CEMWP № 2.9.2 EP-CR5-HN-440 от 18.05.2018	Annex 14 Borrow Pit Management Plan	The road proposed for the transportation of borrow pit material does not meet the safety requirements	It is necessary to determine on what road to transport the borrow pit material	C-055 from 22.04.2018 EP-CR5-HN-368 of 19.04.2018	
20e	Tree management	CEMWP № 2.5.1 Tree management EP-CR5-HN-467, of 25.05.2018г	Annex 10 Tree Management Plan for Sections 1-4	On Section 1 there are trees, the trunks of which are covered with construction materials.	Trunks of trees are cleaned of construction soil	29.05.2018	30.05.2018
21e	The problem of recycling of construction and household waste	CEMWP № 2.6.2. EP-CR5-HN-467, of 25.05.2018г	Annex 5 Waste Management Plan	On Section 1, during the construction of culverts, there are construction waste	It is necessary to remove construction waste from the site		30.05.2018г Construction waste partially removed
22e	The problem of transportation of a borrow pit material	CEMWP № 2.9.2 EP-CR5-HN-468, of 30.05.2018г	Annex 14 Borrow Pit Management Plan	Determination of the route of transportation of a borrow pit material	Determination of the route of transportation of a borrow pit material	№ 201 – 149 Of 22.05.2018г	23.05.2018

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
23e	Recycling of old asphalt	CEMWP № 2.6.1. EP-CR5-HN-487, of 01.06.2018г	Annex 7. Old Asphalt Management Plan	Getting approval for the export of asphalt to rural streets	The approval is given, under condition of crushing of asphalt on pieces no more than 20x20	№С-070, of 29.05.2018	30.05.2018
24e	Recycling of old asphalt	CEMWP № 2.6.1. EP-CR5-HN-540, of 22.06.2018	Annex 7. Old Asphalt Management Plan	The removed asphalt is exported to a country road, A large amount of asphalt is transported to the road and not planned.	In the established time frame nothing was done.	The contractor is warned that in case of failure to perform until 26.06, all work will be stopped.	25.06.2018 27.06.2018 Contractor complied
25e	Dust formation	**CEMWP №2.2.2** EP-CR5-HN-529, of 19.06.2018г	Annex 11 Dust Suppression Plan	The increase of air temperature led to increased dust formation on the road, but despite the repeated warnings of the Contractor about the need to strengthen the hydraulic irrigation, the situation does not change. Complaints from citizens for increased dust formation were also received during public consultations. In connection with the current situation, it is necessary to increase the intensity of watering the road, including the roadside,	A graph with an interval of 1.5 hours between watering is drawn up, but this is a very large interval	The contractor has been warned to reduce the interval between irrigation to 40 minutes	06.07.2018 09.07.2018 The situation has not changed. Lots of dust.

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
				in the construction site from 6 am to 20 pm without a break for lunch. To do this, it is necessary to make a schedule of irrigation of the road, with indication of the interval between irrigation, and monitor compliance with the interval of irrigation by watering machines.			
26e	The problem of old asphalt recycling	**CEMWP № 2.6.1.** EP-CR5-HN-519 of 14.06.2018 EP-CR5-HN-540 of 22.06.2018	Annex 7. Old Asphalt Management Plan	The removed old asphalt from Site 3 was exported to the road, located along the field between Molodezhnaya and Lomonosova streets. Part of the road is currently planned. For the remaining section of the road (about 300 m) a very large amount of old asphalt is imported. Currently, the removal of asphalt is suspended, but heaps of asphalt piled on the roadbed are not equalized and block the passage for vehicles. Vehicles passing through this road are forced to go around the asphalt piles to private fields, damaging crops. Excavation equipment on the road is absent.	The contractor leveled asphalt, but so far has not corrected all the violations	The Contractor's answers 220-024 of 18.06.2018 220-028 of 02.07.2018	09.07.2018 part of the comments were not eliminated. Heaps of asphalt on the agricultural field and the tree is not removed

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
		EP-CR5-HN-560 of 28.06.2018		It is necessary to immediately level the covered part of the road. Excess asphalt to take on agreed with Petrovskiy ayil okmoty sites. It is necessary to provide a list of streets provided for filling with old asphalt			Until now, it remains unfulfilled
27e	Asphalt concrete factory	**CEMWP № 2.9.4** EP-CR5-HN-529, of 19.06.2018	Annex 5 WasteManagementPlan	On the territory of the asphalt-concrete factory, it was established that leakage of large quantities of bitumen occurred from the destroyed packages. Packages from used bitumen are stored directly on the soil, without hard coating. All this contributes to the contamination of soil and groundwater. It is urgent to collect all the bitumen that has been spilled. Prepare a platform with a hard surface and a canopy for storing packages from bitumen. Before the canopy is completed, it is necessary to store the bituminous packages on a waterproof foundation.	Currently, the Contractor has built a canopy for storing packages from used bitumen. Removed previously detected leakage of bitumen	220-028 of 02.07.2018	09.07.2018 Given the high temperature of the air formed new leaks. Needs constant monitoring and cleaning of the area from bitumen leaks to the borrow
28e	Construction of culvert	**EP-CR5-HN-577, of 06.07.2018**		On the site 1 between 15 and 16 km, when the culvert was			09.07.2018

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
				replaced, reinforced concrete flume was dismantled. Currently the pipe has been replaced, but the flume has not been restored to date.			To date, nothing has been done
No.	**The problem of non-compliance by the Contractor (c)**	**Number and date of notification**	**Applicable Guide on Best Practices (No.)**	**Specific issue and location**	**Actions taken by EPTISA**	**Date**	**IG Inspection**
1c	**CEMWP № 2.6.1.** **disposal of old asphalt**	№205-003, from 24.04.2018	Annex 7. Old Asphalt Management Plan	Approval for the export of asphalt to rural streets	The approval is given, provided the crushing of asphalt into pieces no more than 20x20	EP-CR5-HN-417, from 08.05.2018	Weekly inspection completed
2c	**CEMWP № 2.7.4** Development of the Jelamysh borrow pit in accordance with the project	№220-022 from 21.05.2018	Annex 14 Borrow Pit Management Plan	Approval for the development of a borrow pit	Permission to develop a borrow pit was given	EP-CR5-HN-461, from 24.05.2018	Weekly inspection completed
3c	**CEMWP № 2.9.2** The problem of transportation of a borrow pit material	№ 201 – 149 from 22.05.2018	Annex 14 Borrow Pit Management Plan	Determination of the route of transportation of a borrow pit material	Search for a new route for the transportation of borrow pit material		Weekly inspection completed

No.	The problem of non-compliance, defined by EPTISA (e)	CEMWP Number Triggered and date of notification by EPTISA	Applicable Guide on Best Practices (No.)	Specific issue and location	Actions taken by the Contractor (specify)	Date	EPTISA Inspection
4c	**CEMWP № 2.6.1.** Recycling of old asphalt	№C-070, of 29.05.2018	Annex 7. Old Asphalt Management Plan	Getting approval for the export of asphalt to rural streets	The approval is given, under condition of crushing of asphalt on pieces no more than 20x20	EP-CR5-HN-487, от 01.06.2018	Weekly inspection completed

3 Recommendations

3.1 2018

194. Despite repeated written and oral warnings, training and consultation meetings, the contractor continues to disregard most instructions from EPTISA, To address the important gap, the following actions should be taken by IPIG to force the contractor into compliance. EPTISA will then apply these measures. They are as follows:

1. The contractor's environmental monitor should be required to communicate directly with the construction engineers to point out potential issues and proactively prevent negative impacts and strive to reduce the non-compliance letters and complaints by the public.
2. Surface drainage from all construction sites needs to be better controlled, to avoid stream sedimentation/siltation. This should be done be diverting runoff into settling basins or undertaking erosion protection measures at exposed earthen faces and cuts.
3. EPTISA will further instruct the contractor to enforce the construction site-watering schedule and require the watering to continue from 06.00-20.00 during the dry summer weather. This also includes dust control on the borrow site access roads. The contractor needs to try to reduce that the large number of dust-related complaints by local residents.
4. Continue to monitor Camp waste management to avoid the health problem with improper food management and lack of a prompt disposal schedule, leading to odor and bacterial problems.
5. Occupational health and safety measure continue to be violated with little improvement in sight, despite two SSEMP guidelines in place since 2017. EPTISA is recommding to MOTR to fine the contractor for repeated violations in accordance with FIDIC.
6. The spills of bitumen, transported to and stored in polyethylene bags at the batch plant site continues. The photo record shows the broken bags and bitumen spilling on the ground, entering the surface runoff and soon the groundwater. The contractor has been warned several times and asked to provide better storage. The contractor has begun work to eliminate the spillage of bitumen, it is necessary to speed up this work and complete the shortest possible time.
7. The testing of the stored topsoil revealed unacceptably high lead and oil and grease content, especially lead, exceeding KR standards. If used a garden soil. lead can be taken up by vegetables and enter the food. Given the toxicity of lead, EPTISA remind the contractor not to allow topsoil to be removed by local communities for use in their gardens.
8. The construction work had severely degraded the intersections with secondary roads and the contractor is not repairing and installing proper signage. This is leading to traffic safety issues and access degradation, leading to a growing number of complaints. The contractor must address this problem, that has been tabled repeatedly by EPTISA.
9. At the Ak Suu bridge site, the contractor, and or subcontractor should clean the area (river bed) of the waste concrete in the while dismantling the old bridge supports. <u>Immediate clean up is required.</u>
10. The management of the processing and disposal of crushed old asphalt along 89 designated secondary roads must be assessed and a handling and disposal protocol developed before this approach is initiated. The contractor has initiated the worlk and 10-11 roads have been provided the material and the contractor is undertaking this work according to guidelines and so far there have been no complaints..

3.2 The Next Six Months: July-Dec. 2018

195. The focus of the next six months will be to ensure that the 10 non-compliance items defined above and listed in Table 13 are addressed and fully implemented.

196. IPIG and EPTISA should, as soon as possible, review this report and the nine recommendations with the contractor, in order to help the contractor correct these problems as quickly as possible.

197. The nine overarching non-compliance issues (OHS matters in particular) need to be enforced by IPIG and closely monitored by EPTISA.

198. IPIG and EPTISA will remind the contractor of the requirement to hire a full time OHS specialist to address the increasing number of serious non-compliance issues.

199. During the next field visit by the international environmental specialist, in September 2018, a new approach to managing non-compliance issues with the contractor needs to be agreed to, focusing on giving EPTISA more enforcement powers and making the contractor aware of that. Hopefully this will lead to a significant reduction to the >35 non-compliance notices sent to the contractor since April 2018, and with substandard results.

200. The removal, transport, processing and reuse of thousands of tons of old asphalt needs to be monitored and its transport to 89 secondary road locations assessed and a supplemental mitigation and monitoring actions plan prepared, with instructions to the contractor to fully implement all measures, especially those associated with transport and deposition of the crushed asphalt. .

201. The construction period field monitoring or air quality, noise and water quality will continue according to the CEMWP specifications and as agreed with IPIG.

202. The project's international environmental specialist will be redeployed in November 2018 to complete the next semi annual report..

203. Field inspections by the EPTISA environmental monitors will continue on a monthly basis and photo-checklist reports will continue to be prepared and non compliance discussed with the contractor

Annex 1

Construction Environmental Management Workplan: Mitigation and Monitoring Table

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
1	**PRECONSTRUCTION PREPARATION PERIOD (not included as this is meant for the construction period)**									
2	**CONSTRUCTION PERIOD**									
2.2	**Dust and Air Quality**	**MITIGATION**				**MONITORING**				
2.2.1	Dust Generation: Transportation of Material: A small increase in particulate matter (dust) is expected at the location of rehabilitation works and from vehicles hauling materials to the rehabilitation areas. **SEE ANNEX 9**	I. The Contractor will be required to spray water on uncovered sand and gravel layers in dry periods within villages and near houses located close to the road and to cover the trucks used for transport. II. Watering during dry periods and setting strict speed limits of no more than 30kph across the rehabilitation sections will control dust at the construction site.	Throughout the construction period	Anywhere where there is material moved, earthworks cutting and filling.	Contractor/ CSC	Travel work areas and check for dust—and if found take immediate action with contractor	Anywhere where there is material moved, earthworks cutting and filling.	Written and dated note indicating compliance or issue and action taken	IPIG	CSC
2.2.2	Dust Generation: Quarry and Batching Plant Operation and removal and placement of cut and fill materials respectively, including asphalt. Pavement crushing plant **SEE ANNEX 9, AND 13**	I. The works will include large concrete works for and shall be carried out without a batching plant. Therefore no mitigation is required. II. Slow and controlled mixing of the cement with aggregate to produce concrete shall minimize dust during manual batching for small concrete structure. III. dust during material extraction and movement shall be controlled through transport in batched trucks and watering during dry period. IV. The > 1 million m3 of asphalt-concrete wearing course of the existing road will be totally replaced, requiring the excavation, storage, reprocessing and reuse of the granulated material as road	i-iii Throughout the construction period	i-ii Anywhere where there is material moved, earthworks cutting and filling. iii-all work sites at all times.	Contractor/ CSC	Travel to Quarry and Works site and check for dust—and if found take immediate action with contractor.	I – iii. Throughout the construction period	Written and dated note indicating compliance or issue and action taken	CEE	CSC

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		sub-base or recycled for use on secondary roads. Pavement milling/scraping, crushing and reprocessing generates large quantities of dust, Therefore, dust suppression equipment, and protective gear for workers, will be required. Dust control via watering and road cleaning wil be conducted daily with watering at least 4 hours every day.								
2.2.3	Increase in air pollution from vehicular and machinery exhaust **SEE ANNEX 9**	Emissions will be minimized by: i. ensuring that the contractor's fleet of vehicles are properly maintained according to manufacturer's specifications; ii. use of appropriate octane fuel and haul loads within specified limits. iii. Vehicle idling time when not in use, limited to no more than 3 minutes, iv. Equipment such as the diesel generator will be included in the emission control program and will be and regularly tuned to prevent excessive temporary pollution.	During the Construction period	Construction Site	Contractor/ CSC	Record findings and conduct regular inspections in association with construction supervision	During the Construction period	Inspection Note to file for use in contractor's reporting and in audit reports.	CEE	CSC
2.3	Solid waste management at the construction site **SEE ANNEX 4 & 5**	No open incineration of solid waste (garbage) and construction materials shall be permitted on site. All plastics , paper and useable wood will be recycled. Wood scraps can be burned.	During the Construction period	Construction Site	Contractor/ CSC	Record findings and conduct regular inspections in association with construction supervision	During the Construction period	Inspection Note to file for use in contractor's reporting and in audit reports.	CEE	CSC
2.4	**Surface and Groundwater**									
2.4.1	**Contamination of Water Resources (Surface & Groundwater)** Surface water can result from leaking fuel storage, liquid bitumen and other chemicals used in rehabilitation works. **SEE ANNEX 7 & 8**	i. Fuel and oil storage areas should be at least 500m away from watercourses and repair yards to be equipped with an impervious platform, with interceptor traps so that any fuel leakage is retained within the site. ii. All fuel storage sites must be checked daily for leaks and held in an impervious site where	Throughout the construction period	All construction sites	Contractor / CSC	Regular inspection of work camps, contractors yard, fueling areas , fuel storage Water quality samples to be taken U/S and D/S of bridge construction sites, twice while work is ongoing at one section	Inspection at least monthly throughout the construction period. WQ sampling only 2X at bridge construction site- at start	Checklist showing the check of fuel and lubricant handling, waste oil management, machinery was down water control, etc.	IPIG	Supervision Consultant

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
	Groundwater contamination from surface runoff leaking into roadside wells. **SEE ANNEX 8**	spilled/leaking material can be collected. iii. Wash down water from machinery repair areas to be directed into this system that retains the oil and grease. Refueling not to be permitted within or adjacent to watercourses. Surface water channels crossed by the road will be monitored upstream and downstream of the road before, during and after the work has been completed on that crossing.					and midway through work; Oil and grease, TSS, pH and BOD 5 if possible	signed and dated--filed. Checklist showing the check for lighting and signage signed and date filled Monitoring database		
2.4.2	Interruption / Contamination of Water channels: Movement/drainage of surface water interrupted due to improper culvert construction activities, inadequate diversions and notifications. **SEE ANNEX 8 & 12**	i. Contractor should provide the adequate sized diversion, so that there shall be no disturbance to water flows of canal /watercourse. The placement of temporary culverts must avoid scouring and erosion and water leaves the temporary diversion ii. Protection mechanism should be provided to avoid contamination. iii. The land used for the temporary diversion and the water course shall be restored as far as possible to its initial state once the work has been completed	Construction period	Culverts and bridges	Contractor Safety Engineer /CSC	Inspection of diversion along the road, check signage, lighting any leakages at the diversions and rectify through contractor. Ensure contractor has adequately restored temporary work areas.	Construction period	Contractor EHS Officer	CEE	CSC
2.5	**Flora and Fauna**									
2.5.1	Loss of roadside vegetation and trees **SEE ANNEX 10 & 11**	The project requires the cutting of around 4,000 mature trees, for which a plan has been prepared as defined Annex 11, a separate volume This must be fully adhered to and implemented completely by the contractor. Only trees marked for cutting will be removed. All cutting required shall be monitored according to the KR Law "General technical rules and regulations for environmental safety in the Kyrgyz Republic", #151, Clause 12 dtd.	Throughout the construction period when tree cutting is planned	At any locations where mature trees will be cut down.	Contractor/ CSC	-Inspect tree planting and maintenance operation and confirm compliance with mitigation item 2.5.1 and Annex Volume 10. Also provide ongoing list of tree planting activity	Throughout the construction period when tree cutting is planned	Compliance Monitoring Checklist filled in	CEE	CSC

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		08.05.2009. and the Law of KR "On Protection and Use of Flora", #53 dtd. 20.06.2001. To date tre replanting plans have been prepared for the following sections: 1. Km 15.9-21.3 2. Km 35.5-40.5 3. Km 44.5.-51.6 4. Km 54.2-59.35 These must be strictly adhered to Due to small design changes of the sidewalks—some trees marked to be cut should now be saved. These trees have a yellow verttcal line through the blue X. These are to remain and the sidewalk built around them When work is finished in anyone area, tree replanting should start, i.e. not waiting until the entire road is completed.								
2.6	**Spoil and Solid Waste**									
2.6.1	Inappropriate use of asphalt layers and base materials removed from the existing road . **SEE ANNEX 7**	Demolished asphalt may be re-used in the soft shoulders or as fill for other parts of the rehabilitation works. It may also be used as back-fill for borrow pits and then over-lain with topsoil. Asphalt pieces can be spread on adjacent roads as surface or pothole fill material and compacted.	During Construction	All Construction Sites	Contractor/ CSC	Monitor to check waste handling and disposal procedure of contractor	Throughout construction period	Note to file, signed and dated	IPIG	Supervision Consultant
2.6.2	Unused construction material (sand, crush), empty drums, concrete waste and waste from work camps. **SEE ANNEX 5 & 7**	i. The contractor will identify dumping locations for construction debris and non-hazardous solid waste with DEP9/Bishkek-Osh and the CSC ii. The contractor shall identify any hazardous waste as part of its health and safety plan and	During Construction	All Construction Sites	Contractor /CSC	Monitor to check waste handling and disposal procedure of contractor	Throughout construction period	Note to file, signed and dated	IPIG	Supervision Consultant

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		dispose of the material through an approved waste management contractor. iii. The cost of disposal of hazardous (lubricant drums, waste oil, hydraulic fluid, engine filters) and non-hazardous waste shall be included in the Contractors BOQ.								
2.7	**Quarry/Borrow Materials**									
2.7.1	Preservation of Top Soil **SEE ANNEX 12 &13**	i. Excavation of earth fill will be limited to an appropriate depth of 20cm. ii. Where deep ditching is carried out, the top half-meter layer will be stripped and stockpiled. iii. The ditch will be filled initially with debris/scrap material from old construction and leveled with stockpiled topsoil later. iv. Where borrow pits cannot be fully rehabilitated, land owners will be compensated as provided in agreements between the land owner and contractor.	During Construction	At any locations where borrow pits, quarries will be operated.	Contract /CSC	i. Confirm that topsoil has been set aside ii. Check quarry sites for depth.	During Construction period	Written and dated note indicating compliance or issue and action taken.	CEE/ IPIG	Supervision Consultant
2.7.2	Overloading of trucks, may damage pavement, bridges, and culverts	The Contractor will ensure that loaded trucks do not exceed road, bridge and pavement specifications and are checked by weighbridges. The contractor will be required to monitor the transport of material, recording vehicle movements and weights, to be inspected.	Throughout construction period	Construction sites	Contractor's CEE & Safety Engineer/ CSC	Examine weighbridge records and compare to amount of material moved	Throughout construction period	Inspection Note with findings, dated and signed	CSC	IPIG
2.7.3	Opening of new borrow pits without permit or management plan **SEE ANNEX 14**	If new borrow pit is required contractor will: **1.** Prepare a sketch map of site to be used, access road and volume to be extracted, then seek approval from CSC. **2**. Get approval for the site, based in KR regulation and agreement with landowner; **3.** Open the site by first stockpiling topsoil and	Prior to the opening of any new borrow site	At any site where material is take for the road construction, either outside or inside the impact corridor	Contractor/ CSC/IPIG	Confirm documentation prepared as defined in mitigative action No. 2.7.3	Prior to the opening of any new borrow site	Copy of documentation or permit no.	CSC and CEE	IPIG

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		securing the area against erosion. **4.** Decommission the site after work is complete, including landscaping and revegetation: 5.Prepare a table showing the 5 actions and notation of what action was taken, sign it and submit to CSC.								
2.7.4	Risk of erosion and destruction of landscape from side borrow operations. **SEE ANNEX 13**	Side- borrowing along or outside the RoW will not be permitted unless a construction emergency arises, and which will trigger a mandatory consultation with the Environmental Officer of IPIG.	Throughout the construction period	Along all 45.1 km of the project road	CEE	Inspect all side borrow activities and establish what permission given, and if none require immediate closure and restoration of the site.	Throughout construction period	Permit and relevant documentation on file	CSC and CEE	IPIG
2.8	**Noise and Vibration**									
2.8.1	Noise and Vibrations associated with earthworks and haul roads. **SEE ANNEX 6**	i. Enforcing a speed limit of 30 kph within 500m of any village. ii. Restricting operating hours through roadside villages and settlements to between hours of 0700 and 1800. iii. Large and noisy machinery operations close to urban areas are restricted to daylight hours, and a schedule agreed to between contractor and local communities. iv. CSC to conduct noise monitoring at 12 sensitive sites and during operation of noisy equipment: asphalt breaking and loading, truck haul routes, aggregate crushing, concrete and asphalt production facilities Application shall be carried out with equipment checked for compliance with the applicable Laws in KR regarding Noise and Vibration at construction sites: SN 2.2.4/2.1.8.562-96 “Noise in working areas, dwelling	During Construction period	At 12 sites and varying distances from noisy machinery	CSC and CEE of Contractor/ IPIG-MOTR	Using a portable noise meter, monitor works conditions , and inspect if work conducted within permitted time period in urban zones. 12 sensitive sites monitored as well as work areas were asphalt breaking and loading, asphalt crushing site, truck haul routes, aggregate crushing, concrete and asphalt production facilities is in operation	During Construction period	Inspection Note to file for use in contractor's reporting with eventual noise measurements.	CSC and CEE	Supervising Consultant

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		accommodations, public buildings and on the territory of residential construction". SN 2.2.4/21.8.566-96 "Production vibration. Vibration in accommodations, dwelling and public buildings»								
2.9	**Health and Safety**									
2.9.1	Damage / disturbance to Utilities within RoW **SEE ANNEX 3 & 4**	Removal and relocation of power, water, and other utilities to make way for construction must be conducted through a consultation-first approach, followed by removal and immediate replacement	-At start of construction for the entire 45.1 km--	Along the entire alignment	Contractor / CSC	i. Inspect construction areas where access is an issue and establish if contractor is managing problem and if local residents are satisfied. ii. Always identify by clear signage according to regulation maintenance activities on the roadway	Throughout construction period	Inspection note with findings, dated and signed	Contractor's CEE, CSSC and IPIG	Supervising Consultant
2.9.2	Traffic Disturbance : Loss of access for roadside residents . **SEE ANNEX 4**	Contractor shall provide safe and convenient passage for vehicles and pedestrians to and from side roads and properties connecting the project road/area. In case such work occurs, traffic management arrangement shall be submitted for approval by the Supervision Engineer , after consultation with local people and the police, before the work takes place, and according to local regulations.	Construction Period	Town Crossings, roadside businesses and operations	Contractor and Safety Engineer/ CSC	Inspection of construction sites to ensure proper use of OHS gear and contractor enforcement	Throughout construction period	Inspection note with findings, dated and signed	Contractor's CEE, CSSC and IPIG	Supervising Consultant
2.9.3	Health and Safety Concerns: Protecting the workforce and maintaining a safe working environment. **SEE ANNEX 3 & 4**	i. Contractor must provide safety vests, hard hats and protective footwear for all workers handling heavy machinery, and working with hazardous materials such as concrete, asphalt, paints, and cleaning agents . ii. Contractor must provide protective masks to machine operators, where dust can be generated, and to anyone working in the area of the machines, with masks of a micron	Construction period	Contractor's Depots and all work areas, including those of sub-contractor	Contractor's Safety Engineer and CEE / CSC	Inspect all operations in the depots including worker housing and all waste management procedures.	Throughout the construction period	Inspection note re findings, dated and signed.	Contractor's CEE, CSSC and IPIG	Supervising Consultant

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		size, capable of capturing dust down to 2 microns. iii. Any works at night should be adequately lit and high visibility clothing worn and contractor should provide basic training on use of protective clothing and equipment.								
2.9.4	Contractor's work areas and depots not maintained, no proper waste management, environmental health and safety measures. **SEE ANNEX 4**	i. All depots shall be provided with septic sanitation facilities and potable water. ii. Monitoring will be required for the solid waste disposal at the depot and to ensure that the health and safety plan based on contract specifications is followed. iii. During operation, the surface of the depot used for storage of construction materials shall be protected against run-off and spills of hazardous materials using impermeable protection covering the ground and a system to collect contaminated run-off.	Throughout the construction period	Contractor's Depots and all work areas, including those of sub-contractor	Contractor's Safety Engineer and CEE / CSC	CEE and Safety Engineer to conduct regular inspections of sites	Weekly , during the construction period	Inspection checklist addressing three items listed here	CEE	CSC
2.10	Lack of contractor's construction period mitigation completion report	Contractor will be required to prepare a safeguards implementation completion checklist at the end of the construction period, discussing very briefly, each construction period EMP item.	Prior to final payment to contractor	NA	Contractor's CEE and Safety Engineer/ CSC	Inspect and collect report	Prior to final payment to contractor	Copy of report on file	CSC and Contractor	IPIG
2.11	Lack of transport and facility for CSC environmental auditor to conduct compliance monitoring.	The MOTR must file a semi-annual environmental monitoring report with ADB. Data for that will be assembled based on quarterly environmental inspections by the CSC's environmental specialist. Twice a year the Int'l Env. Specialist will conduct a due diligence compliance audit. To complete this work the CSC Env. Specialist will be provided with	Conduct inspection of all operations every three months, including contractor yard, file semi annual monitoring report and Annual DD	Across the entire construction area , including all subcontractor facilities	CSC and Contractor's CEE/ IPIG	Conduct inspection of all operations every three months, including contractor yard, file semi annual monitoring report and Annual DD audit.	Every three months	Copy of report	CSC and Contractor	CSC/IPIG

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
		transportation as needed, as well as working space in the field	audit.							
2.12	Failure to protect 13 sensitive site identified in the IEE	The 12-13 sites have been identified in Annex 2 of the IEE and parameter likely impacted identified, plus baseline measurements obtained in 2013 , 2015 and again in 2017. A construction period air, noise and surface water quality testing program will be undertaken quarterly according to the design defined using GPS coordinates as defined in the in the IEE Annex 2 s.	Throughout the construction period	AT 12 sensitive sites using the sampling design provided in the IEE-and as specified in CEMP Items 2.4.1, 2.8.1 & 2.8.2	Contractor/ CSC	Examine field survey data on noise, air and surface water quality around the sensitive sites	Throughout the construction period	Data tables on file	CEE/CSC	CSC
3	**Operating Period; Contractor's Defect Year**									
3.1	Failure to fully decommission and clean up work area including garbage site, sewage, service area fuels and lubricant spills and erosion protection **SEE ANNEX 12**	Buried garbage, latrine pits, fuel and lubricant and construction material such as bitumen left in and around the contractor's work area will be cleaned up and the area restored.	Within first 3 months of the defect period starting	At contractor offices and housing as well as all other work camps	CEE	Photo inspection/record of before and after	To take place before the end of the 8th month of the defect period	Photo record of before and after rehab. conditions	CEE	CSC
3.2	Contractor abandons used borrow sites leading to illegal mining, erosion and land degradation **SEE ANNEX 14**	Borrow pit restoration according to plan defined in the IEE and earlier in this table, Activity 2.7	Within first 3 months of the defect period starting	At all borrow sites	CEE	CEE to provide photo record of before and after photos	To take place before the end of the 8th month of the defect period	Photo record of before and after rehab. conditions	CEE	CSC
3.3	Haul roads left abandoned not decommissioned leading to inappropriate use, erosion, damage to nearby property. **SEE ANNEX 14**	Close road as agreed to with local authorities and local land owners				Record of agreement with local authorities and photo of post-construction road use!	To take place before the end of the 8th month of the defect period	Photo record of before and after rehab. conditions	CEE	CSC
3.4	Inadequate maintenance of large	Based on MOTR's DEP9 guidance, ensure that trees planted remain	At the start of the operating	All areas where tree planting	MOTR's highway	Inspection of tree plantation and replanting	3 months before end of	Tree inventory and replanting	Contractor's CEE	CSC

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Implementing	Supervising
	roadside tree plantation **SEE ANNEX 10**	healthy, are protected from grazing animals and receive water. Annual tree count will be required and any dead trees will need to replaced.	period and every two months for the 1st year and semi annually for the next 2 years.	took place during the construction period	maintenance unit/MOTR	dead trees and re-establishing better maintenance program	defect year	data sheet		
3.5	Aggregate crushing facilities, concrete plant and asphalt plant, especially bitumen storage areas are not cleaned up. **SEE ANNEX 14**	Contractor to clean up and fully rehabilitate the sites	Within first six months of the defect year	Sites used for the activities defined in column 1	Contractor's CEE	Inspect and record clean up	Within first 6 months of start of operations of the rehabilitated roadway	Inspection record and photo evidence	CEE	CSC

CEE=Contractor's Environmental Engineer, MOTR=Ministry of Transportation and Roads, CSC=Construction Supervision Consultant (EPTISA), IPIG-International Project Implementation Group

Annex 2

MONTHLY Environmental Compliance Monitoring Checklist
(Six A-3 sheets or 11 US Legal Size Sheets)

TO BE COMPLETED BY CONSTRACTOR'S ENVIRONMENTAL MONITOR

Inspector Name:
Inspection Date:
Construction Section:
Chainage:

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
1	**PRECONSTRUCTION PREPARATION PERIOD-Not included as this is meant for the construction period**								**Activities 1.1-1.9 completed by CSC and IPIG**
2	**CONSTRUCTION PERIOD**								
2.2	**Dust and Air Quality**	**MITIGATION**				**MONITORING**			
2.2.1	Dust Generation: Transportation of Material: A small increase in particulate matter (dust) is expected at the location of rehabilitation works and from vehicles hauling materials to the rehabilitation areas. **SEE ANNEX 11**	I. The Contractor will be required to spray water on uncovered sand and gravel layers in dry periods within villages and near houses located close to the road and to cover the trucks used for transport. II. Watering during dry periods and setting strict speed limits of no more than 30kph across the rehabilitation sections will control dust at the construction site.	Throughout the construction period	Anywhere where there is material moved, earthworks cutting and filling.	Contractor/ CSC	Travel work areas and check for dust—and if found take immediate action with contractor	Anywhere where there is material moved, earthworks cutting and filling.	Written and dated note indicating compliance or issue and action taken	
2.2.2	Dust Generation: Quarry and Batching Plant Operation and removal and placement of cut and fill materials	I. The works will include large concrete works for and shall be carried out without a batching plant. Therefore no mitigation is required.	i-iii Throughout the construction period	i-ii Anywhere where there is material moved, earthworks cutting and	Contractor/ CSC	Travel to Quarry and Works site and check for dust—and if found take immediate action with contractor.	I – iii. Throughout the construction period	Written and dated note indicating compliance or issue and action taken	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
	respectively, including asphalt. Pavement crushing plant **SEE ANNEX 9, 11 AND 14**	II. Slow and controlled mixing of the cement with aggregate to produce concrete shall minimize dust during manual batching for small concrete structure. III. dust during material extraction and movement shall be controlled through transport in batched trucks and watering during dry period. IV. The > 1 million m3 of asphalt-concrete wearing course of the existing road will be totally replaced, requiring the excavation, storage, reprocessing and reuse of the granulated material as road sub-base or recycled for use on secondary roads. Pavement milling/scraping, crushing and reprocessing generates large quantities of dust, which when working with old asphalt-concrete may contain asbestos fibers. Therefore, dust suppression equipment, and protective gear for workers, will be required and at least 10 core samples taken and tested for asbestos fiber content, before any work begins.	iv. Collect and analyze core samples prior to start of removal of asphaltic layer if asbestos fibers are detected, provide protective clothing and masks to all workers coming contact with removal and crushing work.	filling. iii-all work sites at all times. iv. 12 cores to be taken from all pavement sections and protective gear distributed immediately if asbestos is present.			iv. Collect and analyze core samples prior to start of removal of asphaltic layer if asbestos fibers are detected, provide protective clothing and masks to all workers coming contact with removal and crushing work.		
2.2.3	Increase in air pollution from vehicular and machinery exhaust **SEE ANNEX 9 & 11**	Emissions will be minimized by: i. ensuring that the contractor's fleet of vehicles are properly maintained according to manufacturer's specifications;	During the Construction period	Construction Site	Contractor/ CSC	Record findings and conduct regular inspections in association with construction supervision	During the Construction period	Inspection Note to file for use in contractor's reporting and in audit reports.	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		ii. use of appropriate octane fuel and haul loads within specified limits. iii. Vehicle idling time when not in use, limited to no more than 3 minutes, iv. Equipment such as the diesel generator will be included in the emission control program and will be and regularly tuned to prevent excessive temporary pollution.							
2.3	Solid waste management at the construction site **SEE ANNEX 4 & 5**	No open incineration of solid waste (garbage) and construction materials shall be permitted on site. All plastics , paper and useable wood will be recycled. Wood scraps can be burned.	During the Construction period	Construction Site	Contractor/ CSC	Record findings and conduct regular inspections in association with construction supervision	During the Construction period	Inspection Note to file for use in contractor's reporting and in audit reports.	
2.4	**Surface and Groundwater**								
2.4.1	**Contamination of Water Resources (Surface & Groundwater)** Surface water can come from leaking fuel storage, liquid bitumen and other chemicals used in rehabilitation works. **SEE ANNEX 7 & 8** Groundwater contamination from surface runoff leaking into roadside wells. **SEE ANNEX 8**	i. Fuel and oil storage areas should be at least 500m away from watercourses and repair yards to be equipped with an impervious platform, with interceptor traps so that any fuel leakage is retained within the site. ii. All fuel storage sites must be checked daily for leaks and held in an impervious site where spilled/leaking material can be collected. iii. Wash down water from machinery repair areas to be directed into this system that retains the oil and grease.	Throughout the construction period	All construction sites	Contractor / CSC	Regular inspection of work camps, contractors yard, fueling areas , fuel storage	At least monthly throughout the construction period.	Checklist showing the check of fuel and lubricant handling, waste oil management, machinery was down water control, etc. signed and dated--filed. Checklist showing the check for lighting and signage signed	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		Refueling not to be permitted within or adjacent to watercourses. Surface water channels crossed by the road will be monitored upstream and downstream of the road before, during and after the work has been completed on that crossing.						and date filled .	
2.4.2	Interruption / Contamination of Water channels: Movement/drainage of surface water interrupted due to improper culvert construction activities, inadequate diversions and notifications. **SEE ANNEX 8 & 13**	i. Contractor should provide the adequate sized diversion, so that there shall be no disturbance to water flows of canal /watercourse. The placement of temporary culverts must avoid scouring and erosion and water leaves the temporary diversion ii. Protection mechanism should be provided to avoid contamination. iii. The land used for the temporary diversion and the water course shall be restored as far as possible to its initial state once the work has been completed	Construction period	Culverts and bridges	Contractor Safety Engineer /CSC	Inspection of diversion along the road, check signage, lighting any leakage etc. at the diversions and rectify through contractor. Ensure contractor has adequately restored temporary work areas.	Construction period	Contractor EHS Officer	
2.5	**Flora and Fauna**								
2.5.1	Loss of roadside vegetation and trees **SEE ANNEX 10 & 12**	The project requires the cutting of around 4,000 mature trees, for which a plan has been prepared as defined Annex 11, a separate volume This must be fully adhered to and implemented completely by the contractor. Only trees marked for cutting will be removed. All cutting required shall be monitored according to the KR Law "General	Throughout the construction period when tree cutting is planned	At any locations where mature trees will be cut down.	Contractor/ CSC	-Inspect tree planting and maintenance operation and confirm compliance with mitigation item 2.5.1 and Annex 11 . Also provide ongoing list of tree planting activity	Throughout the construction period when tree cutting is planned	Compliance report, bullet form that mitigation measures are being implemented	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		technical rules and regulations for environmental safety in the Kyrgyz Republic", #151, Clause 12 dtd. 08.05.2009. and the Law of KR "On Protection and Use of Flora", #53 dtd. 20.06.2001. To date tre replanting plans have been prepared for the following sections: 1. Km 15.9-21.3 2. Km 35.5-40.5 3. Km 445.6-51.6 4. Km 54.2-59.35 These must be strictly adhered to When work is finished in anyone area, tree replanting should start, i.e. not waiting until the entire road is completed.							
2.6	**Spoil and Solid Waste**								
2.6.1	Inappropriate use of asphalt layers and base materials removed from the existing road . **SEE ANNEX 7**	Demolished asphalt may be re-used in the soft shoulders or as fill for other parts of the rehabilitation works. It may also be used as back-fill for borrow pits and then over-lain with topsoil. Asphalt pieces can be spread on adjacent roads as surface or pothole fill material and compacted.	During Construction	All Construction Sites	Contractor/ CSC	Monitor to check waste handling and disposal procedure of contractor	Throughout construction period	Note to file, signed and dated	
2.6.2	Unused construction material (sand, crush), empty drums, concrete waste and waste from work camps. **SEE ANNEX 5 & 7**	i. The contractor will identify dumping locations for construction debris and non-hazardous solid waste with DEP9/Bishkek-Osh and the CSC ii. The contractor shall identify	During Construction	All Construction Sites	Contractor /CSC	Monitor to check waste handling and disposal procedure of contractor	Throughout construction period	Note to file, signed and dated	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		any hazardous waste as part of its health and safety plan and dispose of the material through an approved waste management contractor. iii. The cost of disposal of hazardous (lubricant drums, waste oil, hydraulic fluid, engine filters) and non-hazardous waste shall be included in the Contractors BOQ.							
2.7	**Quarry/Borrow Materials**								
2.7.1	Preservation of Top Soil **SEE ANNEX 14**	i. Excavation of earth fill will be limited to an appropriate depth of 20cm. ii. Where deep ditching is carried out, the top half-meter layer will be stripped and stockpiled. iii. The ditch will be filled initially with debris/scrap material from old construction and leveled with stockpiled topsoil later. iv. Where borrow pits cannot be fully rehabilitated, landowners will be compensated as provided in agreements between the landowner and contractor.	During Construction	At any locations where borrow pits, quarries will be operated.	Contract /CSC	ii. Confirm that topsoil has been set aside ii. Check quarry sites for depth.	During Construction period	Written and dated note indicating compliance or issue and action taken. Photo record	
2.7.2	Overloading of trucks, may damage pavement, bridges, and culverts	The Contractor will ensure that loaded trucks do not exceed road, bridge and pavement specifications and are checked by weighbridges. The contractor will be required to	Throughout construction period	Construction sites	Contractor's CEE & Safety Engineer/ CSC	Examine weighbridge records and compare to amount of material moved	Throughout construction period	Inspection Note with findings, dated and signed	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		monitor the transport of material, recording vehicle movements and weights, to be inspected.							
2.7.3	Opening of new borrow pits without permit or management plan. **SEE ANNEX 14**	If new borrow pit is required contractor will: **1.** Prepare a sketch map of site to be used, access road and volume to be extracted, then seek approval from CSC. **2**. Get approval for the site, based in KR regulation and agreement with landowner; **3.** Open the site by first stockpiling topsoil and securing the area against erosion. **4.** Decommission the site after work is complete, including landscaping and revegetation: 5.Prepare a table showing the 5 actions and notation of what action was taken, sign it and submit to CSC.	Prior to the opening of any new borrow site	At any site where material is take for the road construction, either outside or inside the impact corridor	Contractor/ CSC/IPIG	Confirm documentation prepared as defined in mitigative action No. 2.7.3	Prior to the opening of any new borrow site	Copy of documentation or permit no.	
2.7.4	Risk of erosion and destruction of landscape from side borrow operations. **SEE ANNEX 14**	Side- borrowing along or outside the RoW will not be permitted unless a construction emergency arises, and which will trigger a mandatory consultation with the Environmental Officer of IPIG.	Throughout the construction period	Along all 45.1 km of the project road	CEE	Inspect all side borrow activities and establish what permission given, and if none require immediate closure and restoration of the site.	Throughout construction period	Permit and relevant documentation on file	
2.8	**Noise and Vibration**								
2.8.1	Noise and Vibrations associated with earthworks and haul roads. **SEE ANNEX 6**	i. Enforcing a speed limit of 30 kph within 500m of any village. ii. Restricting operating hours through roadside villages and settlements to between hours of 0700 and 1800. iii. Large and noisy machinery operations close to urban areas	During Construction period	At 12 sites and varying distances from noisy machinery	CSC and CEE of Contractor/ IPIG-MOTR	Using a portable noise meter, monitor works conditions , and inspect if work conducted within permitted time period in urban zones	During Construction period	Inspection Note to file for use in contractor's reporting with eventual noise measurements.	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		are restricted to daylight hours, and a schedule agreed to between contractor and local communities. iv. CSC to conduct noise monitoring at 12 sensitive sites and during operation of noisy equipment: asphalt breaking and loading, truck haul routes, aggregate crushing, concrete and asphalt production facilities							
2.8.2	Noise and Vibrations associated with compaction of asphalt and unbound materials **SEE ANNEX 6 AND 7**	Application shall be carried out with equipment checked for compliance with the applicable Laws in KR regarding Noise and Vibration at construction sites: SN 2.2.4/2.1.8.562-96 "Noise in working areas, dwelling accommodations, public buildings and on the territory of residential construction". SN 2.2.4/21.8.566-96 "Production vibration. Vibration in accommodations, dwelling and public buildings»	During Construction period	At 12 sites and varying distances from noisy machinery	CSC and CEE of Contractor/ IPIG-MOTR	Using a portable noise meter, monitor works conditions , and inspect if work conducted within permitted time period in urban zones	During Construction period	Table of noise measurements at sensitive sites	
2.9	**Health and Safety**								
2.9.1	Damage / disturbance to Utilities within RoW **SEE ANNEX 3 & 4**	Removal and relocation of power, water, and other utilities to make way for construction must be conducted through a consultation-first approach, followed by removal and immediate replacement	-At start of construction for the entire 45.1 km--	Along the entire alignment	Contractor / CSC	i. Inspect construction areas where access is an issue and establish if contractor is managing problem and if local residents are satisfied. ii. Always identify by clear signage according to regulation maintenance activities	Throughout construction period	Inspection note with findings, dated and signed	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
						on the roadway			
2.9.2	Traffic Disturbance : Loss of access for roadside residents **SEE ANNEX 4**	Contractor shall provide safe and convenient passage for vehicles and pedestrians to and from side roads and properties connecting the project road/area. In case such work occurs, traffic management arrangement shall be submitted for approval by the Supervision Engineer , after consultation with local people and the police, before the work takes place, and according to local regulations.	Construction Period	Town Crossings, roadside businesses and operations	Contractor and Safety Engineer/ CSC	Inspection of construction sites to ensure proper use of OHS gear and contractor enforcement	Throughout construction period	Inspection note with findings, dated and signed	
2.9.3	Health and Safety Concerns: Protecting the workforce and maintaining a safe working environment. **SEE ANNEX 3 & 4**	i. Contractor must provide safety vests, hard hats and protective footwear for all workers handling heavy machinery, and working with hazardous materials such as concrete, asphalt, paints, and cleaning agents . ii. Contractor must provide protective masks to machine operators, where dust can be generated, and to anyone working in the area of the machines, with masks of a micron size, capable of capturing dust down to 2 microns. iii. Any works at night should be adequately lit and high visibility clothing worn and contractor should provide basic training on	Construction period	Contractor's Depots and all work areas, including those of sub-contractor	Contractor's Safety Engineer and CEE / CSC	Inspect all operations in the depots including worker housing and all waste management procedures.	Throughout the construction period	Inspection note re findings, dated and signed.	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		use of protective clothing and equipment.							
2.9.4	Contractor's work areas and depots not maintained, no proper waste management, environmental health and safety measures. **SEE ANNEX 3 and 4**	i. All depots shall be provided with septic sanitation facilities and potable water. ii. Monitoring will be required for the solid waste disposal at the depot and to ensure that the health and safety plan based on contract specifications is followed. iii. During operation, the surface of the depot used for storage of construction materials shall be protected against run-off and spills of hazardous materials using impermeable protection covering the ground and a system to collect contaminated run-off.	Throughout the construction period	Contractor's Depots and all work areas, including those of sub-contractor	Contractor's Safety Engineer and CEE / CSC	CEE and Safety Engineer to conduct regular inspections of sites	Weekly , during the construction period	Inspection checklist addressing three items listed here	
2.10	Lack of contractor's construction period mitigation completion report	Contractor will be required to prepare a safeguards implementation completion checklist at the end of the construction period, discussing very briefly, each construction period EMP item.	Prior to final payment to contractor	NA	Contractor's CEE and Safety Engineer/ CSC	Inspect and collect report	Prior to final payment to contractor	Copy of report on file	
2.11	Lack of transport and facility for CSC environmental auditor to conduct compliance monitoring.	MOTR must file a semi-annual environmental monitoring report with ADB. Data for that will be assembled based on quarterly environmental inspections by the CSC's	Conduct inspection of all operations every three months, including	Across the entire construction area , including all subcontractor	CSC and Contractor's CEE/ IPIG	Conduct inspection of all operations every three months, including contractor yard, file semi annual monitoring report and Annual DD audit.	Every three months	Copy of report	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
		environmental specialist. Twice a year the Int'l Env. Specialist will conduct a due diligence compliance audit. To complete this work the CSC Env. Specialist will be provided with transportation as needed, as well as working space in the field	contractor yard, file semi annual monitoring report and Annual DD audit.	facilities					
2.12	Failure to protect 12 sensitive site identified in the IEE	The 12-13 sites have been identified in Annex 2 of the IEE and parameter likely impacted identified, plus baseline measurements obtained in 2013 , 2015 and again in 2017. A construction period air, noise and surface water quality testing program will be undertaken quarterly according to the design defined using GPS coordinates as defined in the in the IEE Annex 2 s.	Throughout the construction period	AT 12 sensitive sites using the sampling design provided in the IEE-and as specified in CEMP Items 2.4.1, 2.8.1 & 2.8.2	Contractor/ CSC	Examine field survey data on noise, air and surface water quality at sensitive sites	Throughout the construction period	Data tables on file	
3	**Operating Period Contractor's Defect Year**								
3.1	Failure to fully decommission and clean up work area including garbage site, sewage, service area fuels and lubricant spills and erosion protection	Buried garbage, latrine pits, fuel and lubricant and construction material such as bitumen left in and around the contractor's work area will be cleaned up and the area restored.	Within first 3 months of the defect period starting	At contractor offices and housing as well as all other work camps	CEE	Photo inspection/record of before and after	To take place before the end of the 8th month of the defect period	Photo record of before and after rehab. Conditions	

N°	Environment Issue	Mitigative Measures	Time Frame	Location	Implement By/ Supv. By	Monitoring Action	Timing	The Deliverable	Contractor's CEE & CSC Reporting on Compliance: what as done, where and when
3.2	Contractor abandons used borrow sites leading to illegal mining, erosion and land degradation. **SEE ANNEX 14**	Borrow pit restoration according to plan defined in the IEE and earlier in this table, Activity 2.7	Within first 3 months of the defect period starting	At all borrow sites	CEE	CEE to provide photo record of before and after photos	To take place before the end of the 8th month of the defect period	Photo record of before and after rehab. Conditions	
3.3	Haul roads left abandoned not decommissioned leading to inappropriate use, erosion, damage to nearby property. **SEE ANNEX 14**	Close road as agreed to with local authorities and local land owners				Record of agreement with local authorities and photo of post-construction road use!	To take place before the end of the 8th month of the defect period	Photo record of before and after rehab. Conditions	
3.4	Inadequate maintenance of large roadside tree plantation **SEE ANNEX 10**	Based on MOTR's DEP9 guidance, ensure that trees planted remain healthy, protected from grazing animals and receive water. Annual tree count will be required and any dead trees will need to be replaced.	At the start of the operating period and every two months for the 1st year and semi annually for the next 2 years.	All areas where tree planting took place during the construction period	MOTR's highway maintenance unit/MOTR	Inspection of tree plantation and replanting dead trees and re-establishing better maintenance program	3 months before end of defect year	Tree inventory and replanting data sheet	
3.5	Contractor crushing facilities, concrete plant and asphalt plant, especially bitumen storage areas are not cleaned up **SEE ANNEX 14**	Contractor to clean up and fully rehabilitate the sites	Within first six months of the defect year	Sites used for the activities defined in column 1	Contractor's CEE	Inspect and record clean up	Within first 6 months of start of operations of the rehabilitated roadway	Inspection record and photo evidence	

ANNEX 3

EXAMPLE OF MONITORING REPORTS by National Environmental Specialist

These and other reports serve as the evidence for notices sent to the contractor concerning non-compliance issues. The process followed is that as issues are identified, official notices are sent from EPTISA to the contractor. There have been a total of 37 notices sent between January and June 2018,and all have been acted on and , for the most part, complied with by the contractor. The report provided is a summary of the bi-weekly reports prepared between April and June 30th 2018

Conditions considered to be non-compliant have been immediately brought to the attention of the contractor and the contractor has responded and implemented change quickly. Follow up monitoring is needed.

Summary of bi-weekly environmental Monitoring Reports; April through June 2018

Please note that the CEMWP numbers refer to numbers of mitigation/monitoring actions defined in the CEMWP, included as Annex 1 to this report

ENVIRONMENTAL ISSUES

CEMWP №2.2.1, CEMWP № 2.7.1 Earthworks

Section 1.1- In the spring of 2018, earthworks were started on the road site 15.9-21.3 km (section 1.1).

The removal and export of soil, asphalt removal, rolling and tamping of the side slopes on the south side of the road are carried out. Works on soil packing, on the direction of ADB, are carried out with the use of vibration. Vibration is allowed only on the section 1.1, where there are no houses from 15,9 km to19,8 km (EP-CR5 - HN-469 of 25.05.2018)

In June, the designing of the south side of the road was completed. Preparation for asphalt laying is underway.

On the section 1.1, on the south side of the road, works on dismantling of old and installation of new culverts were started.



Also, in places where there are steep slopes, work was carried out to install retaining walls.

Site 1.3- On the section 1.3 RK 371+00 – 431+00 (Petrovka village 45,6-51,6 km) works on dismantling of old and installation of new culverts, on the south side of the road were continued. On the North side of the road on the Site 3 RK 371+00 – 431+00 (Petrovka village 45,6-51,6 km) the construction of pipes was completed. In this site, the problem, during installation of new pipes, is created by wedged ground water.
Works on soil packing on the site 3 on the directions of the ADB are carried out without vibration (Letter No. EP-CR5-HN-469 of 25.05.2018)

For the purpose of traffic safety, all areas of work are fenced, fencing barriers and traffic safety signs are exposed. New lighting devices are installed. Installed stands with an appeal to drivers to treat with understanding the inconvenience on the road in areas where construction work is carried out.


There are watering machines on the construction sites constantly. Hydraulic irrigation of the construction site is regularly carried out.

The increase in air temperature has led to increased dust formation on the road, but despite repeated warnings of the Contractor about the need to strengthen the hydraulic irrigation, situation does not change. Citizens are complaining for increased dust formation
In view of the situation, it was the Contractor was instructed to increase the intensity of watering the road, including the roadside, in the construction site from 6 am to 20 pm, without a break for lunch. To do this, it is necessary to make a schedule for watering the road, specifying the interval between irrigation, and monitoring the compliance with the irrigation interval with watering machines. About this letter of non-compliance was sent to the Contractor No. EP-CR5-HN-529 of 19.06.2018.

Bridges

The Bridge over Jelamysh River.

n April 2018, construction work continued on the construction of the bridge over the Jelamysh River on the north side of the road, which began in the autumn of 2017 and was completed in May, and the north side of the bridge was opened for traffic.

In May, work on the construction of the south side of the bridge has been started. There is no water in the Jelamysh River.

The road in the area of bridge construction is constantly irrigated with water.

The Bridge over Sokuluk River

In may, on the construction of a bridge over the Sokuluk River on the north side of the road has been started. The flow of water into the river was blocked. Construction waste was not allowed to enter the riverbed.

The method of construction of the bridge - is drilling and stuffing. Bentonite is used as drilling mud. Hydrous solution with bentonite, remaining after use is taken out in a special pit and after dewatering is transported to the designated place (the pit), agreed with the local authorities. In June, the installation of piles was completed. The bypass road during the construction of the bridge over the Sokuluk River was not built. The construction of the bridge did not affect the traffic. Traffic is carried out on the main road.

On June 8, noise and vibration monitoring was carried out by the laboratory LLC "Profilab" in the area of bridge construction. The studies were conducted at several points in the area of the bridge construction and nearby house. Test reports are attached.

Results and Conclusion on Noise and Vibration measurements:
At the time of the measurements, the noise level from the compactor and the impact machine in all measured points exceeds the sanitary norm from 2 dBA to 16 dBA. During the operation of the compactor, the noise level exceeds the sanitary norm from 1 dBA to 13 dBA, with the switched-off mode of the impact machine and the compactor, the noise level exceeds the sanitary norm from 1 dBA to 11 dBA, and in the bedroom of the house on Frunze street 231 does not exceed the sanitary norm.

The Bridge over Ak-Suu River

In May construction works on the bridge on the Ak-Suu River have been started. A bypass bridge across the river is being built. Construction is controlled by road safety specialists. With the beginning of the rains, water appeared in the river. Currently, the bridge has been extended from 7 to 15 meters by the specialists ' instructions. But during the construction was not provided for a path for pedestrians, currently it is starting to build.

CEMWP № 2.6.2. Construction waste

The construction waste generated during the construction of bridges and culverts should be transported in time to the dedicated ROE sites for the storage of old concrete products. About what, the letter to the Contractor No. ER-CR5-HN-467 of 25.05. 2018, was sent.

An old asphalt

With the beginning of the work on sites 1-1 and 1-3 there was a problem with the disposal of old asphalt.
The problem of crushing the old asphalt remains unresolved, thats why old asphalt on the Site 1-1 almost is not exported to backfill of rural streets, as in the villages there is no equipment for leveling large pieces of old asphalt. Part of the asphalt was exported to private areas at the request of citizens. The owners of the sites carried out the planning of the sites themselves.

Partially old asphalt was taken out on field roads. Prior to the start of the work, approvals were obtained from the local authorities and environmental authorities for the use of removed asphalt on rural roads.
During the backfilling of country roads were made violations, about what were sent to the Contractor a letter of warning in the elimination of violations, such as violation of road slopes, the designing of slopes, dumping outside the road.(Letter No. EP-CR5 - HN-407 of 4.05.2018, No. EP-CR5 - HN-413 of 7.05.2018 № EP-CR5-HN-519 of 14.06.2018).
The asphalt is not exported on wetland areas.

CEMWP № 2.2.2 Borrow-pits

During the reporting period, there have been development of AK-Suu 2 and Jelamysh borrow-pits. Works on the excavation, sifting and stockpiling of material on the dumps are carried out.

Jelamysh borrow-bit

It was found that at the Jelamysh borrow-pit the height of bench is approximately 10 m, while the project provided that the development will be done in layers with the height of bench of 5 m.
It is also established that the base of the borrow-pit side goes beyond the established boundaries and went to the country road, threatening with a rockfall.
The border of the dumps of sifted inert materials, also beyond the contour of the borrow-pit site.
After the identified violations in the development of the borrow-pit Jelamysh on May 3, the work at the borrow-pit was stopped №ER-CR5-HN-397 to remedy the situation.
The contractor performed Stripping works, cutting 4 benches 5 m high and 10 -15 m wide, starting from the top platform. The road to the upper bench has been laid.
The letter №ER-CR5-HN- 461 of 24.05. 2018 was allowed the Contractor to continue development of borrow-pit subject to development from the upper bench.

The photographs show the thickness of the strip

General view of the borrow-pit. Width of benches

Ak-Suu 2 borrow-pit

The depth of development of the AK-Suu 2 borro-pit does not exceed the project set 2.5 m Earlier in the Ak-Suu 2 borrow-pit, work on the development of the borrow-pit was carried out with safety violations (the excavator is on a bench). Twice warnings were made to the excavator operator, but when leaving the borrow-pit it was found that the work continues to be carried out with safety violations.

CEMWP № 2.9.3
ACP Territory
A large amount of bitumen has been Delivered to the ACP territory. Bitumen is delivered in polyethylene packages.

The bitumen was discharged on the ground without the observance of environmental measures. Visual inspection established that some of the package when unloading suffered, in consequence, has been the leakage of bitumen on the ground. This was reported in a letter № EP-CR5-HN-439 of 17.05 2018.
Packages from used bitumen are stored directly on the ground. All this contributes to the contamination of soil and groundwater. It is urgent to collect all the bitumen that has been spilled. Prepare a platform with a hard surface and a canopy for storing packages from bitumen. Before the canopy is completed, it is necessary to store the bituminous packages on a waterproof foundation. About what the letter №ER-CR5-HN-540 of 22.06. 2018 was sent to the Contractor.

The Contractor started construction of a canopy for storage of unused bitumen and bitumen packaging. But despite the fact that the leakage of bitumen to the ground were partially removed, but with an increase in air temperature, there are new leaks of bitumen in the areas of storage of bitumen. All this contributes to the pollution of soil and groundwater. It is urgent to collect all the bitumen spilled on the ground. Assign responsibility for oversight of the territory storage of bitumen and the timely collection of leakage of bitumen from the ground (letter no. EP-CR5-HN-540 of 22.06.2018).

To supply the plant with water, a well was drilled and a pipeline was laid to the plant. Currently, there are no problems with water at the plant.

In the photo, the fenced area of the well.

CEMWP № 2.5.1 Tree Management

The Contractor marking trees at the section 2.1 at the trees only on 3 km of the site from km 21+300 to km 24+300 and asks a request for cutting down this trees, with sending a letter №202-011 of 25.06.2018. Eptisa is answered that according to the procedures established by ADB for permission for cutting down of trees should be marking trees in the area, and get permission for cutting down from the local authorities and environmental authorities to develop a Plan of planting trees in the area.
A package of documents in the List of trees to be cut down, the road Scheme with the location of the be cut down trees and the existing communications Plan for tree planting in this area is directed to the IPIG and after approval, the IPIG sends the documents to the ADB. ADB, if negotiates the documents submitted, gives official permission for cutting down of trees in the area.
Section 2.1 is located from km 21+300 to km 35+500, length of the site is 14.2 km. The contractor has marked and submitted permits to cut trees only for 3 km of the site from 21+300 km to 24+300 km, therefore, taking into account the above, at present the Eptisa cannot give permission to cut trees on the section 2.1.

The sites on which it is planned to cut down trees in 2018

No of Sites	Start of the site km	End of the site km	Length of the site km
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

CEMWP № 2.9.4

Camp of the workers

In camps of workers in the territory of ACP, in the Sokuluk and Belovodskoye villages, the territory was cleaned from household and construction waste, cosmetic repairs of residential premises were carried out, living conditions of residents were improved. All noted violations, eliminated. Garbage cans are installed. In the kitchen and living areas there are fire extinguishers, fire shields are installed. Explanatory conversations with residents about the rules of residence, the need to keep the premises clean were held (letter № ER-CR5-HN-397).

CEMWP № 2.12 Laboratory monitoring

In April, the selection of the laboratories for monitoring of environmental components during the 2018 construction period was carried out. April 30, approval was received from the ADB regarding the selection of laboratories.

On 8 June, noise and vibration monitoring was carried out by the laboratory of LLC "Profilab" in the area of the bridge construction on the Sokuluk River. In the area of construction of the bridge on the Sokuluk River work of driving piles is being conducted, which causes vibration in the nearby of the houses. The laboratory made measurements of noise and vibration in a nearby house, as well as the surrounding area.

Also measurements were made in the area of soil packing by rollers without vibration in Petrovka village on the section 1.3.

Test reports are attached.

Preparation of Ecological passport

The ecological passport of the enterprise is the complex document containing the characteristic of relationship of the enterprise with environment. The environmental passport for the borrow-pit was developed and passed the state environmental expertise in December 2017.
To develop an environmental passport for the operation of the stone crushing plant (SCP) of the asphalt concrete plant (ACP) and the concrete batch plant (CBP), the Contractor engaged a specialist. A draft version of the document was submitted at the end of December. But there were problems due to the fact that the key performance indicators of the equipment were not provided in time, which led to a delay in the analysis of impacts. Currently, all the necessary data is provided to the designer. After the modification of the environmental passport was submitted to the State environmental expertise in the state Agency for environmental protection. The positive conclusion was received on April 12.
On the basis of environmental passports in April, applications for permits for emissions were filed and for the actual operation of the equipment, pavement for the use of natural resources was made.

Documentation development and training

- new contracts with laboratories for environmental monitoring during the construction work have been prepared – field studies are being conducted;
- weekly reports on the supervision of construction works are being prepared;
- EPTISA has carried out training for IPIG and the Contractor staff on procedures for the SEMP implementation, prepared the checklist for monitoring compliance;
- Currently, there is a revision and updating of IEE.