Initial Environmental Examination

Project Number: TA 8887-KGZ
July 2016

KGZ: CAREC Corridors 1 and 3 Connector Road Project

Prepared by Kocks Consult GmbH / Finnish Overseas Consultants Ltd. / CAC Consulting for the Ministry of Transport and Roads of Kyrgyz Republic for the Asian Development Bank.

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.ABBREVIATIONS

ADB	-	Asian Development Bank
ADT	-	Average Daily Traffic
AIDS	-	Acquired Immune Deficiency Syndrome
AP	-	Affected People
BoQ	-	Bill of Quantities
CAREC	-	Central Asia Regional Economic Cooperation
CEWP		Construction Environmental Work Plan
CITES	-	Convention on International Trade in Endangered Species
CO	-	Carbon Monoxide
CSC	-	Construction Supervision Consultant
CW	-	Civil Works
dBA	-	A-weighted decibels
DO	-	Dissolved oxygen
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EIP	-	Environmental Impact Permit
EMoP	-	Environmental Monitoring Plan
EMP	-	Environmental Management Plan
FCM	-	Family Medicine Centres
GRM	-	Grievance Redress Mechanism
h, hr	-	Hour
Ha	-	Hectare
HIV	-	Human Immunodeficiency Virus
IA	-	Implementing Agency
IEE	-	Initial Environmental Examination
IES	-	International Environmental Specialist
IPIG	-	Investment Projects Implementation Group
KDTP	-	Kyrgyzdortransproekt
Kg	-	Kilogram
Km	-	Kilometer
Kpa	-	Kilopascal
LAR	-	Land Acquisition and Resettlement
LARP	-	Land Acquisition Resettlement Plan
LHS	-	Left Hand Side
Ls	-	Lump Sum
M2	-	Square Meter
M3	-	Cubic Meter
Max.	-	Maximum
MESD	-	Ministry of Economic and Sustainable Department
Min.	-	Minimum
MOF	-	Ministry of Finance
MOTR	-	Ministry of Transport and Road of the Kyrgyz Republic
MoCIT		Ministry of Culture, Information and Tourism of the Kyrgyz

		Republic
MPC	-	Maximum Permissible Concentrations
NES	-	National Environmental Specialist
NGO	-	Non-Governmental Organization
No.	-	Number
NO2	-	Nitrogen Dioxide
PAM	-	Project Administration Manual
PAP	-	Project-Affected Person
PBM	-	Performance-based maintenance
PER	-	Public Environmental Review
PPMS	-	Project Performance Management System
PPTA	-	Project Preparatory Technical Assistance
RAP	-	Resettlement Action Plan
RHS	-	Right Hand Side
ROW	-	Right-of-Way
RP	-	Resettlement Plan
SA	-	Social Assessment
SAEPF	-	State Agency on Environment Protection and Forestry
SER	-	State Environmental Review
SO2	-	Sulfur Dioxide
SPS	-	Safeguard Policy Statement
SSEMP	-	Site Specific Environmental Management Plan
TA	-	Technical Assistance
TMP	-	Traffic Management Plan
TOR	-	Terms of Reference
TPH	-	Petroleum Hydrocarbon
TSP	-	Total Suspended Particulates
UNFCC	-	United Nations Framework Convention on Climate Change
WHSP	-	Worker’s Health and Safety Plan

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A. Executive Summary

Introduction

1. The Government of the Kyrgyz Republic has requested the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and/or grant for the CAREC Corridors 1 and 3 Connector Road. The main outcome of the PPTA is to prepare a feasibility study suitable for donors financing. The Section «Epkin (Km 89) to Bashkugandy (km 159)" will be financed by ADB.

2. The proposed Project will improve the following socioeconomic indicators of the regions of the Kyrgyz Republic:

(i) Reduce the cost of passenger and cargo transportation between southern and Issyk-Kul and Naryn regions by providing direct access.
(ii) Reduce transport costs due to route cutting and better road conditions.
(iii) Increase in local and international transportation and movement.
(iv) Origination of additional income-generating opportunities for local residents
(v) Creation of new jobs
(vi) Good state of vehicles/Reduction of operating costs

3. According to the categorization of ADB Safeguard Policy Statement, the project belongs to category "B" and doesn't require full Environmental Impact Assessment (EIA). As a part of the ADB Policy, the project requires Initial Environmental Examination (IEE). In accordance with the legislation of the Kyrgyz Republic, this stage is considered as a preliminary environmental impact assessment (Pre-EIA) to feasibility study and shall be documented by EIA report. The Project will not be categorized according to Kyrgyz Republic legislation, however these IEE and pre-EIA documents might be considered as equivalent.

4. The purpose of this Initial Environmental Examination (IEE) is to assess potential environmental, health, safety and social impacts of the proposed road project. With the expected construction scope, no significant adverse and irreversible environmental impacts had been noted in the environmental assessment process. This IEE document includes an Environmental Management Plan (EMP) based on the identified potential impacts, their characteristics, magnitude, distribution, and duration, sensitive receptors and affected groups with corresponding mitigation measures designed to minimize, reduce and mitigate (or compensate the affected parties), to be implemented for the entire project cycle.

5. The IEE study for Section "Epkin (Km 89) to Bashkugandy (km 159)" is being conducted based on secondary information from a number of available sources, while primary data were obtained from field parametric measurements along with the observations gathered from several field visits. Environmental public consultation was done and was attended by residents of the communities mentioned as well as those from surrounding villages.

Policy, Legal, and Administrative Framework

6. The IEE study was in conformance with the national legal framework of Kyrgyzstan consisting of the important laws in environmental protection, water protection, cultural heritage, public health, and other national environmental legislations. In addition, International Treaties that Kyrgyzstan was a signatory were also considered as part of the overall framework.

7. The environmental assessment in Kyrgyz Republic is founded on two subsystems:

(i) OVOS (the Russian acronym for “Assessment of Environmental Impacts”), and (ii) Ecological Expertise (State Environmental Review, SER). The resulting EIS is then presented for public consultations, after which revisions are done according to the public’s feedback. Subsequently, the OVOS report, Statement of Environmental Consequences, and other supporting documentations are submitted for the State Environmental Review (SER). After which the project may be approved, rejected or send for re-examination.

8. Under ADB approval requirements, a set of specific safeguard requirements are required to be met by the Borrowing Country in addressing environmental and social impacts and risks. The project would undergo Screening and Categorization, formulation of Environmental Management Plan and Public Disclosure. Public Consultations for Category B would be required so that views of affected groups are taken into account in the design of the Project and within the mitigation measures proposed.

Description of the Project

9. The project road Section Epkin (Km 89) to Bashkugandy (km 159) is a 70-km east to west highway. Generally, this Section follows the existing alignment up to Bashkugandy (km 159). The entire of this section is within Naryn Oblast and it traverses small western part of Kochkor Distric (Kochkor, as the capital); while the most part is in Jumgal District (Chaek as the capital).

10. The details of the proposed road Section project are:

(i) Rehabilitate and pave the project road to Technical Category II from Epkin (Km 89) to Bashkugandy (km 159) according to Kyrgyzstan National Standard with Geometrical and Structural Requirements with design speed of 120 km/hour in rolling terrain (60 km/hour in mountainous terrain).
(ii) Rehabilitation, repair and/or replacement of bridges and culverts.
(iii) Construction of side drains and other drainage structures.
(iv) Provision of retaining walls and river protection measures, where necessary.
(v) Provision of adequate road signing and marking.
(vi) Provision of safety barriers.

11. The road is to be designed according to Kyrgyz geometric design standard, and accordingly, it shall be sufficient to carry the traffic loading efficiently within its projected service life. Effectively, these will be a two-lane road consisting of a carriageway width (sum of the width of lanes) and the width of the shoulders. The design elements for the cross section of the project road are as follows:

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

Description of the Environment (Baseline Data)

12. The road 70 km from Epkin (km 89) to Bashkugandy (km 159) runs over Kochkor valley through Kyzart mountain pass (2664m) to Jumgal depression. The Section proceeds westward to Bashkugandy village passing through a number of settlements interspersed by agricultural

fields with a 2-line configuration of carriageway.

13. These western parts of Kochkor District are vast tracts of agricultural lands devoted to farming and animal stock-raising. The road climbs to around 2,600 m which seem to be the highest point at Kyzart Pass after which it descends to Jumgal District. The high portion appears to be the boundary between Kochkor and Jumbal Districts, and also the delineation of the watersheds for the Chui and Jumgal Rivers. This high point on the road seems to be the saddle point between mountain ranges the run parallel east to west of Naryn Oblast. The terrain is characterized as undulating and mountainous and covered with grasses suitable for grazing.

Environmental Impacts and Mitigation Measures

14. Most of the anticipated environmental impacts of the proposed road project are likely to be resulting directly from construction activities and certain impacts occur in operation stage as well. These impacts are due to increased traffic volume and vehicle speed and refer to elevated levels of gaseous and noise emissions and potentially increased pedestrian vs. vehicle accidents. In addition there is an increased risk of accidents with possible spills of harmful substances. The identified impacts include (i) noise impacts, emission of pollutants to air and vibration, which is especially of high significance within the settlements alongside the Project road and where sensitive receptors are located such as schools, hospitals mosques or other, e.g. households located near the road and others like quarries, bazaar (ii) impacts on water courses and rivers (iii) impacts on historical and archaeological sites (iv) impacts from aggregate sourcing at borrow sites; (v) impacts on soil and vegetation, inclusive tree plantations alongside the Project road due to site clearance activities; (vi) impacts from bridge and drainage facilities rehabilitation; (vii) impacts from asphalt plant and aggregate crushers and (viii) impacts from contractor's working camps. Impacts have been decided in to design phase, construction phase, and operation phase impacts.

15. The construction entails a number of activities which are expected to introduce impacts and disturbances to the general environment, especially during the construction period. Most of these impacts are confined within the right-of-way, construction sites, and facility sites; while some activities can affect the outlying areas or even a wider area, especially if not properly mitigated.

16. Avoidance of impacts can be executed by proper planning/preparation during the Pre-engineering and design phase. The mitigation measures will consist of the following: (i) use of green measures for erosion; (ii) asymmetric widening to avoid felling of trees; (iii) avoidance of encroachment to archeological and historical sites with strict instructions to workers; (iv) provision of road safety measures and traffic plan to avoid accidents and maintain access to people; (v) gaseous emissions will be minimized and controlled by proper and regular maintenance of equipment; (vi) dust is controlled by regular water spraying on exposed areas; (vii) noise is minimized at the vicinity of sensitive receptors by proper scheduling of works and provision of noise mufflers to trucks and equipment; (vii) surface water contamination is mitigated by avoiding petroleum spills and soil droppings in water and situating contaminating substances away from waterways and construction of settling ponds for clarifying water prior to discharge; (viii) material sources should be reinstated after usage; (ix) ensure usage and installation of safety measures at worksites and along the road; (x) strictly avoid possible habitat areas of biological organism and prohibit workers from harming indigenous local species.

Analysis of Alternatives

17. Two alternatives were considered in this IEE :
    (i) Zero option - inaction / do nothing
    (ii) The road reconstruction project

18. The “Zero option” alternative scenario will mean that the road stays “as is”, in which no rehabilitation works. Considering the mentioned reasons and along with those presented in the “Country and Regional Strategy” and “Locality Specific Rationale”, the benefits of rehabilitating and reconstructing the road generally outweigh the expectations of the “zero option” alternative. The second Alternative is considering the road reconstruction in the section Epkin (Km 89) to Bashkugandy (km 159).

Consultation, Participation, and Information Disclosure

19. In accordance with ADB’s Public Communications Policy (2011) and SPS (2009), Public Consultation meeting for this section on the environmental aspects was undertaken on 18 March 2016 in the village hall in Bashkugandy. During the said public consultation the Consultant (Kocks Consult, GmbH), prepared PowerPoint presentation regarding the technical features of the project and explained the potential environmental and social impacts with corresponding mitigation measures. This event was organized by IPIG with the assistance of PPTA consultants. At this instance, the participants were able to express what they thought about the project and were given a chance to ask clarificatory questions during the open forum. Forms were provided to the people for them to write in their own comments which incorporated in the IEE and serve as recommendations in the design phase.

20. The IEE shall also be disclosed to a wider audience via the ADB website. During the project implementation, periodic environmental monitoring reports shall be submitted by IPIG on behalf of MOTR and correspondingly also be uploaded in the ADB website and in KGZ on MOTR website.

Grievance Redress Mechanism

21. The Grievance Redress Mechanism (GRM) is a process through which the affected people need a trusted way to voice and resolve concerns about the project and the project also finds an effective way to address affected people’s concerns. The GRM will cover issues related to social, environmental and other safeguard issues under ADB safeguard covenants and Kyrgyz Law.

22. With two stage appeals – the Local (village) Level and Central Level, along with greater participation of the local people, resolution of complaints will be better ensured. ADB itself has additional mechanism in which a complainant can be appealed through the ADB Accountability Mechanism which is always accessible to the APs.

Environmental Management Plan

23. The Environmental Management Plan (EMP) for the project road, consisting of impact mitigation and monitoring plan, has been prepared as part of this IEE. A program of monitoring, the Environmental Monitoring Plan (EMoP), is also developed herein to ensure that all concerned agencies take the specified action to provide the required mitigation, to assess the level of project impacts on environmental quality and to determine whether any additional

measures may be necessary.

24. This EMP will be part of the contract documents consisting of specified measures covering most of the possible issues that can occur will enable the avoidance, reduction, and mitigation of adverse impacts in the project cycle. The Contractor shall adopt the mitigation measures, particularly those for the construction into his Site-specific Environmental Management Plan (SEMP) consistent with their own work program. Supplementary Plans will also be drawn up by the Contractor for specific situations to ensure a focused action on any problem that might arise.

25. Operational framework of the EMP involves the national agencies (IPIG-MOTR & SAEPF), ADB Safeguard Specialists, Construction Supervision Consultant, Contractor, with the local governments and recognizing roles of NGO's and people's organization at the project site.

26. The cost for implementing EMP will be financed by the loan, specifically the costs of mitigation measures will be included in the construction contracts, and the cost for environmental monitoring will be included in the consulting service of the CSC. Mitigation measures and a monitoring plan have been developed and incorporated into the EMP. Under the guidance of CSC, the contractor will have to submit site-specific Environmental Management Plans (SSEMP) for the following prior to commencing operations: (i) SSEMP in the sensitive sites such as main residential areas, cultural& historical sites including cemeteries, riverbanks or other waterways; (ii) layout of the work camp with sewage management and waste management plan; (iii) sitting and description asphalt and crashing plants, equipment maintenance and storage facilities; (iv) spoil soil management plan; (v) borrow site management including restoration; and (vi) method statement for bridge reconstruction works. The SSEMPs shall be endorsed by the construction supervision consultant before submission to IPIG for approval.

27. IPIG will promptly inform ADB of the occurrence of any risks or impacts, with detailed description of the event and proposed corrective action plan if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE. IPIG will report any actual or potential breach of compliance with the measures and requirements set forth in the EMP promptly after becoming aware of the breach.

28. Monitoring and reporting. CSC will submit quarterly project progress report reflecting environmental safeguard compliance. CSC will assist IPIG in compiling and submitting semiannual monitoring reports (EMR) during project construction within one month after each reporting period. EMRs will be disclosed at ADB website and to local authorities.

Conclusions and Recommendations

29. The IEE/EMP-EMoP, as part of the contract documents, shall be adhered to by the Contractor. Accordingly, the Contractor shall require all his Sub-Contractors to follow also the EMP and such stipulations should also be shown in Sub-contracting agreements and which will be verified by the Engineer (or the CS Consultants).

30. Upon assessment of the impacts in this IEE process, the project is maintained at Environmental Category B; since the predicted impacts are «site-specific», with few irreversible, and in most cases mitigation measures can be readily designed and to be incorporated in the detailed designs.

31. Mitigation measures have been developed to be utilized for finalization in the detailed design phase, for implementation in the construction phase, and subsequently for the operations phase, to reduce all negative impacts to acceptable levels.

32. As per assessment in this IEE, the proposed Road Project is unlikely to significant environmental impacts. To ensure environmental and social safeguards, the IEE recommends that:

(i) Proper design should be produced;
(ii) The strict monitoring is done;
(iii) Measures be implemented;
(iv) Avoid socioeconomic impact – hire local people;
(v) Contractor should have SSEMP approved before commencing construction works;
(vi) baseline measurements and periodic monitoring be done;
(vii) Contractor to designate environmental staff;
(viii) CSC to provide sufficient training on EMP implementation and compliance monitoring for the CSC engineers and to the Contractor's staff;
(ix) CSC to assist IPIG in monitoring and reporting on EMP implementation;
(x) IPIG-MOTR shall oversee environmental compliance and ensure that reporting requirements are followed.

B. Policy, Legal, and Administrative Framework

1. Introduction

33. The Government of the Kyrgyz Republic (the government) has requested for a project preparatory technical assistance (PPTA) from the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and/or grant for the CAREC Corridors 1 and 3 Connector Road. The main output of the PPTA is a feasibility study suitable for donors financing. The study will cover five (5) sections:

(i) Balykchi (Km 0) to kilometer-post 43 (Km 43), approximately 43 kilometers (km);
(ii) Kochkor (Km 64) to Epkin (Km 89), approximately 25 km;
(iii) Epkin (Km 89) to Bashkugandy (km 159), approximately 70 km;
(iv) Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), approximately 24km, where a Bypass Road is being envisioned to avoid the village of Chaek and part of Kyzyl-Zyldyz; and
(v) Epkin (Km 89) to Bashkugandy (km 159), approximately 91 km.
The Section Epkin (Km 89) to Bashkugandy (km 159) will be financed by ADB.

34. The project scope also includes soft components to tackle sector-wide issues. Agreement needs to be reached with the government on the exact details, including: (i) improve efficiency of road asset management in the Kyrgyz Republic, (ii) support the government with institutional reforms in transport sector, (iii) introduce performance based maintenance contracts, and (iv) improve road safety in the Kyrgyz Republic.

35. The Investment Project Implementation Group (IPIG) within the Ministry Transport and Communication (MOTR) shall be the Executing Agency (EA) for this project during the construction stage. As initial part of the possible funding assistance, the ADB has engaged Kocks Consult GmbH, Germany, to prepare a Feasibility Study and Preliminary Design for the entire project. The consultancy scope also includes an Initial Environmental Examination (IEE);

and a social and poverty analysis and impact assessments, in accordance with ADB's Safeguard Policy Statement (SPS) 2009.

36. With reference to the Contract Agreement for Consultancy Services for the engagement, one of the main tasks of the Consultant is to prepare the Initial Environmental Examination (IEE) for the project in accordance with the requirements of the ADB's Safeguard Policy Statement (SPS) 2009; and also the relevant legislation of the Government of Kyrgyzstan. Such environmental safeguard requirements specify that the borrowers/clients are to undertake an environmental assessment process which entails assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking consultation establishing a grievance mechanism, and monitoring and reporting. The IEE document shall also include particular environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resources.

37. This IEE document includes an Environmental Management Plan (EMP) based on the identified potential impacts, their characteristics, magnitude, distribution, and duration, sensitive receptors and affected groups. The EMP shall address the potential impacts and risks identified by the environmental assessment with the corresponding mitigation measures designed to minimize, reduce and mitigate (or compensate the affected parties) and to be implemented for the entire project cycle.

2. Extent of IEE Study

38. This Initial Environmental Examination (IEE) Report is for the Section «Epkin (Km 89) to Bashkugandy (km 159)", which has a distance of around 70 km. This road section shall be rehabilitated into Category II road. Accordingly, with its setting and mode of rehabilitation, the project undertaking is classified under the ADB Safeguard Policy Statement 2009 as environment Category B, requiring an Initial Environmental Examination. The purpose of this IEE is to assess potential environmental, health, safety and social impacts of the proposed road project. With the expected construction scope it is expected that few impacts, if any, are irreversible, and in most cases mitigation measures can be designed to avoid or minimize them.

39. The IEE study is being conducted based on secondary information from a number of available sources, while primary data were obtained from field parametric measurements along with the observations gathered from several field visits.

40. Public Consultations meeting on the environmental aspects for Epkin (km 89) to Bashkugandy (km 159), in accordance with Kyrgyz legislation on public access to the information and ADB's Public Communications Policy (2011) and SPS (2009), was undertaken on 18 March 2016 in Bashkugandy Village Administration Office. This was organized by the IPIG-MOTR through official communication to the local leaders inviting stakeholders in the surrounding villages.

3. Environmental protection legislation of Kyrgyz Republic

41. Environmental impact of the Epkin (km 89) to Bashkugandy (km 159) Road Rehabilitation Project is regulated by a number of environmental legislative acts of the Kyrgyz Republic.The Relevant elements of the environmental legislation of the Kyrgyz Republic are shown in Table below.

Table 1: National Environmental Legislations

#	Legislation	Number & Year of adoption	Purpose/content
Main laws on environmental protection			
1	The Constitution of the Kyrgyz Republic	2010	Land, its mineral resources, airspace, waters, forests, flora and fauna and other natural resources are used, but at the same time are under protection. Everyone is obliged to take care of the environment, flora and fauna of the country.
2	The Environmental Safety Concept of KR	No.506 dtd. 23.11.2007	It establishes the basic principles of environmental policy and determines global, national and local environmental issues; priorities in the field of environmental protection at the national level as well as tools to ensure environmental safety.
3	National Sustainable Development Strategy of the Kyrgyz Republic for 2013-2017	No.11 dtd. 21.01.2013	Provides a conceptual sustainable development framework aimed to satisfy the needs of current generations and not to endanger at the same time the needs of future generations.
4	Law of KR “On Environmental Protection”	No.53 dtd. 1999 in the wording dtd. 27.04. 2009	Establishes the basic principles of environmental protection and provides legal authority to establish environmental quality, designate special protected areas, promulgate rules and procedures for the use of natural resources, establish environmental monitoring and control system and reinforce procedures for overcoming emergency situations. Among the standards and norms of environmental quality authorized under this law and related to the project there are: Standards of Maximum Safe Concentration of Hazardous Substances In Air, Water; Standards of Natural Resources Use; Standards of Maximum Safe Noise, Vibration Levels and Other Hazardous Physical Impacts. This law establishes the requirements for environmental examination (environmental assessment) intended by economic or other activities to prevent potential adverse environmental impacts. In addition, it prohibits financing or implementation of projects related to the use of natural resources without obtaining approval from the State Environmental Expertise.
5	Law of KR "On Environmental Impact Assessment"	No.54 dtd. 1999, in the wording dtd. 04.05. 2015	The main law related to environmental assessment. Its task is to prevent negative impacts on human health and environment occurring as a result of economic or other activities, and to ensure compliance of these activities with environmental requirements of the country.
6	Law of KR "General technical rules and regulations for environmental safety in the Kyrgyz Republic"	No.151 dtd. 2009	Is meant to protect the environment. It determines the main provisions for technical regulation of environmental safety and establishes general requirements for ensuring environmental safety during design and operations of businesses and other facilities of all legal and physical entities.
7	Regulation on procedure for conducting environmental impact assessment in the Kyrgyz Republic	No. 60 dtd. 13.02.2015	Establishes the procedure for assessing the environmental impact of the proposed activity (hereinafter EIA). The purpose of EIA is to prevent and/or mitigate the environmental impacts of the proposed activity and other related social, economic and other consequences.
8	Regulation on Water Zones and Strips of Water Bodies Protection in the Kyrgyz Republic	No.271 dtd. 7.07. 1995	Defines the procedure for establishing water zones and strips of water bodies protection in the Kyrgyz Republic Establishes a regime of economic activity and land use located in the water protection zones and strips. This law also defines responsibility for keeping them in proper shape.
9	Rules for the protection of surface waters in KR	on March 14, 2016 № 128	These Rules govern the protection of surface waters from pollution and depletion, in the implementation of the water users of different types of business activities that have or may have an adverse impact on the status of surface waters, irrespective of their legal form, as well as regulate the procedure for implementation of measures for the protection of surface water.
10	Law of KR "On Protection of Atmospheric Air"	No.51 dtd. 1999, in the wording dtd. 09.08.2005	Governs the relations on use and protection of atmospheric air.
11	Law of KR "On Production and Consumption Waste"	No.89 dtd. 2001	Defines the national policy in production and consumption waste management. It is aimed at preventing negative impacts from production and consumption waste on the environment and human

			health while handling it and their maximum involvement in the economy as an additional source of raw materials.
12	Law of KR "On Protection and Use of Flora"	No.53 dtd. 2001	Establishes the legal framework for ensuring effective protection, rational use and reproduction of flora resources.
13	Law of KR "On Wildlife"	No.59 dtd. 1999, in the wording dtd. 24.06.2003	Establishes the legal relations in the context of protection, use and reproduction of wildlife.
14	Law of KR "On local self-government and local state administration"	No.101 dtd. 2011	Establishes the principles for setting-up local authorities at the level of administrative and territorial units of the Kyrgyz Republic.
Legislation on Land Acquisition			
15	The Constitution of the Kyrgyz Republic	2010	Clause 12 recognizes a diversity of forms of ownership and guarantees equal legal protection of private, state, municipal and other forms of property (Clause 12, paragraph 1). Land can be of private, municipal and other forms of ownership except for pastures, which cannot be privately owned (Clause 12, paragraph 5). Property is indefeasible. No one can be arbitrarily deprived of his property. Seizure of property by the state against the will of the owner is allowed only by court decision (Clause 12, paragraph 2). Seizure of property for public purposes specified in the law is possible by the court decision with fair and advanced compensation of property cost and other damages caused as a result of such alienation. (Clause 12, paragraph 2).
16	Civil Code	No.16 dtd. 8.05.1996 in the wording dtd. 30.05.2013	Determines that the person whose right is violated can demand full compensation for damages, unless the law or agreement consistent with the law says otherwise (Clause 14, paragraph 1). The Civil Code specifies the following losses subject to compensation: expenses incurred or to be incurred by the person whose right is violated in connection with restoration of violated rights (Clause 14, paragraph 2); loss or damage to property (Clause 14, paragraph 2); lost income that would be received by the person under normal civil turnover conditions if his right was not violated (lost profits) (Clause 14, paragraph 2); Compensation for loss of profits along with the other costs, at least in the amount of such income, to the person loosing land, assets or livelihood.
17	Land Code	No.45 dtd. 2.06.1999 in the wording dtd. 26.05.2009	Governs land relations in the Kyrgyz Republic, basis for the origin, procedure for exercise and termination of rights to land and their registration, and also aimed to create land and market relations in state, communal and private ownership of land and efficient use and protection of land. The Land Code is the main document, which regulates land use.
18	Law of KR «On transfer (transformation) of land»	No. 145 dtd. 15.07.2013	This law is developed in accordance with the Land Code of the Kyrgyz Republic and other normative legal acts of the Kyrgyz Republic. It defines the legal basis, conditions and procedure for transfer (transformation) of land from one category to another or from one type of land to another.
19	Law «On Highways»	No.72 dtd. 2.06.1998	According to Clause 4 the public roads are owned by the state and not subject to sale and cannot be passed into private ownership. This law (Clause 27) also provides that without prior approval of the State Automobile Inspectorate and the Ministry of Transport and Roads of the Kyrgyz Republic the following is prohibited among others: trade on the roadside; placement of kiosks, pavilions and similar structures; and, unauthorized use of road lands (Clause 23)
20	Regulation on valuation of assets		Valuation of assets is made based on the Provisional Rules of activities of valuators and valuation organizations (Government Resolution #537 dtd. August 21, 2003), property valuation standards (Government Resolution #217 dtd. April 3, 2006) and other national legislative provisions.
Law On Protection And Use Of Historical And Cultural Heritage			
21	The Law "On protection and use of historical and cultural heritage"	No.91 dtd. 26.07.1999	Establishes legal norms for protection and use of tangible historical and cultural heritage on the territory of the Kyrgyz Republic, which is of unique value for people. The law is mandatory for all legal entities and individuals. It defines their rights and obligations in the context of

			protection and use of tangible historical and cultural heritage. Historical and cultural heritage are the historical and cultural monuments associated with historical events in the life of the people, development of society and the state, material and spiritual creative works representing historical, scientific, artistic or other value.
Law on Access to Information			
22	The Law "On access to information held by public bodies and local self-government of the Kyrgyz Republic"	No.213 dtd. 28.12.2006	This law regulates the rights and obligations of public authorities to provide information to the local population, in order to achieve transparency of work of public awareness
International Conventions and Agreements			
1	UN Framework Convention on Climate Change	2000	Combating global climate change and its consequences.
2	Aarhus Convention on access to information, public participation in decision-making and access to justice on environmental issues.	2001	To support the protection of human rights to a healthy environment and wellbeing, access to information, public participation in decision-making and access to justice on issues related to the environment.

42. Ratification of international legal acts involves implementation of international requirements into the national legislation and harmonization of the Kyrgyz legislation with the international legislation. However, this process is moving very slowly in Kyrgyzstan given that conventions are really frameworks that need to be translated into national laws, a process that is time consuming and complicated.

4. Permitting Processes in the Kyrgyz Republic

43. The assessment of the possible effects of economic and other activities on the environment and human health, as well as the development of a list of measures to prevent adverse effects (destruction, degradation, damage and depletion of natural ecological systems and natural resources), and improve the environment are carried out in the framework of environmental impact assessment provided the environmental legislation of the Kyrgyz Republic.

44. Environmental impact assessment is carried out according to the Regulations on the procedure for environmental impact assessment in the Kyrgyz Republic (13 February, 2015, #60); Regulations on the procedure of the state ecological examination in the Kyrgyz Republic (7 May, 2014, #248); Law "On Ecological Expertise" No.54 dtd. 1999, (with amendments as of 04 May 2015), the Law "On Environmental Protection" No.53 dtd. 1999, and the Law "general technical regulation on environmental safety." No.151 dtd. 2009. The Environmental Management Plan (EMP) is developed on the basis of the EIA, design solutions and refined, is specified on each next stage of the project. EMP reflects all the possible negative impacts that have been identified EIA and includes mitigation measures these effects.

45. Environmental assessment in Kyrgyzstan is founded on two subsystems: (i) OVOS (the Russian acronym for “Assessment of Environmental Impacts”), and (ii) Ecological Expertise (State Environmental Review, SER). Based on a “list”, project screening is done to determine whether a project is the subject to environmental assessment or not. For cases that this is required, an OVOS is conducted by an OVOS consultant hired by a Project Proponent. The environmental assessment process produces the EIS documents which will be subjected for further reviews.

46. The resulting EIS is then presented for public consultations, after which revisions are done according to the public’s feedback. Subsequently, the OVOS report, Statement of Environmental Consequences, and other supporting documentations are submitted for the SER. After which the project may be approved, rejected or send for reexamination.

47. The outputs of the public consultation are incorporated in the Public Environmental Review (PER) which can be done on the stages of the OVOS. The SER duration depends on the complexity of the project, but should not exceed 3 months after submission of all the OVOS documents for the SER by the Project Proponent.

5. Environmental Standards

48. The following environmental standards are applied to the Project. International standards were also presented herewith for comparison with Kyrgyz standards; subsequently the more stringent standards shall be used as monitoring requirements.

5.1. Air quality

49. Maximum permissible concentrations of harmful substances in ambient air according to Kyrgyz and international standards below in Table 2.

Table 2: MPC of Harmful Substances

Pollutants	Maximum Permissible Concentration (mg/m3)		Concentration Averaging Period	
	According to National Legislation	According to IFC*	According to National Legislation	According to IFC*
Particulate Matter	0,500	0,02	daily average	1 year
Sulphur Dioxide (SO2)	0,500	0,02	daily average	24 hours
Nitrogen Dioxide (NO2)	0,085	0,04	daily average	1 year
Carbon monoxide (CO)	3,000	0,10	daily maximum	Maximum daily 8 hour mean

*World Health Organization (WHO). WHO Ambient Air Quality Guidelines.

5.2. Noise

Table 3: International (IFC) Noise Standards (dB)

Noise Level Guidelines*		
	One Hour LAeq (dBA)	
Receptor	Daytime 07:00–22:00	Nighttime 22:00–07:00
Residential; institutional; educational	55	45
Industrial; commercial	70	70

*Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999.

Table 4: Kyrgyz Republic Noise Standards (dB)

Description of activity/category	**Leq**		**Lmax**	
	Day	**Night**	**Day**	**Night**
Areas directly adjacent to hospitals and sanatorium	45	35	60	50
Areas immediately adjacent to dwellings, polyclinics, dispensaries, rest homes, holiday hotels, libraries, schools, etc.	55	45	70	60
Areas immediately adjacent to hospitals and dormitories	60	50	75	65
Recreational areas in hospitals and sanitariums	35		50	
Rest areas at the territories of micro-districts and building estates, rest houses, sanitariums, schools, homes of aged, etc	45		60	

SN (Sanitary Norms) 2.2.4/2.1.8.562-96 “Noise at workplaces, in dwelling rooms, in public buildings and at the area of residential development”.

5.3. Surface water

Table 5: Surface Water Quality Standards

Pollutants	Maximum permissible concentration (mg/m3)	
	According to national legislation	According to EC legislation
Turbidity	Not less than 20 cm	Not less than 1,0 metres/depth
Petroleum oils	0,3 мг/л	not visible in the form of a film

GN 2.1.5.1315-03 with changes GN 2.1.5.2280-07 and SanPiN2.1.5.980-00.
Directive 2006/44 / EC of the European Parliament and of the Council of 6.09 in '06 on the quality of fresh waters needing protection or improvement of quality in order to maintain aquatic life.

6. Required ADB Environmental Approval

50. ADB requires the consideration of environmental issues in all aspects of its operations. Superseding the previous environment and social safeguard policies, ADB's Safeguard Policy Statement, 2009 (SPS, 2009) sets out the policy objectives, scope and triggers, and principles for three key safeguard areas: (i) environmental safeguards, (ii) involuntary resettlement safeguards, and (iii) Indigenous Peoples safeguards. ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks. Borrowers/clients comply with these requirements during project preparation and implementation. The environmental safeguard requirements are indicated in Appendix 1 of SPS 2009 (Safeguard Requirements 1: Environment). This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.

51. In the ADB's Screening and Categorization, the nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact are assigned to one of the following four categories:

(i) Category A. Projects could have significant adverse environmental impacts. An Environmental Impact Assessment (EIA) is required to address significant impacts.
(ii) Category B. Projects could have some adverse environmental impacts, but of lesser degree or significance than those in category A. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An IEE is required to determine whether significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
(iii) Category C. Projects are unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are reviewed.
(iv) Category FI. Projects involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all projects will result in insignificant impacts.

52. Environmental Management Plan: An Environmental Management Plan (EMP) which addresses the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the project's impact and risks.

53. Public Disclosure: ADB will post the following safeguard documents on its website so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

(i) For environmental Category A projects, draft EIA report at least 120 days before Board consideration;
(ii) Final or updated EIA and/or IEE upon receipt; and
(iii) Environmental Monitoring Reports submitted by Implementing/Executing Agencies during project implementation upon receipt.

54. ADB also requires public consultation in the environmental assessment process. For Category B projects, the borrower must consult with groups affected by the proposed Program and with local non-governmental organizations (NGOs) if possible. The consultation needs to be carried out as early as possible in the Program cycle so that views of affected groups are taken into account in the design of the Program and within the mitigation measures proposed. Any compensation related grievance redress issues will be resolved according to the Program's Resettlement Framework. A single Grievance Redress Mechanism (GRM) shall be set up to tackle both environmental and social issues for the project.

C. Description of the Project

1. Need for the Project

55. Since Kyrgyzstan is a mountainous, landlocked country, regional commerce depends heavily on road transport, which dominates the Kyrgyz transport system and heavily dependent on road transport. As mentioned in Country Partnership Strategy with ADB,[1] the road infrastructure has been routinely affected by climate-induced extreme events, including extreme temperatures, landslides, and mudslides. It is for this reason that further investment will be needed in the rehabilitation and maintenance of the road infrastructure.

56. The proposed project will help link the southern regions of Osh, Batken, and Jalal-Abad with the northern regions of Naryn, Issyk-Kul, Chui, and Talas, and then further connect to the regional corridors. The project will: (i) reduce the cost of passenger and cargo transportation between southern and northern regions by providing direct access, (ii) provide a more direct transit route between Kazakhstan and Tajikistan, and (iii) help stimulate trade.

2. General information on project facility

57. This Section's starting point designated as Km 89, after Epkink village within Kochkor District. Generally, this Section follows the existing alignment up to Bashkugandy (km 159). The entire of this section is within Naryn Oblast and it traverses small western part of Kochkor District (Kochkor, as the capital); while the most part is in Jumgal District (Chaek as the capital).

58. These western parts of Kochkor Districts are vast tracts of agricultural lands devoted to farming and animal stock-raising. The road climbs to around 2,600 m which seem to be the highest point at Kyzart Pass after which it descends to Jumgal District. The high portion appears to be the boundary between Kochkor and Jumbal Districts, and also the delineation of the watersheds for the Chui and Jumgal Rivers. This high point on the road seems to be the saddle

[1] Country Partnership Strategy: Kyrgyz Republic, 2013–2017 ADB, 2014.

point between mountain ranges the run parallel east to west of Naryn Oblast. The terrain is characterized as undulating and mountainous and covered with grasses suitable for grazing. The table below shows the Geographical Jurisdictions that the road section traverses or is near to.

Table 6: Geographical Jurisdictions along the Road Section

Oblast	Rayon	Town	Village	Section / km
Naryn	Kochkor (Western Part)		Epkin	Km 89–Km 159
	Jumgal		Jumgal	
			Kuyruchuk	
			Tugol Sai	
			Bashkugandy	

Source: The Consultant.

The map of the project road is shown in the following page.

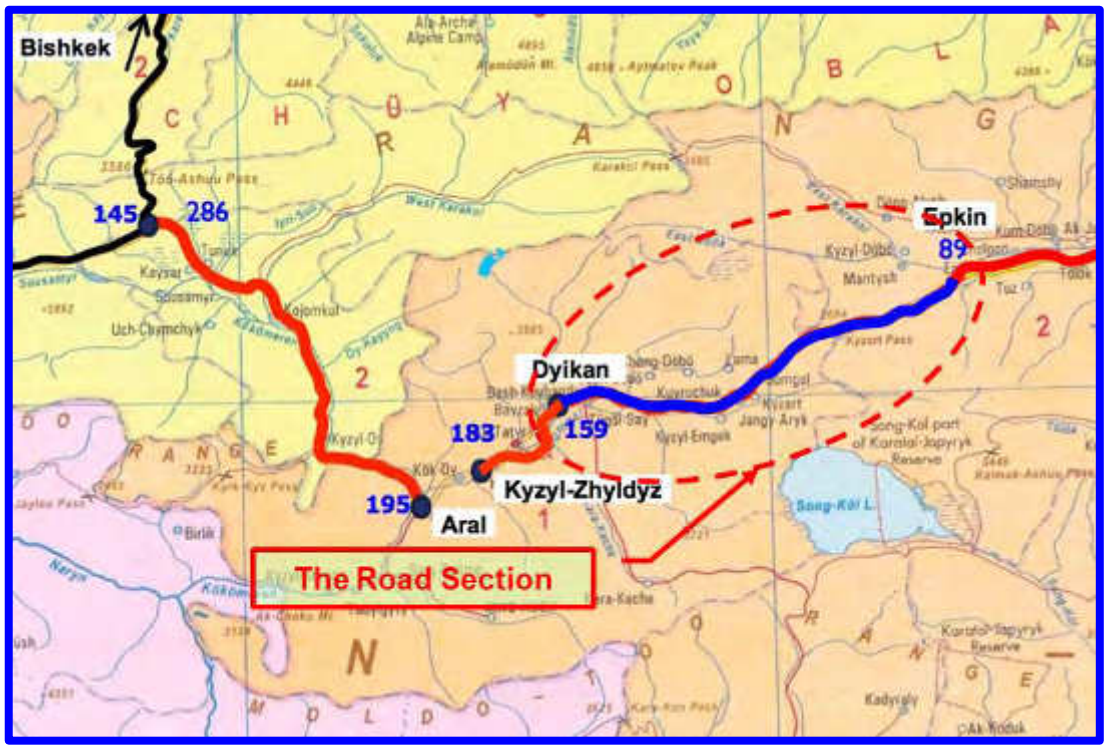


Figure 1: Location Map of the Road Section.

59. Engineering-geological conditions of subgrade construction on the North-South Alternative road on the section between Epkin and Bashkugandy are favourable. Baseline with a length of 70 km is laid mainly on the existing roadbed with gravel envelope, in some spaces with asphalt coat. Coating is asphalt, mainly with a thickness of 5–6 cm, rarely 9–10 cm. Base of road pavement and is constructed from gravel, pebble and crushed-stone soils with sandy-loam, sandy fillers.

60. The road is in poor condition, the surface is bumpy with numerous patches, covered with frequent transverse and longitudinal cracks, often with crack network. The road goes along the Jumgal River and crosses Tugol-Sai river as well as other many feed and irrigation ditches and low places.

3. Type and Technical Road Category of the Project

61. The Section "Epkin (Km 89) to Bashkugandy (km 159)" will be upgraded to Technical Road Category II consisting of (i) pavement works – replacement and/or construction of new pavement structure; (ii) bridge construction/repair – mostly repairs of bridge decks; (iii) culverts and drainage works – replacement of old culverts and improvement of existing ones with installation of side ditches; (iv) road curvature improvements – for improved drivability and safety, curvatures and gradients will be improve, especially at existing narrow curves; (v) carriage way widening – in a number of spots the road width will be widened to allow for safe two-way traffic, and pedestrian access; (vi) slope cuts – due to necessary widening and safety; (vii) slope stabilization – cuts will be stabilized by structural works; and (viii) installation of road furniture – necessary safety features and furniture shall be installed at strategic locations along the road. The envisioned service life of the pavement based traffic load forecast is set at 20 years, with the normal routine and periodic maintenance.

4. Details of the Project

62. The details of the proposed road project are:

(i) Rehabilitate and pave the project road to Technical Category II from "Epkin (Km 89) to Bashkugandy (km 159)" according to Kyrgyzstan National Standard with Geometrical and Structural Requirements.
(ii) Rehabilitation, repair and/or replacement of bridges and culverts.
(iii) Construction of side drains and other drainage structures.
(iv) Provision of retaining walls and river protection measures, where necessary.
(v) Provision of adequate road signing and marking.
(vi) Provision of safety barriers.

4.1. Road Cross Section

63. The road is to be designed according to Kyrgyzstan geometric design standard, and accordingly, it shall be sufficient to carry the traffic loading efficiently and with the vehicles from the opposite directions can pass safely. Effectively, these will be a two-lane road consisting of a carriageway width (sum of the width of lanes) and the width of the shoulders. The design elements for the cross section of the project road are as follows:

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

64. Planned volume of earthworks:

Table 7: Volume of Earthwork

Description	Unit	Quantity
Excavation of top soil (vegetative layer)	m3	282,800
Excavation to spoil of unsuitable and surplus material, common soil	m3	576,400
Excavation to spoil of unsuitable and surplus material,rocky ground	m3	84,500.00
Formation of embankment, common material from cut	m3	300,200
Provision of Subgrade, selected material	m3	128,800

65. The ensuing Figures are typical cross-sections for Technical Category II Road.

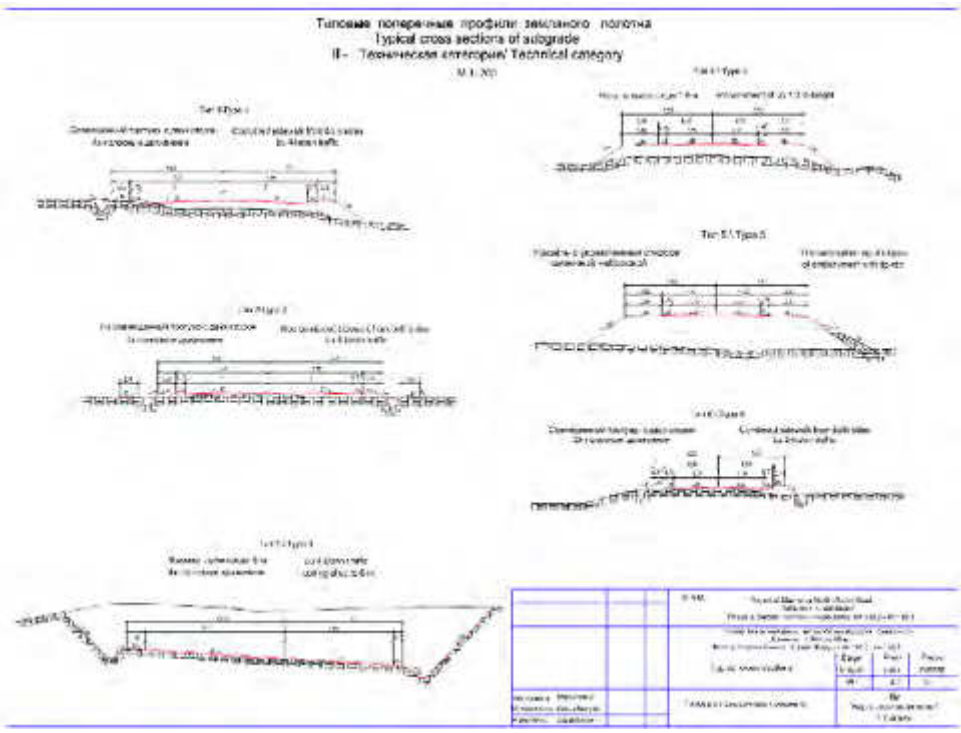


Figure 2: Technical Category II Road (Type 1-6).

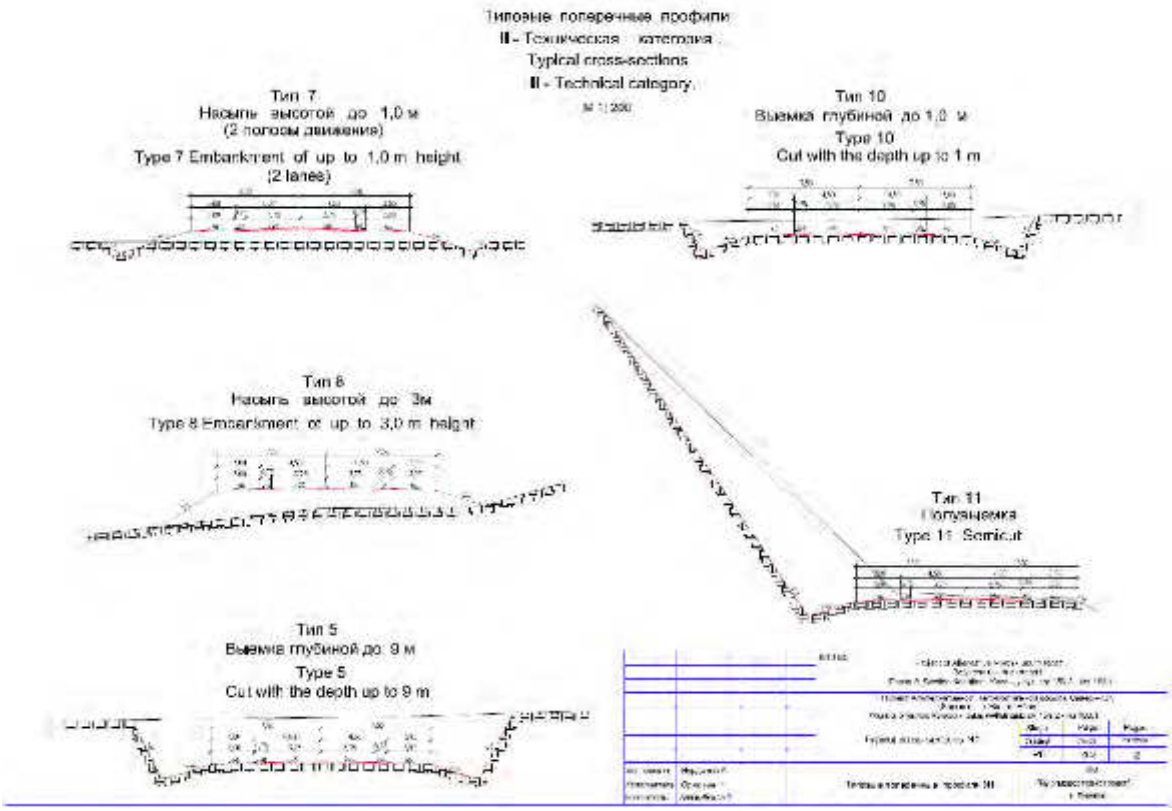


Figure 3: Technical Category II Road (Type 7-11).

4.2. Bridges and Culverts

66. There is one bridge along this section of the project road as shown in the Table below. In addition, there are minor water crossings that may be repaired or reconstructed into box culverts. Estimate is 134 culverts.

Table 8: Bridge in the Section

No.	Bridge Location	Name of crossing watercourse	Span Scheme	Bridge length, m	Design bridge width, m	Proposed Rehabilitation Measure
1	148+874	Tugol-Say river	2x12,0	30,15	8+2x0.875	148+874

5. Temporary Ancillary Facilities

5.1. Material Sources and Cut and Fill

67. Considerable volume of materials will be obtained from borrow areas and will be used for construction of road embankments and bridge approaches. Several potential borrow areas are quite apparent in the general vicinity. Contractors involved in the recent road reconstruction works also can readily identify potential areas for borrow materials which can be used for the bridge approach roads. The prospective contractor will probably identify his own source of materials. However, the materials need to be approved by the construction supervision engineer prior to using them for the project.

68. Should the Contractor be sourcing the materials from existing and operational quarry site, the contractor should exert influence on the operator that all required permits from local

authorities, get approval from territotrial departments of SAEPF are obtained and proper operational and management measures be instituted to minimize impacts to the general environment. On the other hand, should the Contractor decide to open a new borrow site, government permits are also required and borrow pit management plan will be developed as SSEMP. The guidelines indicated below should be followed in order to minimize impacts associated with the operation of borrow areas:

(i) All of the required environmental approvals should be secured and extraction and rehabilitation activities consistent with the requirements of SAEPF and/or permit conditions be carried out;

(ii) Prior to operation of the borrow areas, the contractor should submit to SAEPF and construction supervision consultant (CSC) the following:

- (a) A plan indicating the location of the proposed extraction site as well as rehabilitation measures to be implemented for the borrow areas and access roads upon project completion;
- (b) A dust management plan which shall include schedule for spraying water on access road and schedule of the equipment to be used;
- (c) A schedule of regular dust suppression on all unpaved access roads during the construction period, particularly in sections where sensitive receptors, such as settlements, are located;
- (d) Location map of stockpiles which should be away from watercourses to avoid obstruction of flow and siltation;
- (e) Cover on haul trucks to minimize dust emission and material spillage;
- (f) Plan to undertake regular maintenance and repair of access roads to their original condition whenever necessary.

69. During the field investigations by the material specialist, suitable construction materials were located and inspected. However, near the road section, no suitable materials were found. During to construction period, the contractor should perform his own material survey and process the corresponding permits for the operation of material sources.

5.2. Construction materials

70. The Table provides a list of possible sites for borrow areas.

Table 9: Possible Borrow Areas

No.	Location	Description
1	Km 70+000, km 76+000.	On LHS a mountain is located, which consists of gravel and gravel-sand material. These materials can be used for the sub-base and embankment.
2	Km 89+000, 94+000, 101+000	Open borrow pits are located in the villages of Chekildek, Cholpon. The subsoil consists of gravel and gravel-sand.
3	Km 108+000.	On the RHS is the loosened rock that can be used for the road pavement. Other sub-soils consists of gravel.
4	Km 145+000, km 160+000	On RHS is an old open pit with loamy clay subsoil.

Source: The Consultant

5.3. Asphalt and Cement Batching Plants

71. In establishing asphalt plant at the site for the road pavement basically the binder course and the surface course; the Contractor should be guided by a number of items to protect the

environment. Emissions will be produced in producing the asphalt mix likewise bitumen spill may occur during handling and mix preparation. For the cement batching plant for concreting works such as bridges, culverts and drainage works, cement dust can contaminate the air. In addition, the preparation, mixing and loading of concrete mix into the transit mixer and subsequent washing of trucks will result into soil and water contamination.

72. These two facilities should be situated at appropriate distances from the residences (not less then 500m) as well as the river (not less then 100m) so as not to result to water contamination. Within the project road, since the area is rural, there are ample spaces to set up these plants. The Contractor should obtain the necessary permits, negotiate properly with the landowners and reinstate the area after usage at the end of the project.

5.4. Construction Camp

73. The proper maintenance of all the service and sanitary facilities at the construction camp falls under the direct responsibility of the Contractor under the supervision of the construction supervision engineer for the project. The sanitary facilities or ablution include toilets, urinals, showers, washstands and a laundry area. In addition, equipment and maintenance yard will also have to be sited accordingly. Waste water should not be discharged into the river unless treated in compliance to local effluent standards. Solid waste collection and disposal should be planned properly. For construction camps, there are ample spaces in the area that the Contractor can select to set them up. It will be up to the Contractor to select the land parcels required, negotiate directly with the landowner and obtain the necessary permits for his facilities.

6. Alternatives

74. Two alternatives were considered in this IEE :

(i) Zero option - inaction / do nothing
(ii) The road reconstruction project

The “Zero option” alternative scenario will mean that the road stays “as is”, in which no rehabilitation works. Considering the mentioned reasons and along with those presented in the “Country and Regional Strategy” and “Locality Specific Rationale”, the benefits of rehabilitating and reconstructing the road generally outweigh the expectations of the “zero option” alternative.

The second Alternative is considering the road reconstruction for the Category II which will be on the existing road in the section Epkin (Km 89) to Bashkugandy (km 159), 70 km.

7. Traffic Volume

75. Results of the Manual traffic for road section counting converted into AADT by each vehicle type (Year 2015) in view of seasonal and daily correlation is shown in the Table below[2].

[2] This is part of the Economic Report fot this PPTA

Table 10: Results of Manual Traffic Count (2015)

Analysis section	Name of the section	Vehicle Type	Car	Light Bus/Van	Medium Bus	Large Bus	Light Truck Pick Up	Medium Truck 2-axle	Heavy Truck 3-axle	Truck trailer	Truck Semi trailer	Total
1B & 2A	Kochkor 62+580km – Epkin 89km & Epkin 89km – Bashkugandy 159+274km	Counting result	1359	128	91	3	40	48	72	55	35	1831
		Day/Month Factor (Tuesday/August) = 0.885										
		AADT	1203	113	81	3	35	42	64	49	31	1620

76. As per estimate in the traffic study, the growth rate is as follows: (i) 2011-2024 = 4.2%; (ii) 2025–2029 = 3.7%; (iii) 2030–2035 = 3.2%; and (iv) 2036–2040 = 2.8%. After adding the diverted traffic and applying the growth rates the future traffic are around 2,434 cars. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category II road will be sufficient to service the future traffic.

8. Proposed Schedule for Implementation

77. The schedule for the construction activities is at preliminary stage. The detailed design consultant will have to be recruited who will undertake the necessary design finalization along with all the contract documents. This IEE will form a part of the contract with specific provisions to form part of the Technical Specifications. The anticipated start of construction will be around March 2017.

D. Description of the Environment

1. Topography, Geology, and Soils

78. The road section «Epkin (Km 89) to Bashkugandy (km 159)", starts west of Epkin village which is part of the Kochkor District. This area is part of the Kochkor valley which is described as a cavity with a base altitude 1800¬2500 m, length of 80 km, and a width of 20 km. The general area can be considered as steppe environs with fragments of forests and meadows. Near the road, agriculture and animal herding are the main activities.

79. Around 20-25 km west of the section's starting point; the road ascends at its highest point at Kyzart Pass with an elevation of around 2600 meters. Its highest point, the Kyzart Ridge has a maximum height of 4400 meters (average height of 3800 m), length of 30 km, and maximum width of 16 km. At this point the basins divide into Kochkor River basin in the east and Jumgal River basin in the west. The general terrain at both sides of the road is mountainous and mainly grasses which mostly found in spring and summer. Shrub vegetations (Barberry (Berberis spp), Wild Rose (Rosa spp), Buckthorn (Hippophae rhamnoides), Caragana spp and others) can be found along the creeks that drains into the main Kochkor and Jumgal rivers.

80. At around km 128, the road descends into the Jumgal valley - altitude valley bottom basin 15002600 m, length of 80 km within the bottom, within the maximum width of the bottom 25 km – and enters the Jumgal village and proceeds along the valley floor up to Bashkugandi (elev 1850m). The roadside terrain is mainly grassland devoted to animal grazing. Local vegetation is sparse, however in some parts of the road are lined with trees (mainly poplars, elms and black locust).

2. Climate

81. Much of the Naryn regions are ridges. The climate is continental; winter is cold and long. The-lowest absolute temperature gets as low as - 45°C (below zero). The summers are short and cool. There are several climatic zones in the area: (i) at the height of 1400--1600m above sea level - desert, semi-desert; (ii) 1600--1800m, 1800--2000m – steppe; (iii) 2500--4000m subalpine and alpine zone;(iv) above 4000m zone of eternal snows.

82. The average temperature in January is - 15°C. The absolute minimum temperature (-50°C) was registered on the territory of Ak-Sai valley. In the area of the lake Chater-Kël, valleys: the Ak-Sai, Arpa, in the upper reaches of the Naryn, in the basins Son-kul have cold winters, warm summers short. During the day characterized by abrupt changes in temperature may be freezing even in the summer months. Average annual precipitation on the plains is 200-300 mm in the mountains a little more. The period of heavy rainfall in the second half of spring and the first half of summer, when the fall of 30 to 60% of annual precipitation. In the valleys of the amount of precipitation increases from west to east. The snow cover is in the valley of the up to 40 cm, in the mountainous area of up to 80 cm. In Kochkor valley because of strong winds snowfall are rare, and cover is unstable.

3. Hydrology, Water Resources, and Water Quality

83. Naryn region has more than 5,000 rivers and streams. Highland ridges of the perennial glaciers that give rise to many rivers that go far beyond the region. Glaciers are located at an altitude of 4000 m. The total area of glaciers is about 500 km2. Most glaciers are located on the ridges of Kakshaal. The largest is the Ak-Sai Ai-Tal Ortho-Tash. Also in the region there are

numerous alpine lakes and the biggest of them are Son-Kol and Chatyr -Kol.

84. Within the Naryn region flows the longest river of the country - the Naryn River, which supplies seven hydroelectric power plants. Naryn River is providing a huge flow of water that significantly affects the economic activity not only in Kyrgyzstan, but also Uzbekistan, Kazakhstan and Tajikistan. It flows within the ranges of 10-14 cu.km. The most important tributaries of the Naryn River: Small Naryn (407 m^3 / s), On -Archa (160 m^3 / s), Dzhergetal (65.4 m^3 / s), Kok -Gert (Kazhyrty) (64.5 m^3 / s).The Syr-Darya River within Naryn forms the second largest river in Central Asia - the Syr Darya.

85. The eastern watershed before the Kyzart pass forms the catchment that drains into Orto-Tokoi Reservoir via Kochkor River. The main rivers in this area are Zhany-Aryk River that joins Koch-Kor River at Km 67.The Kochkor River is a river in Kochkor District of Naryn oblast. It is formed by confluence of Karakol and Seok rivers. The river is 45 kilometres (28mi) long, the basin area 2,590 square kilometres (1,000 sqmi), and the average annual discharge 12.6 cubic metres per second (440cuft/s). Chu River is formed by the confluence of Kochkor River and Zhany-Aryk River near village Kok-Jar.

4. Ecological Resources in Project Area

86. Naryn oblast is considered rich in flora and fauna. Some of the species that thrive are relict Tien Shan blue spruce, herbs: buckthorn, ephedra, zverovoy, yarrow, valerian, wild rose and manyo thers. In the area there are reserves: Naryn and Karatal-Zhapyryk reserves, hunting re-serves: Kochkor, At-Bashy, Ugut etc.

4.1. Flora

87. Territory of the Epkin - Bashkugandy section refers to arable irrigated land on the site of steppes and deserts. According to geobotanical subdivision, the territory refers to inner Tien Shan province.

Range of vegetation types. Desert: thorn cushion plant, sod-grass steppes, tall grass meadow, cryophilic cushion plant, swamps, spruce forests, leafy summer green forests, deciduous shrubs and juniper stands. Great area is occupied by primitive plant aggregation with sparse vegetation. Type of belts - deserted - steppe with fragments of forests and meadows.

Dominant vegetation is: *Sympegmaregeli*, *Silver willow* (*Salix acutifolia*), Sea buckthorn (*Hippophaerhamnoides*), *Geranium regelii*, *Geranium himalayense*, *Kalidiumcuspidatum*, *Reaumuriasoongorica, Acantholimonalatavicum, Artemisia tianschanica, Stipacaucasica, Festucasulcate,Phlomisoreophila, Carexstenocarpa*. Out of medicinal plants, there grow Begger's rose, loose rose, Ural licorice.

4.2. Fauna

88. The territory of the project area is desert and semi-desert. By geographical zoning, the territory refers to inner Tien Shan and midland. Representative species of the given territory are:

(i) Reptiles: desert lidless skink, lizard, arrow-snake, copperhead;
(ii) Birds: little owl, mongolian plover, short-toed lark, tawny pipit, common chats, black redstart, rocky nuthatch, desert mongolian finch, roodyshelduck (in reservoirs), bearded partridge, chukar partridge (in open habitats), turtle dove,

black-bellied sandgrouse flies;

(iii) Animals: great horseshoe bat, sharp-eared owl-moth, tolai hare, sand eel, steppe polecat, stone marten, gray marmot, muskrat (in reservoirs);

(iv) Fish: Suusamyr scaly osman, Marina, trout, snakehead.

5. Endogenous and Exogenous Processes

89. **Seismic hazard**. According to seismic regionalization of the Kyrgyz Republic territory, the project area relates to 8-point seismic zone (SNiP KR 20-02:2009).

90. **Mudflow hazard**. Mudflow of storm origin may take place in Bashkugandy and Zhany-Aryk rural districts by threatening homes, bridges, roads and channels. Mudflow may take place once in two or more years on the major part of the area's mountainous territory. Mudflows of storm origin may happen within April-September, most likely within May–July.

Table 11: Forecast of Possible Activation of Mudflows and Floods

№	Rural district	River	Settlement	Facilities that might be affected
2	Bashkugandy	Mudflows, right bank, Bashkugandy River	Bashkugandy village	houses, homestead lands
27	Zhany-Aryk	Mudflows		Kok-Jar, Shybak canals

Source: MES KR website, 2015.

91. **Flooding.** Areas with high levels of groundwater are confined to lower terraces of Jumgal, river' valleys.

Table 12: Forecast of Possible Development of Flooding Processes

№	Rural district	Settlement	Flooding reasons	Recommended safety measures
45	Zhany-Aryk	Kyzart village	High ground water level	Construction of collector drainage network.
		Zhany-Aryk (northern part)	High ground water level, collector drainage network silted.	Clean-up, rehabilitation and construction of collector drainage network
50	Kuiruchuk	Kuiruchuk village	High ground water level	Regulation of irrigation, follow-up survey
53	Tugol-Sai	Tugol-Sai village	High ground water level	Conduct of geo-enginnering survey
66	Cholpon	Epkin village	High ground water level	Construction of collector drainage network

Source: MES KR website, 2015.

6. Socioeconomic Information

92. Kyrgyzstan's economy is trying to improve from its current poverty level. It is a mountainous country with dominant agricultural sector. Cotton, tobacco, wool, and meat are the main agricultural products, although only tobacco and cotton are exported in considerable quantity. The industrial exports include gold, mercury, uranium, natural gas, and electricity. Kyrgyzstan's economy is heavily dependent on two major items: (i) on gold exports - mainly from output at the Kumtor gold mine; and (ii) on remittances from Kyrgyzstani migrant workers primarily in Russia.

93. In 2011, World Bank reports that the per capita GNI of Kyrgyzstan was $920, which is considered as a low income country. With series of reforms from 2010, it tried to spur developments. Following strong growth in 2011, the Kyrgyz economy was hit by a significant drop in gold production due to geological movements at the Kumtor gold mine. The real GDP in

the first half of 2012 dropped by 5.6 percent as gold production at Kumtor fell by 60 percent. Excluding Kumtor mines revenue, the real output grew moderately at 3.9 percent with growth across all economic sectors.

94. The agricultural sector accounts for about a quarter of the country's Gross Domestic Product (GDP) and about one third of employment and has expanded rapidly between 1996 and 2002. This was due to the Government's successful completion of land reform, creation of a rural bank and agribusiness/rural advisory services, and establishing water-user associations and pasture committees.

Regional Information

95. Naryn Oblast is situated in the southeast of Kyrgyzstan is bordered on the east by the Issyk-Kul, in the north - Chui, in the west - Jalal-Abad and Osh provinces in the south - with China. The region consists of 5 districts (Ak-Talaa, Al-Bashy, Jumgal, Kochkor and Naryn). Naryn City is the administrative center of the region and the largest city in the Inner Tien Shan. Its total land area is 45.2 thousand square kilometers, accounting for 1/4 of the territory of Kyrgyzstan, and with 249.1 thousand people, which is 5.2% of the country's population.

96. In the past years the Regional Gross Domestic Product (RGDP) of Naryn oblast averages around 274.9 million or 6,709 soms per capita. The composition of RGDP by sector is as follows: industrial sector 114.6 million soms per year; retail sector 30.6 million soms; services sector 38.6 million soms; and construction and assembling works 91.1 million soms.

97. The Oblast's main imports include industrial chemicals, metals and machinery, while the exports are comprised of livestock, livestock products including hides, minerals, textiles and textile products. The main livelihood in Naryn Oblast is engaging in animal husbandry or agriculture. Private farms cover less than 5% of the utilised land area of the Oblast, with significant overgrazing in many places as distant pastures are not accessible due to poor road networks.

Local Information

98. The Section - «Epkin (Km 89) to Bashkugandy (km 159)" - of the project road passes mostly through the several villages of Jumgal Rayon. Basic social infrastructures are available in these villages, such as drinking water, and electricity. For heating purposes local people use charcoal and firewood. All of the villages have schools, with kindergartens in large villages.

99. Village Medical Points are found in every village and in rayon centres there are hospitals. Transport infrastructure is the main road with an asphalt surface (cold asphalt) and dirt roads.The bulk of the population is engaged in agricultural activities and livestock. The main products are wheat, potatoes, barley, meat, milk, wool, eggs.

7. Cultural and Archaeological Resources

100. There are several objects of cultural and historical significance in the project area. One notable item though is the presence of burial sites and cemeteries along the road. It is important that the road design and consequently the construction will ensure that impacts will be avoided or minimized. To obtain more detailed archaeological, cultural and historical information, a local specialist was engaged by PPTA to undertake this scope. This specialist had conducted a separate field work and presented his findings in a report.

101. In March 2016, an archaeological investigation was performed by a local archaeologist, historical and cultural heritage sites and objects in the vicinity of the project within the territories of Ton district of Issyk-Kul, and Kochkor and Jumgal district of Naryn oblast, Jaiyl district of Chui oblast in accordance with the Technical instructions and norms of the method of archaeological investigations[3].
Within the section the significant archaeological resources consist of the following:

(i) Complex mausoleums (N41.97764 E74.91014) – around 75 km from Kochkor to Chaek. This complex of mausoleum is transected by the road at this spot, and which is dated back to XVIII-XIX cc, 138 km Clay mounds. Located close to the road (3 - 3,5 m) on the RHS and approximately 100 meters to the LHS.

Figure 4: Complex mausoleums (N41.97764 E74.91014).

102. Based on the results of the research, report has been prepared, which was sent to the Ministry of Culture and Tourism of the Kyrgyz Republic (MoCIT KR) for opinion (Appendix F). This object of historical and cultural heritage is the object of study and protection of MoCIT KR. To prevent exposure to this object it is necessary to develop Management plan for object of cultural heritage, according to the law protection zone of object is not less than 50 m. Therefore, all questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government.
On the basis of the findings (Appendix F), during the detailed design, Consultant should send the

[3]Provisional Regulations on the procedure of the archaeological survey. Approved by Decree of the Government on July 11, 2014 under the number 386;Avdusin DAField Archaeology of the USSR.- M., 1980. - p.58-113.

road design along with the Management plan for object of cultural heritage for coordination with MoCIT KR.

103. In accordance with the Law of the Kyrgyz Republic on historical cultural heritage (art. 32, 33) in the event of cultural monuments found, all construction works must stop and report the findings to the local executive authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National University after Balasagyn), and in MoCIT KR.

8. Sensitive Receptors

104. Sensitive receptors are those areas where the occupants are more susceptible to the adverse effects of exposure contaminants, pollutants and other adverse substances that the activities may generate. These generally include, but are not limited to, hospitals, schools, bazaars, mosques/churches, convalescent facilities and cultural, historical or archeological sites. Such facilities along the project road section as referred to the alignment sheet are:

(ii) Jumgal village (km129+400) – near the school along the road, LHS;
(iii) Kuyruchuk village (km144+000) – near the Azamat shop, RHS;
(iv) Tugol Say village (km151+000) – near the shop of Kutman, LHS
(v) Bashkugandy village (km 159+000) – near the school adjacent to the road, RHS
(vi) Cemeteries:
- ✓ 158 – 160 km Cemetery on the (LHS), around 6 m from the road.
- ✓ 153 km -155 km Cemetery (RHS) on a hill 20-50 m away from the road.
- ✓ 152 +300 km Cemeteries on the both sides for Tugol-Say village. The distance between the boundaries of the two cemeteries, 25m; width of the existing road 13.4m. From the border of the cemetery (RHS) to the road 3 m; opposite side (LHS) 3-5 m.
- ✓ 141 km +300 Cemetery on the left side (LHS) of the road, 10-15 m from the road.
- ✓ 138 km Complex mausoleums - Clay mounds both sides. Located close to the road (3 - 3,5 m) on the RHS and approximately 100 meters to the LHS.
- ✓ 132 km Cemetery on the LHS located around road 20-30m from the road.
- ✓ 131 km Cemeteries on the both sides (RHS - 3 m, LHS – 3,5 m from the road).

105. Aside from the possible impact due to noise, dust, vehicular emissions during construction and operations of the project, public safety can be a concern when trucks, equipment and construction materials are brought to the sites near these sensitive receptors. Disturbances may occur during class hours and treatment period and traffic safety may be concern with hazards to children as they walk or commute to and from schools.

9. Baseline Measurements

106. Baseline measurements in water quality, air quality and noise/vibration were obtained in selected spots. Water quality measurements were obtained where construction will impact river quality. Air quality and noise/vibration measurements were obtain in likely receptor areas. These results shall be used as reference parameters in monitoring the impacts of construction and operations of the project. International standards were also presented herewith for comparison with Kyrgyz standards; subsequently the more stringent standards shall be used as monitoring requirements.

107. Water quality and air quality measurement were done by the Ecological monitoring Department of the SAEPF. While noise and vibration measurements were done by the Department of the sanitary protection of the Ministry of Health.

9.1. Water Quality Measurements

108. As baseline data in water quality, it was decided that measurements would be done for the most relevant parameters: Turbidity and Total Petroleum Hydrocarbons (TPH). Therefore, the contracted laboratory was instructed to obtain the measurement in bodies of water adjacent to or being crossed by the project road. Within the section Epkin (Km 89) to Bashkugandy (km 159), water body crossing the road is Tugol-Say River. However, for this site no water quality measurement was done for the baseline survey, since civil engineer has not decided on bridge replacement or rehabilitation options, during the first field visit in October 2015. In subsequent phases, need to conduct water quality measurement in this point designated for monitoring purposes. The water quality parameters to be applied within the in the monitoring activities during construction is shown below.

Table 13: Water Quality Measurement Parameters the Section

No	Locations	Km in Road	Turbidity cm	TPH, mg/l
Maximum Permissible Concentrations (MPC)				
According to national requarements			**Not less than 20**	**0.3**
According to EC legislation			**Not less than 1,0 metres/depth**	**Not visible in the form of a film**
Tugol-Say river, Bridge(148+874)			-	-

9.2. Air Quality Measurements

109. Measurement results will serve as reference values for monitoring during the construction phase. Air quality was measured at 4 points along the road, which were identified as areas sensitive to air pollution due to the proximity of schools, street markets and other special facilities.

110. In the project area there is no large industrial source of pollution affecting the air quality, but it is influenced by dust from cars. The nearest station air quality monitoring from the project area is located quite far away - in Tokmok (Chui valley) and Cholpon-Ata (Lake Issyk Kul). Naryn region has no air quality monitoring stations.
Most of roads are located along foothill and mountain areas with the perimeter surrounded by mountain ranges. The height of the terrain within 700 - 3615 m above sea level. Within the territory dominated by wetlands are dotted with sparse vegetation.

111. The only source of dust, noise and vibration is road transport. The content of inorganic dust in the air due both to climatic conditions of the region and with the movement of vehicles. For air quality the most relevant parameters to be measured would be Dust, SO2, and NO2. Accordingly, the contracted laboratory was instructed to obtain the measurement in populated areas along the project road. The results of such air quality testing are shown below.

Table 14: Air Quality Measurement Results

No.	Measurement Point Locations	Chainage	Air Quality Parameters (mg/m3)		
			Dust	SO2	NO2
Maximum Permissible Levels (KR standards)			0.5	0.5	0.085
Maximum Permissible Levels (IFC (WHO standards))			0.02	0.02	0.04
1	Jumgal village,near the school on the road, LHS	129+400	<0.26	<0.05	0.018±0.003
2	Kuyruchuk village, near the Azamat shop, RHS	144+000	0.28±0.07	<0.05	<0.02
3	Tugol-Sai village, near the shop Kutman, LHS	151+000	0.28±0.07	<0.05	0.017±0.003
4	Bashkugandy village, near the school adjacent to the road, RHS	159+000	<0.26	<0.05	0.029±0.005

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

9.3. Noise and Vibration Measurements

112. The main sources of the noise in the study area are those generated by vehicle engines, especially those carrying heavy loads running over unpaved road and at low speed. This noise is also aggravated by the noise of friction of tires on the road surface. Since there not many settlements in the area, noise is not a major problem.

113. The noise level is expected to decrease rapidly with distance from the road, all noise measurements were taken at 3 m from the roadside: at a distance of 8-9 meters from the road where reconstruction will be done, noise level drops to a level less than 60 dB (a), i.e. up to the recommended maximum level at night for the populated areas. According to the regulations limits outside noise from road transport is 80 dBA for vehicles with an engine capacity of 150 kW or more. When measuring noise in the environment as it is necessary to measure the wind speed, air temperature, barometric pressure, altitude and time data recording of the measurement (e.g., day or night).

114. Vibration is a danger to human health and the environment and mainly generated by transport, construction equipment, industrial facilities and other sources. In the area of the planned works vibration occurs when operating heavy vehicles. The most effective vibration shield can be realized at the stage of designing the project. When designing the vibration parameters will govern: sanitary and technical standards for vehicles and vibration sensitivity for building structures. Normally, as a means of protection against vibration effects on the environment is the usage noise protection wall or fence of varying heights. Low construction near the tracks can significantly reduce vibration exposure. The simplest and most effective is the usual earth mound with upset it shrubs, which also serves as a sound absorber, and at the same time strengthens the roots of the earth mound.

115. The enforcement of the standards of pollution noise and vibration lies with the Department of Sanitary and Epidemiological Surveillance Ministry of Health of the Kyrgyz Republic. The measurements were done for points at 3 m from the roadside. The noise and vibration levels are below the prescribed limits as shown below.

Table 15: Noise and Vibration Measurement Results

No.	Measurement Points	Locations	Aspects		
			Noise, dBA		Vibration, dB
			Day	Night	
KGZ Maximum Permissible Levels			70	65	108
IFC Guidelines: - for Residential; institutional; educational			55	45	
- for Commercial & Industrial			70	70	
1	Jumgal village,near the school on the road, LHS	129+400	69	-	92
2	Kuruchuk village, near the Azamat shop, RHS	144+000	58	-	91
3	Tulgo Say village, near the shop Kutman, LHS	151+000	53	-	92.3
4	Bash-Kuugandy village, near the school adjacent to the road, RHS	159+000	42.7	-	95

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

E. Environmental Impacts and Mitigation Measures

1. Impacts in the Project Phases

116. For the Section Epkin (Km 89) to Bashkugandy (km 159), the construction entails a number of activities which are expected to introduce impacts and disturbances to the general environment, especially during the construction period. Most of these impacts are confined within the right-of-way, construction sites, and facility sites; while some activities can affect the outlying areas or even a wider area, especially if not properly mitigated.

117. The environmental impacts and mitigation measures presented in this IEE Report were based on the results of the conducted field surveys. The section Epkin (Km 89) to Bashkugandy (km 159), will entail upgrading of road along its existing alignment. In some spots, road runs close to sensitive receptors such as schools, mosques, bazaars, historical and archaeological sites or others. It is anticipated that main impact categories will be due to the following activities: (i) construction works within or close to settlements result in noise, vibration impacts, emission of pollutants to air and vibration which is especially of concern when the Project road comes close to sensitive receptors, (ii) site clearance activities result in loss of top soil and vegetation structures, (iii) aggregate sourcing, crushing of aggregates and asphalt plant operation may have severe impacts in case of unsuitable site selection or management. Additional impacts refer to (iv) impacts from bridge rehabilitation/construction, (v) potential impacts on surface waters and potential impacts on natural habitats and biodiversity.

118. The main impacts from reconstruction of the road are described below.

Air pollution

119. During construction concentration of toxic substances in air depends on a type of automobile engines (carburetor, diesel), on engine power, traffic density and possibility of distribution of these substances in air. Concentration of harmful products in the air decreases as the distance from the carriageway grows and it depends on wind speed and direction and on value of incoming solar radiation. Upon reconstruction of the road, air might be polluted by exhaust emissions of construction equipment and dust. Both of these factors will be of short duration and will have minimal impact on people (excluding builders, who must wear protective masks).

120. Construction machines and machinery are sources of emission of pollutants during construction: exhaust gases (CO, NOx, SOx, etc.) coming from trucks, construction machinery; dust generated due to vehicular traffic, operation of equipment, upon excavation and welding.
During the construction, those equipment and machinery emit the following pollutants into air:

(i) Carbon Monoxide;
(ii) Hydrocarbons;
(iii) Nitrogen Dioxide;
(iv) Soot;
(v) Sulfur Dioxide;
(vi) Iinorganic Dust
(vii) Benzpyrene

121. Given the linear stretch of the road to be reconstructed, the entire road machinery will concentrate on construction site.

During operation, basic impact is related to traffic intensity.

The main pollutants are:

(i) Carbon Monoxide;
(ii) Hydrocarbons;
(iii) Nitrogen dioxide;
(iv) Plumbum.

Noise Impact

122. Within the period of construction works, sources of non-continuous noise are running engines of construction and road-building machinery. Sound is expected to generate at the construction site upon operation of construction equipment, delivering of building materials, digging of trenches and pits, removal and delivery of soil etc. According to construction norms 2.2.4/2.1.8.562-96, equivalent value of sound level at the work site (dump trucks) is equal to 70 dBA for broadband non-permanent noise level. During the construction period, road machines and machinery will create noise and vibration. On territories of villages, sensitive recipients are hospitals, schools, gardens and historical & archaeological structures adjacent to the road.
At sensitive receptors within settlements and beyond:

(i) Jumgal village (km129+400) – near the school along the road, LHS;
(ii) Kuruchuk village (km144+000) – near the Azamat shop, RHS;
(iii) Tulgo Say village (km151+000) – near the shop of Kutman, LHS
(iv) Bashkugandy village (km 159+000) – near the school adjacent to the road, RHS
(v) Complex of mausoleums (km 138) – RHS, LHS.
(vi) Cemeteries and mausoleum.

123. In during operation period, after reconstruction of road, level of noise and vibration impact shall depend on road traffic intensity and road pavement. However, having studied calculations of similar facilities may conclude that levels of noise impact will be low and sound wave shall spread to a distance of less than 5-8 m from the road and at a distance of 8 m from the road noise and vibration levels of die down. According to measurements carried out in November 2015, the existing road coating noise and vibration levels 3 m to both sides do not exceed the required standards (table 15). In the villages on that distance are located fences or yards of the local residents. The impact will be insignificant.

Surface water

124. During construction period, surface waters may be polluted due to discharging of production and domestic wastewater, flowing of chemical and mechanical pollutants from the road into water. Some pollution of surface water may result from spills of fuel and lubricants from equipment and containers to streams by washing. It may also be polluted during construction and reconstruction of bridges.

125. Out of common pollutants of water bodies, the biggest concern may cause penetration oil productions into water. First signs as individual colored spots appear already when upon spilling of 4 ml/m2. Maximum permissible concentration for oil and oil products is 0.1 mg/l - 0.3 mg/l (according to Kyrgyz standards). To prevent contamination of surface and groundwater, it is necessary to provide mitigation measures, which will be described in the Environmental Management Plan (EMP).

126. During the construction period, water bodies will be affected upon repair, widening 1 bridge Tugol-Sai watercourse (148 км+874) and 134 culverts will be replaced. This impact will be expressed in possible contamination by soil, remaining parts of pipes, concrete headwalls, oil products, oils and by debris. During operation period surface water will not be polluted, except for extraordinary emergencies.

Contamination and erosion of soil

127. During the construction period, asset of work processes associated with construction of roadbed usually causes the greatest damage to environment. Soil contamination is first observed on lands temporarily used as borrow pit, construction site as well as on the road being reconstructed. Soil might be also contaminated by installation and operation of asphalt concrete mixing plant. Soil is mainly contaminated due to precipitation of solid and fine silt fractions of particles to pavement from air. Such particles are brought by car wheels from roads and driveways with unimproved pavement, partial loss of transported loose goods, tire and pavement abrasion, as well as by toxic components of exhaust gases of cars. Soil might be contaminated by POL coming from construction equipment. It is assumed that this effect will be minimal and take place only within the roadside. Such impact might be reduced, if machinery is maintained in good condition by proper disposing of used oil. Soil shall be slightly eroded in the roadside due to road reconstruction, since major work is executed on the existing road with protective works in the drainage system. During the construction period, impact will be expressed in the form of loss of topsoil in areas adjacent to the road, garbage, spills of oil products and oils.

Description	Unit	Quantity
Excavation of top soil (vegetative layer)	m3	282,800
Excavation to spoil of unsuitable and surplus material, common soil	m3	576,400
Excavation to spoil of unsuitable and surplus material,rocky ground	m3	84,500.00
Formation of embankment, common material from cut	m3	300,200
Provision of Subgrade, selected material	m3	128,800

128. During the operation period, the soil will be contaminated by engines exhaust emissions containing lead compounds. Roadside soil contamination occurs mainly due to accumulation of lead compounds in soil, which are contained in exhaust gases of car engines. About 80% of lead contained in exhaust gases penetrates into the soil. We need to note stability of lead compounds in soil and its intensive accumulation in vegetation followed by transfer to animals and humans.

At roadside area, about 50% of lead emission in the form of small particles is immediately distributed over the surface of adjacent territory. Considering the results of similar projects' calculation, we can conclude that content of lead compounds in the roadside soil will not go beyond the earth roadbed and will not exceed MPC during operation of road.

Flora and Fauna

129. During the construction period, reconstruction of road may cause insignificant impact on flora and fauna due to accident going of construction machinery beyond the construction site. There might be observed the following factors as well:

(i) Factors that prevent natural migration of species to temporary and permanent habitats, exchange of gene pool, reproduction, etc. They are road construction elements - slopes, embankments, excavation, grade, fence and roadbed.

(ii) Anxiety factors that frighten animals and violate their habitat are noise, vibration, light from the traffic flow. As we know animal's reaction to disturbance factor may differ according to species. Collision with oncoming traffic can cause death of fauna representatives on roads. All these factors lead to decrease in number of populations.

130. Given that the road had existed for a long time before reconstruction, established way of wildlife habitation in adjacent territory, we can assume little additional impact on flora and fauna, which will be caused by road reconstruction. Within the alignment, there are considerable trees that will be affected. In the preliminary assessment, the estimated number of trees to be affected is 100. Impact on flora and fauna will be minor during operation period.

Social environment

131. During construction, the most dangerous type of transport pollution is emission of exhaust gases into air and other types of energy loss: noise, vibration, electromagnetic radiation. When mitigation activities are properly carried out, this negative impact will be reduced. Impact of construction process will last for relatively short time, though there may occur accidents due to the poor state of the road. In general, the effect on the social environment of the road reconstruction project will only be positive. During construction period, there will be created many jobs, particularly for local residents, who can participate in reconstruction of the road. Construction of the road shall radically improve movement conditions, travel time on the road and increase road safety. This, in turn, shall result in improvement of social situation of population in the project area. During operation period, despite existing negative impacts of the road on the human habitat, flora and fauna, the road has well-defined value in socioeconomic development of society and livelihoods of population. With improvement of transport - operating characteristics of the road due to its rehabilitation, the quality of services to public will be significantly improved. During operation period, the given impact will not take place.

Cultural and historical sites

132. During constructionThe impact to cultural sites will be in the form of physical abuse and vibration exposure from operating machinery. Physical disturbance of these sites by construction workers. During construction the impact to the following objects below.
Cemeteries:

(i) 158 – 160 km Cemetery on the (LHS), around 6 m from the road.

(ii) 153 km -155 km Cemetery (RHS) on a hill 20-50 m away from the road.
(iii) 152 +300 km Cemeteries on the both sides for Tugol-Say village. The distance between the boundaries of the two cemeteries, 25m; width of the existing road 13.4m. From the border of the cemetery (RHS) to the road 3 m; opposite side (LHS) 3-5 m.
(iv) 141 km +300 Cemetery on the left side (LHS) of the road, 10-15 m from the road.
(v) 138 km Complex mausoleums - Clay mounds both sides. Located close to the road on the right (RHS) (3-3,5 m) and approximately 100 meters to the left (LHS).
(vi) 132 km Cemetery on the LHS located around road 20-30m from the road.
(vii) 131 km Cemeteries on the both sides, RHS - 3 m, LHS - 3.5 km from the road.

133. The expansion of the road may be affecting this site of cultural heritage, but it is necessary to take mitigation measures from physical impact of machinery and equipments, as well as construction workers. It is necessary to determine the protection zone of these objects, and coordinate with MoCIT KR and local authorities and during construction to ensure their fencing. During operation period no significant impact is expected.

Traffic Safety

134. During construction period, construction and road building machinery shall influence on traffic resulting in impeded movement, possible crowding of cars and machinery, violation of traffic rules and possible emergencies. In order to prevent such situations, we need to provide for mitigation measures to regulate traffic.
During operation period, of the impacton traffic will be minimal due to arrangement of road signs and markings.

LARP, Social Issues

135. During construction period, persons, who sell and plots will be covered by road extension, will be subjected to impact. Fences of private persons, lands of municipal areas, business facilities and government organizations might be affected. By the time such impact may be temporary or permanent relocation.The impact will be reduced due to developed plan of resettlement and economic displacement. Below is a table of the LARP report, which shows the number of people, exposed to resettlement. Affected people will work with compensatory mecanism, according to LARP plan.

Table 16: Summary of project impact magnitude according to the geographical location and types of impact

No	Village	TOTAL Affected land parcels	AHs	Vulnerable	Severely affected	Total affected perennials	No of affected fruit - trees	No of non-fruit trees	Municipality	Homestead	Parcels w/t affected fence/walls	Affected Movable Kiosk	Affected Operating Business	Non-operating
1	Jumgal	35	34	15	0	303	13	290	3	32	32	2	2	2
2	Kuiruchuk	12	12	6	1	89	0	89	1	11	7	0	3	0
3	Tugol-Sai	3	2	1	0	0	0	0	0	3	3	0	0	0
	Total	50	48	22	1	392	13	379	4	46	42	2	5	2

There will be no impact during the operation period.

Construction camps

136. During construction period, construction camps will be established outside the territory of villages. Works schedule will be controlled in camp sites. There may be formed of solid domestic waste, bad housekeeping, soil contamination may take place, local flora and fauna might be impacted on the territory and thereby cause concern of local population. The Environmental Management Plan includes measures focused on mitigation of such impact. During operation period, this issue is not considered.

2. Mitigation measures

2.1 Pre-Construction and Design Phase

137. The Pre-construction and Detailed Design Phase covers the period when the Design Consultant accepts the design work up to finalization of the Tender Documents and prior to the engagement of the contractor for the actual construction. The engineering designs shall include all the necessary work relevant to detailed site surveys, design computations, technical drawings, environmental and social requirements, technical specifications and tender documents. This will be followed by Tendering process from which the Client/Employer shall decide on the Contractor for the civil works.

138. Avoidance of impacts can be executed by proper planning/preparation during the Pre-engineering and design phase. Contract documents should include clauses be formed based on the IEEs and EMPs of the project and communicated with sufficient emphasis to the Contractor. A number of these impacts are discussed below and reflected appropriately in the EMP.

139. During the pre-construction and detailed engineering phase, the design engineers should be guided on a number of items need to be considered in the production of road and bridge designs, and which will have relevance to the environmental aspects of the project. These items are as follows:

(i) To minimize impacts of erosion, side slopes of embankments will be designed to reflect soil strength and other considerations as included in the project specifications in order to reduce slips or erosion; for embankments greater than 6m, stepped embankments will be used. Use of “green measures”, such as planting native vegetation will be a favoured mitigation approach

(ii) For geology and seismic conditions, cuts on the mountain and hillsides should be stable or be reinforced; earthquake loading shall be applied to the design of structures, to ensure that seismic events do not have negative impacts during the operational phase of the Project.

(iii) On Flora and fauna – The Design Engineers should provide guideline in the design for the Contractor to ensure that his ancillary facilities such as asphalt plants, construction camps and others are properly sited to protect indigenous flora and fauna. The Contractor should be instructed to avoid loss of trees, where possible, and should employ techniques such as asymmetrical widening. Where trees must be felled, the Contractor should be instructed that each tree removed should be replaced by at least two new saplings of the same or similar species and be planted at suitable locations, or as designated by the tree owner.

(iv) On cultural and historical sites – The Design Engineers should provide guideline in the design for the Contractor to employ techniques during construction works with minimal or no impact to any cultural and historical structures along the road.

In the project design, include installation of physical cordons around identified sites to minimize construction impact and alert workers/people from disturbing cultural and historical sites. Conduct visual observation of the objects in cemeteries and mausoleums to document their state before the construction works jointly with MoCIT KR and local authorities.

(v) Health and Safety – The Contractor shall be provided guidelines in the design or in the Technical Specifications to ensure that traffic safety issues shall be responded to during the construction phase of the Project, including incorporation of: (a) Safety barriers; (b) Traffic signs; (c) Road crossings; (d) Speed bumps; and (e) Speed limits.

140. **Uncontrolled Establishment of Material Sites** - This situation will be avoided by requiring the Contractor to follow the mandatory steps in establishment of material sites as defined by KR Regulation, specifically to acquire all required permits material sites from local authorities, get approval from regional departments of SAEPF under the Government of KR, prepare a "Quarry or Borrow Pits Development and Restoration Plan". All of these relevant documents should be submitted to IPIG-MOTR of KR for the purpose of securing a license to extract materials from the State Agency for Geology and Mineral Resources.

141. **Unmanaged waste asphalt-concrete temporary storage and processing areas** – Old asphalt pavement will be removed and be replaced in the new pavement. Storage or stockpile areas of old asphalt should be situated where they pose no risk of contamination to the environment. In coordination with local authorities, location of old asphalt stockpile areas will be identified, with a minimal distance of 500m from any settlement. Preferably, storage areas should be in state-owned land. If private lands will be used, a negotiated rent on the property should be established with the land owner. All temporary asphalt pavement storage and processing areas shall be agreed upon with the regional departments of SAEPF of KR under the Government of KR. Old asphalt should be trucked away in blocks and stockpiles should be no higher than 2.5 m.

142. There are two ways of using old asphalt:

(i) The transfer of old asphalt to Local RMU of MOTR for upfilling of the secondary roads;

(ii) Use the old asphalt to strengthen the top coating of the road shoulders by adding the gravel-sand mixture with 15cm thickness.

143. **Establishment of Asphalt and Concrete batch plants** – Due to the noise and emissions, batch plants for the pavement should be installed with a minimum distance of 500m to residential areas. Should aggregate crushing be adjacent to the batch plants, dust suppression equipment (standard on most modern crushers) will need to be installed on the crushing unit. The entire process of establishing a plant will be controlled by SanPiN 2.2.1/2.1.1 Design, construction, reconstruction and operations of enterprises; planning and construction of residential sites/ and Sanitary-hygienic zones and sanitary classification of enterprises, structures and other facilities" and Sanitary-epidemiological rules and standards. SanPiN 2.2.1/2.1.1.006-03.

144. **Material Transport Route Plan** – Estimates from the preliminary design for the section show that 690,000 cubic meters will be the cut volume and 600,400 cubic meters for fill volume for the road section. Truck traffic will considerably impact local roads as well as the communities they traverse. Haul routes should be planned with CSC with sufficient maintenance to minimize

dust, noise generation and disturbance to residents by restricting the hauling time between 07:00 and 18:00. For Quarry site, the most probable sites are along Jumgal River. During the field investigations by the material specialist, suitable construction materials were located and inspected. The following are the possible borrow areas for the section:

No.	Location	Description
1	Km 70+000, km 76+000.	On LHS a mountain is located, which consists of gravel and gravel-sand material. These materials can be used for the sub-base and embankment.
2	Km 89+000, 94+000, 101+000	Open borrow pits are located in the villages of Chekildek, Cholpon. The subsoil consists of gravel and gravel-sand.
3	Km 108+000.	On the RHS is the loosened rock that can be used for the road pavement. Other sub-soils consists of gravel.
4	Km 145+000, km 160+000	On RHS is an old open pit with loamy clay subsoil.

Source: The Consultant.

145. **Environmental Safeguard Training** - CSC will designate his own environmental specialist for the implementation of EIAs, their EMPs and monitoring compliance with environmental clauses contained in the contract specifications. Correspondingly, the Contractor will do the same. Preferably during the early part of the construction, the CSC will provide sufficient briefing seminar on EMP implementation and compliance monitoring for the CSC's inspectors as well as the contractor. Such seminar should be conceptualized during the design phase.

146. Along the rehabilitation segments of the Section "Epkin (Km 89) to Bashkugandy (km 159)," the expected main ecological impacts at the design phase of the project relate to minimizing the loss of trees along the road sections. Impacts on the ecological environment are minimal since the project activities will be mainly located on the existing road corridor.

147. **Water contamination** can occur in Tugol-Say (148+874) river and other streams crossing the road. The design engineer should consider the imminent contamination issue during construction of bridge and road segment at these points. Special measures and technical specifications are clearly stipulated to eliminate any adverse water quality impacts. Construction methodology from the Contractor should incorporate measures to prevent and to mitigate water contamination during construction. Although, there are no special protected areas or biodiversity hotspot within 500m on either side of the alignment for its entire length, the river bank and the pond can be considered as ecologically relevant sites which warrant special consideration. The design engineers should take these items into consideration in finalization of the designs.

148. **Tree Management Plan** – Within the alignment, there are considerable trees that will be affected. In the preliminary assessment, the estimated number of trees to be affected is 100. A replacement ratio of 1:2 is recommended to ensure that the tree replacement rate does not fall below the number to be replaced. The CSC shall produce the plan with IPIG-MOTR. Areas for replanting shall be decided with IPIG-MOTR and the local officials. The cost for replanting can be part of the project to be implemented by the Contractor during the construction period to ensure that plant care will be provided. Since the target will be survivability of the trees, payment can be contingent to the number of trees that will survive within the contract period.

149. **Maintenance of Access during construction** – Construction of bridges and culverts over water necessitates detour roads to be temporarily arranged. In so doing, normal traffic will

be impaired and cause access issues to motorists. In addition, these detour roads need to be maintained for connectivity and safety purposes. Traffic plan incorporating these detour roads should be formulated by the contractor. During the design stage, the designers should also anticipate the need for detour and to include this issue as part of the work requirements. Adequate local assessment and consultation should be done in order to avoid this particular social issue during the actual construction.

150. **Livestock and Pedestrian Crossings** – Since the road section traverses residential areas, farmlands and pasture grounds, the need to provide pedestrian and livestock crossing becomes important. Category II Road allows design speed of 120 km/hour in flat terrain (100kph in cross-country and 60 kph in mountainous terrain) for vehicular traffic, such that crossing people (especially children) and livestock (sheep, cattle, horses, etc.) pose real danger. The design should identify spots for safe location of these crossings in coordination with the local residents. These crossings should also be dimensioned appropriately to adequately serve the purpose, considering its intended function and safety considerations. It is important to have full utility of these road features to serve the needs of the residents and the agricultural community. The crossing of people in the residential ares will be installed through every 200-250 m.

151. **Bus Stops** – With the improvement of the road, it is anticipated that bus traffic, especially by the mini-buses (marshrutka) will increase. With the new road, for safety purposes, designated bus/transport stops will have to be decided in the detailed design. This required sufficient discussion with MOTR and the local community On the designed section 16 bus stops are provided along the road

152. **Cultural and historical sites -** The objects of historical and cultural heritage are the objects of study and protection of the Ministry of Culture and Tourism of the Kyrgyz Republic (MoCIT KR). To prevent exposure to these objects it is necessary to develop Management plan for cultural and historical sites, according to the law protection zone of objects is not less than 50 m. Therefore, all questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government. On the basis of the findings of Archaelogical Study (Appendix F), during the detailed design stage, Consultant should send the road design along with the Management plan for objects of cultural heritage for MoCIT KR approval. Conduct visual observation of the objects in cemeteries and mausoleums to document their state before the construction works jointly with MoCIT KR and local authorities.

2.2. Construction Phase

153. A specific environmental section shall be included within the main Bid Documents indicating that the Contractor shall be responsible for conforming to the requirements of the EMP. As such this EMP shall be included as an annex to the Contract Bid Documents.

154. Consistent with ADB's SPS 2009, the implementation of measures prioritizes on avoidance; followed by reduction; then mitigation; and finally, if all else fails, replacement of what was impacted or compensation to the impacted parties. Under the guidance of CSC, the contractor will have to submit site-specific Environmental Management Plans (SSEMP) for the following prior to commencing operations: (i) SSEMP in the sensitive sites such as main residential and commercial areas, cultural and historical sites including cemeteries, riverbanks or other waterways; (ii) layout of the work camp with sewage management and waste management plan; (iii) sitting and description asphalt and crushing plants, equipment maintenance and storage facilities; (iv) spoil soil management plan; (v) borrow site management including restoration; and (vi) method statement for bridge reconstruction works. The SSEMPs shall be

endorsed by the construction supervision consultant before submission to IPIG for approval.The SSEMP shall then be updated from time-to-time to incorporate any changes in the field conditions while construction will be in progress.

155. The SSEMP should also contain the following Annexure:

(i) Cultural & Historical sites Management Plan.
(ii) Dust Suppression Plan
(iii) Camp and Workshop Management Plan
(iv) Solid and Liquid Waste Management Plan
(v) Borrow Pits Management Plan
(vi) Material Processing Plants/Equipment and Storage Facilities
(vii) Spoil Soil Management Plant
(viii) Material Source Management and Reinstatement Plan
(ix) Method Statement for Bridge Construction

156. The typical construction process will entail, first the closure or restriction of existing traffic at the work sites and establishment of detour road. The provision of the new detour road will entail, stripping and clearing of vegetation, excavation, filling and leveling of the area, provision of embankment fill and necessary surfacing for the existing traffic.

157. Road widening will entail earthwork and breaking of rocks, which need to be hauled to some designated stockpiles. These works by themselves disturb the natural surroundings, and affect vegetation. It is important that measures for proper maintenance of the detour road be established to respond to traffic and community safety, control of dust, noise and emissions. Replanting of affected trees should be done as soon as possible and schemes for detour roads and soil stockpiles should favor tree preservations. Waterways should be respected and contamination should be prevented.

158. **The succeeding stages would entail demolition of existing pavement and bridges**. This will involve scarifying old pavement structure, and earthworks to conform to design requirements. For the bridges, it will be breaking the structures at the existing connections and removal of deck and girder elements by use of heavy equipment. These old bridge components will be placed in designated areas, which will not impact the natural environment, impede traffic and cause safety concerns to the general public. The bridge abutments and underlying foundations will be excavated and removed to give way for replacement structures. This breaking, demolition and removal of old elements will generate considerable noise and dust and chunks of debris will drop into the existing waterway. To minimize the risk of water contamination, the demolition and construction activities will be highly advisable in the summer months.

159. **The succeeding steps will involve construction of the new pavement and bridges**. The pavement construction will entail embankment filling, subbase, base course and asphalt pavement layer construction. In the end the final wearing course will be laid along all throughout from the existing road, onto the approach roads, and onto the deck slab in such a manner to have smooth layer of road and bridge pavement. Embankment works will entail transport of approved fill materials from borrow pits or from cuts if found to be suitable. The suitable materials for subbase and base course will come from quarries or borrow pits of approved properties. These pavement substructures will be engineered and compacted to desired degrees with the use of graders, and compactors in accordance with designs and specifications. The asphalt pavement layers will be provided by asphalt plants with crushed stones and rocks for the

aggregate requirements. It will be the responsibility of the Contractor that asphalt plant would produce the necessary required bituminous mix in conformance to environmental requirements for asphalt plant siting and operations.

160. The bridge construction will start with the substructure such as the foundation systems and piers. This will be followed by the superstructure elements of girders, deck slab and railing. The construction of the superstructure components such as the girder and deck slab will involve installation of formworks, casting of concrete and in some instances, post tensioning of tendons when necessary. The important guideline to be brought forward is the use of precast elements to minimize pouring and casting of superstructure elements over water to minimize contamination. Concrete batch plants will provide the necessary concrete for these structural elements from approved sites with operational guidelines in accordance with environmental protocols and industry standards.

161. For the Section Epkin (Km 89) to Bashkugandy (km 159), the primary relevant issues consist of air and noise emissions, proper management of earthworks, waste materials and contractor good-housekeeping practices associated with fuel and lubricant management, work camp waste disposal, and occupation health and safety practices for the contractor's workforce. The following is a discussion of highlights of the details provided in the EMP.

162. **Air quality impacts** are expected to be generated by construction activities, such as, construction machinery exhausts, emissions from asphalt plants, dry exposed soils and material stockpiles, dust from haul roads and construction activities, as well as aggregate crushers, but will be temporary as the work progresses along the entire section of the road. Sensitive receptor sites within the villages of Jumgal, Kuyruchuk, Tugol-Say and Baskhugandy should be considered as areas of mitigation in terms of air quality, noise/vibration. Results of the periodic measurements should be used to monitor the level of impacts and corrective/mitigation measures be performed when these parameters exceed their allowable limits. Emissions can be minimized and controlled by proper and regular maintenance of equipment. Dust is controlled by regular water spraying on exposed areas.

163. **Noise.** Construction activities are expected to generate significant but temporary noises from various construction tools such as jack hammers and other similar machines that could produce noise of about 89-90 dBA at about 10 m from the work site. Also, vibration due to large pavement breaking machines as well as a big percentage of trucks going in and out of the area is expected to be generated within 6-8 m from the carriageway but attenuating at 10 m.

164. To reduce emission levels, the contractor must implement the following mitigating measures (i) keep construction equipment in good condition (ii) prevent idling of engines by shutting off machineries not in use for more than 3 minutes (iii) prohibit use of machinery or equipment that cause excessive smoke emissions (iv) utilize low emission machineries.

165. Noise attenuating devices and temporary baffles as well as earthworks storage areas should be used in sensitive areas in order to reduce noise levels and prevent unnecessary disturbance to the surrounding communities.

166. In order to reduce the negative impacts of noise, construction work must be limited to 7:00 - 18:30 in urban areas and 06:00 – 19:00 within 500 m of settlements as well as limiting hauling traffic through settlements. Good mufflers should be installed to trucks and equipment, especially when working near sensitive receptors. Also, noise generated must be limited to 70 db (A) and must be strictly enforced within areas of sensitive receptors. Monitoring of noise during

construction stage will be conducted according to the EMP.

167. **Surface water** – Several types of waterways are found to be crossed by the project road. These are either man-made such as irrigation canals and flood control ditches, as well as naturally occurring rivers. These waterways will become receptors of potential negative environmental impacts such as pollution from construction area runoff, and change in surface hydrology due to increased sediment load. Total amount of culverts will be 134, and 1 bridge on Tugol-Say watercourse. In order to mitigate negative impacts on the waterways, the following must be implemented: (i) store stockpiles of topsoil and other such materials at a safe distance from surface waters; (ii) long term stockpiles must be covered with grass or other suitable coverings; (iii) create settlement ponds where construction activities are near natural waterways.

168. Unsustainable construction practices such as improper handling and storage of construction materials (e.g., concrete, asphalt, lubricants, fuels, and solvents etc.) can pose risk of contaminating the waterways crossed by the project road. Embankments and construction materials like fill, sand and gravel can be washed out by rainwater into watercourses during downpours. Oil and grease from leaks in engines can also accumulate in surface waters and should be properly controlled. To prevent these, appropriate mitigation measures must be taken such as (i) regular maintenance of all construction equipment, (ii) chemicals and oil must be properly stored into impermeable and bounded areas away from surface waters (not less than 50 m).

169. Within the section, the spot are Tugol-Say River and streams crossing the road. The Contractor should be extra careful in this spot as construction activities can directly contaminate the surface water and consequently affect the biological species in this area. Contamination should be avoided and disturbance to biota be minimized. Water quality measurements should be done during actual periods of construction at these sites.

170. During the construction of bridges construction site dimensions shall be the minimum necessary. Construction site should be placed at levels that exclude them flooding. The discharge of polluted water, landfills, parking cars and the construction of temporary facilities within the water protection zones on the river banks. Construction sites should provide capacity for the collection of sewage and garbage.

171. In the water protection zones (not less than 50 m) of rivers it prohibits contamination of the earth surface, including the garbage dump, waste generation, as well as parking, cleaning and repair of motor vehicles and road construction machinery, fueling. All works in water protection zones must be carried out based on the permission from the local authorities.
It is prohibited extraction of local building materials in the water protection zones without permits of environmental authorities.

172. The project documentation should include the restoration work after the bridge construction: the removal of the bed of the river banks, backfilled during the construction of supporting structures; cleaning of the river bed and the flood plain from cluttering of the objects, extracting and hauling piles of scaffolding and temporary supports; dismantling of temporary facilities on the construction site and land reclamation, including borrow area and access roads.

173. The environmental impacts associated with this work can be minimized if culverts are rebuilt properly, i.e., properly sized and with the correct slope and downstream erosion/scour protection measures applied. If possible culvert work should take place during the dry season, since otherwise temporary bypasses will be necessary. However, a number of culverts convey

irrigation water, which flows, based on a prescribed irrigation schedule.Contractors will need to liaise closely with farmers to establish times when work can take place and not harm crop development. Nearly all structures will be concrete box culverts, precast, with each section set in place and sealed with a special commercially available gasket/sealant material.

174. **Disturbance of agricultural lands** can occur when trucks and equipment roll over them during construction activities. During construction, it can occur that equipment and trucks have to maneuver over agricultural lands and in so doing introduce compaction to these areas and render the soil unfit for agriculture. The Contractor should prevent these unnecessary disturbances on agricultural lands.

175. During site clearing and stripping, topsoil storage area should be identified. Mostly the roadside corridor is frequently used as temporary storage areas. These stockpile soil should be protected against erosion. This will be done by, for example, seeding the stockpiles with fast growing shallow rooted grasses. To ensure proper soil management the contractor will submit a soil management checklist to commencing operation. This checklist will include a simple listing of measures for minimizing water and wind erosion losses. As long as topsoil stockpiles remain unused, the seeded grass cover will remain in place.

176. **Borrow Areas** - When planning to open a new borrow site, the contractor, within the purview of this IEE, should have the extraction permit, approval of a development plan, and later on approval of borrow pit restoration plan. The Contractor shall obtain all required permits for use of borrow pits and disposal areas from local authorities, get approval from regional departments of SAEPF under the Government of KR, prepare a “Borrow Pits Development and Restoration Plan” and submit all necessary documents to MOTR of KR to obtain a license to extract aggregate materials from the State Agency for Geology and Mineral Resources. These requirements do not apply to existing borrow areas or aggregated facilities. When using private borrow pit, all permits (licenses, approvals from local authorities, regional departments of SAEPF under the Government of KR, etc.) are responsibility of the owner of borrow pit which should be indicated in the agreements signed between the contractor and the borrow pit owner. The contractor will need to prepare a site development plan which must provide the following information:

(i) capacity and operation hours of a borrow pit;
(ii) development and extraction sequence of borrow pit;
(iii) technique and mechanisms for stripping and excavation operations;
(iv) operation and time schedule for borrow pit development;
(v) extraction method and transport plan, including route(s);
(vi) safety rules and hours of operation;
(vii) expected quality of extracted materials;
(viii) topsoil storage/protection and environment protection steps; and,
(ix) rehabilitation of disturbed lands when site is decommissioned.
(x) Calculation of mobile sources’ emission charge.

177. To minimize dust, the contractor shall develop a dust suppression program and have it approved by the CSC. The Program will ensure unpaved haul routes leading to settlements be water-sprayed regularly to suppress dust. Trucks hauling earth/materials be covered when transporting materials, especially through settlements. Air quality measurements at receptor sites (primarily those specified in the baseline measurements) be done as prescribed in the Environmental Monitoring Plan.

178. **Disposal site for spoil soils and other construction wastes** – Excavation or cuts of soil materials along will require temporary or permanent areas for deposition. This should be done with proper arrangement with the landowner on which the excess soil will have to be deposited. Permanent spoil soil deposit areas should be coordinated with local officials and proper permit obtained accordingly. Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of topsoil, timeframes, haul routes and disposal site. For construction waste, the Contractor shall establish a solid waste management plan covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate local and national regulations.

179. **Safety for workers** and local people, especially around the sensitive receptors - The Contractor shall install necessary safety measures specified in the design or in the Technical Specifications to ensure that community and traffic safety issues shall be responded to during the construction phase of the Project, including incorporation of: (i) Safety barriers; (ii) Traffic signs; (iii) Road crossings; (iv) Speed bumps; and (v) Speed limits. Social impacts along the vicinity of the road during construction, such as impairment of the usual access, community health and safety concerns, plus socioeconomic conflicts. If any traffic re-routing needs to be done, sufficient advisory and notification should be provided to the people and motorists. Dust and noise nuisances should be minimized during construction. Protective barriers and fencing should be provided to prevent people and animals from loitering at the project site for safety purposes. During the construction phase, it may be inevitable that existing traffic will be disrupted and local accessibility will be impaired, which can cause problems with the local community. To mitigate this situation the Contractor should: (1) Submit a traffic management plan to local traffic authorities prior to mobilization; (2) Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions; (3) Allow for adequate traffic flow around construction areas; (4) Provide adequate signalization, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control; and (5) Provide temporary access where accessibility is temporarily restricted due to civil works.

180. **Impacts on cultural and historical sites** – During construction the contractor must apply in writing to the local authorities in defining the protection zones around these sites. Also Contractor should employ techniques during construction works (vibration) with minimal or no impact to any cultural, historical or archeological structures along the road alignment. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing cultural and historical sites, especially near the following:

Cemeteries:

(i) 158 – 160 km Cemetery on the (LHS), around 6 m from the road.
(ii) 153 km -155 km Cemetery (RHS) on a hill 20-50 m away from the road.
(iii) 152 +300 km Cemeteries on the both sides for Tugol-Say village. The distance between the boundaries of the two cemeteries, 25m; width of the existing road 13.4m. From the border of the cemetery (RHS) to the road 3 m; opposite side (LHS) 3-5 m.
(iv) 141 km +300 Cemetery on the left side (LHS) of the road, 10-15 m from the road.
(v) 138 km Complex mausoleums - Clay mounds both sides. Located close to the road on the right (RHS) (3-3,5 m) and approximately 100 meters to the left (LHS).
(vi) 132 km Cemetery on the LHS located around road 20-30m from the road.
(vii) 131 km Cemeteries on the both sides (RHS 3m, LHS-3.5 km from the road)

181. The Contractor should strictly instruct its workers on disturbance of these sites. In accordance with the Law of the Kyrgyz Republic on historical cultural heritage, in the event of cultural monuments found, all construction works must be stopped and report the findings to the local executive authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National Universtiy after Balasagyn) and MoCIT KR.

182.

183. **Asphalt, Concrete and Crushing Plant Pollution** - During the selection of a site for bitumen plant, concrete plant, stone crusher equipment, which emit pollutants, noise and transmits vibrations, the contractor will need to comply with SanPiN 2.2.1/2.1.1 and SanPiN 2.2.1/2.1.1.006-03, and establish a specific buffer zone around any such facility. In the KR this is referred to as a sanitary-hygienic zone, and is a mandatory element of any facility that affects habitats and human health. The sanitary-protection zone (SPZ) separates the area of an industrial site from residential areas, landscape and recreation areas, parks, and health resorts with mandatory demarcation of boundaries by using specialized information signs. The boundaries are as follows:

- Class II – SPZ 500m.
  - ✓ Production of asphalt-concrete at fixed plants.
  - ✓ Production of asphalt-concrete at mobile plants.

- Class III – SPZ 300m.
  - ✓ Production of crushed stone, gravel and sand, milling of quartz sand.

- Class III – SPZ 300m.
  - ✓ Borrow pits of gravel, sand, and clay.
  - ✓ Bitumen plants

- Class IV – SPZ 100m.
  - ✓ Concrete solution plants.

184. **Contractor Good Housekeeping**. Garbage and sewage and solid and liquid waste from equipment maintenance can be serious pollutants and disease vectors. The contractor will therefore need to practice good worksite and construction camp management. Inspections by the CSC environmental specialist will take place monthly and any compliance issues such as strewn garbage, open waste pits, oil soaked ground and unsanitary washing facilities for workers, the contractor will be subject to an immediate fine and a stop-work order will be issued if clean up is not underway within 12 hours of detection. If the contractor does not act, the CSC will retain an outside firm to clean up the area and this amount will be deducted from the contract total.

185. **Occupational Health and Safety**. For health and safety protection of workers and adjacent communities, the following shall be provided: (i) Adequate health care facilities (including first aid facilities) within construction sites; (ii) Training of all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work; (iii) Personal protection equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection in accordance with KR legislation; (iv) Clean drinking water to all workers; (v) Adequate protection to the general public, including safety barriers and marking of hazardous areas; (vi) Safe access across the

construction site to people whose settlements and access are temporarily severed by road construction; (vii) Adequate drainage throughout the camps so that stagnant water bodies and puddles do not form; (viii) Sanitary latrines and garbage bins in construction site, which will be cleared when reaching capacity by the contractors to prevent outbreak of diseases.

186. Where feasible the contractor will arrange the temporary integration of waste collection from work sites into existing waste collection systems and disposal facilities of nearby communities. This shall be taken into consideration when deciding the place for the camp. The contractor will arrange for extra payment if community services are to be used.

187. The contractor shall hire a qualified health and safety expert who will provide safety training to the staff according to the requirements of the individual work place. Prior to the commencement of works, the work site personnel shall be instructed about safety rules for the handling and storage of hazardous substances (fuel, oil, lubricants, bitumen, paint etc.) and also the cleaning of the equipment. In preparation of this the contractor shall establish a short list of materials to be used (by quality and quantity) and provide a rough concept explaining the training / briefing that shall be provided for the construction personnel. The contractor shall provide information to workers, encouraging changes in individual's personal behavior and encouraging the use of preventive measures. The goal of the information is to reduce the risk of HIV / STD transmission among construction workers, camp support staff and local communities.

2.3. Operations and Maintenance Phase

188. After the Handing-Over to the Client, a one-year defects liability period ensues, in which the Contractor will still be responsible in remedying any deficiency or flaws in the overall works.After which the Operation and Maintenance Phase follow, in which the Client takes over with full responsibility for the operations and maintenance of the road. Impacts on the environment shall be on the usage of the road by vehicular traffic and subsequent maintenance activities to retain the service level of the infrastructure.

189. The projected service life of the road is 20 years and over this operations period, the impacts related to traffic on the environment are rather viewed as cumulative on account of the functions of the road components and can be in conjunction with other activities. Time-wise these impacts can also be long-term as they may manifest after construction and continue to persist for the entire usage and operation of the road. The perceived impacts and corresponding mitigation measures during the operation of the road will be on:

(i) Traffic safety to the communities – traffic safety signages, signals, speed regulators, grade separation crossings, etc. should be installed. Enforcement of safe traffic speed should be heightened to instill discipline on motorists.
(ii) Biodiversity – areas which can be habitats of flora and fauna should be protected by the national and local government from public intrusion. Instructional signs should be installed and enforcement of regulations should be strengthened.
(iii) Water quality – spills from vehicles should not reach the bodies of water to avoid water contamination. Petroleum and chemical discharges from vehicles should be prevented by designating stops at safe distance from any existing waterways.
(iv) Air quality – the good air quality can be maintained by vehicles running in good condition to minimize emission levels. The authorities should discourage usage of outmoded vehicles with high emissions. Trees should be planted to act as carbon sinks to vehicular emissions.
(v) Noise – noise levels can be minimized by proper maintenance of vehicles. In

addition, sensitive receptors can be shielded from noise by installing sound barriers or planting buffer trees along the alignment.

Air Quality and Noise

190. As per estimate in the traffic study, the growth rate is as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After adding the diverted traffic and applying the growth rates the future traffic are around 2, 434 cars. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category II road will be sufficient to service the future traffic.

191. After computations the maximum traffic can be around 2, 434 vehicles per day, with this growth, will come the elimination of older more polluting vehicles from the fleet, fewer stops and starts due to better road conditions and traffic management, better engine technology and vastly more fuel efficient vehicles. Further, KR will receive better refined fuels with lower emission factors per liter used. The air quality in the project corridor was presented in Table 14 and estimate as normal. Conditions can be improved by enforcement of annual inspections, especially for the small and large buses and trucks, which contribute most of the emissions. Secondly the required use of catalytic converters and other pollution abatement devices needs to enacted into law and enforced. Having studied and considered various similar calculations to determine pollutant emissions by various traffic densities during the operation, we can conclude that the maximum ground-level concentrations of pollutants at a distance of 3 m to 5 m from the road shall not exceed the maximum permissible concentration.

192. A high grade road, properly signed, with good lane markings and careful intersection management, will allow the traffic to move more smoothly thus reducing the high emission due to frequent acceleration and deceleration. Road safety features such as, streetlights, traffic lights pedestrian crossings, livestock crossings and other visual means to reduce accidents will be installed along the road.

193. Noise - The noise survey completed in Nov 2015 (Table 15) showed that noise levels along the project corridor and for about 3 m on either side of the carriageway, not exceed the KR standards. Noise levels that interfere with sleep and impact schools and hospitals now exist along the road.
During operation period, after reconstruction of road, level of noise and vibration impact will depend on road traffic intensity and road pavement. However, having studied calculations of similar facilities may conclude that levels of noise impact will be low and sound wave shall spread to a distance of less than 5-8 m from the road and at a distance of 8 m from the road noise and vibration levels of die down. According to measurements carried out in November 2015, the existing road coating noise and vibration levels 3 m to both sides do not exceed the required standards (table 15). In the villages on that distance are located fences or yards of the local residents.

194. The only real mitigate measure is to install noise barriers, along the noisiest stretches, based on further noise testing during the operating period. An option could be the construction of earthen berms helping to deflect the noise. It may be possible to use the crushed asphalt as a base for building the berms, then landscaping them with topsoil and vegetation including local drought resistant plants such Loch broadleaf.
Therefore, noise testing will take place at the same sites used during the 2015 survey. The schedule will be conducted 2 times for a six-month period during year 1 of the operating period. The resulting date will be used to determine the best noise mitigation measure.

Soils and erosion control

195. If the contractor properly implements the measures defined in the EMP for the construction period and CSC's environmental specialist completes a post-construction safeguards audit of to confirm all mitigative measures were implemented and remain operational, soils and erosion issues associated with the road should be negligible. Confirming that topsoil and planting were put in place as the work was being completed (not after the construction is completed) the tree planting was done and trees are healthy and being maintained will be essential. On the engineering site inspection of the culverts will be critical since their placement at too steep an invert slope will result in serious and chronic downstream (exit) scouring. To avoid this invert slope should be at the same grade as the natural waterbody and a concrete pads or preferably energy dissipation installation such as large rocks and rock gabions, installed.

196. Further, culverts need to be inspected to ensure that all debris and construction materials have been removed and any stream diversion structures have been completely removed. To that end the CSC and IPIG will prepare a culvert inventory that will provide a photo of each culvert and its condition during each inspection, which should be annually and submitted to MOTR of KR. Two photos will be required, one at the upstream and a second at downstream end of each culvert.

197. MOTR will assign this work will be assigned to the contractor during the one-year warranty period, after road becomes fully operational; and after that period, taken over by MOTR's maintenance unit.

Ecological Environment

198. The only ecological issue that could arise during the operating period is a failure to properly maintain the large tree plantations, and also the noise attenuation berms (if these are to be built) landscaping. The local ecosystem will be significantly altered by the cutting of the trees and therefore the replanting and tree maintenance program, until the trees are at least 9-10 years old will be critical to reestablishing the pre-cutting conditions of roadside shade during the summer and windbreaks during the winter. The roadside forest, admittedly planted many decades ago, is the only mature tree assemblage within many km of the alignment. It is home to many thousands of creatures, mostly insects and birds and is an open forest-track ecosystem. It has a microclimate and huge benefits for people living under them or benefiting from their shade and shelter. Therefore, as stated many time in this IEE, cutting should be minimized to the greatest extent possible by using innovative designs that build the trees into the road structure.

Socioeconomic Environment

199. Livestock and Pedestrian Crossings– Since the road section traverses residential areas, farmlands and pasture grounds, the need to provide pedestrian and livestock crossing becomes important. Category II Road allows design speed of 120 km/hour in rolling terrain (60 km/hour in mountainous terrain) for vehicular traffic, such that crossing people (especially children) and livestock (sheep, cattle, horses, etc.) pose real danger. Also on the road need to install the road signs indicating the places of transition of people and livestock. The crossing of people in the residential ares will be installed through every 200-250 m.

2.4. Climate Change Impacts on the Project Road

200. In this PPTA a Climate Change Study of the Project Road was included as a separate

sector. This study focused on the following impacts to the project road:

(i) River floods and water logging in spring, due to more intense rainfall. This will mainly affect lower altitudes and areas susceptible to flooding;
(ii) Heat stress in the summer, especially at lower altitudes;
(iii) Mudslides related to more intense rainfall in the spring at medium altitudes (and in a lesser degree also high altitudes);
(iv) Flush floods in the summer especially at higher altitudes, related to higher temperatures together with the increase in winter, spring and autumn rainfall (snow at higher altitudes).

201. The study made reference to the climate simulations done by the International Fund for Agricultural Development (IFAD) for Kyrgyzstan in which it indicated that the "Section «Epkin (Km 89) to Bashkugandy (km 159)" located at an area with low or very low vulnerability risk as compared with the north of Chuy Oblast and other high altitude areas. Moreover, as per IFAD the vulnerabilities identified are mainly related to increased heat stress at the project areas with low altitudes and mudslides at medium altitudes. Very limited information on the occurrence of extreme rainfall was found, but with relation to emergency situations, there is a tendency of reduction of rainstorms.

202. The hazards related to flooding have been studied using UNEP's Global Risk Data Platform which entails hazards modeling was developed by the World Meteorological Organization (WMO) and the United Nations Education and Scientific Cultural Organization (UNESCO). As per data in the Platform, the flood hazard will increase along major rivers in the Central Asia region, but Kyrgyzstan and the project area is less influenced by this than the neighboring countries. The project area is located in areas of low risk, whereas the risk increases at higher altitudes.

203. The values of seasonal temperature changes by year 2100 anticipate a greater increase of summer temperature in comparison to other seasons, and the minimum increase is predicted for the winter period. On the positive side, warmer winters due to climate change can alleviate the clearing snow; which would mean less maintenance cost during the winter months.

F. Analysis of Alternatives

204. Two alternatives were considered in this section:

(i) Zero option – the «Inaction»/ do nothing alternative
(ii) The road reconstruction project

205. Within the framework of ADB's SPS 2009, an important consideration the alternative "Zero option" is being devoted on. The alternative "Zero option" presents case scenario in which the project is not to be done at all. By comparative evaluation, it can be inferred whether the project is necessary at all or provide some insights on how to properly proceed should the project be fully implemented.

206. **Atmospheric air.** The existing road surface does not meet the requirements of III road category. In some places, there is no "cold asphalt" road pavement. Due to unevenness of the road, vehicle engines run unevenly by releasing large amount of exhaust gases. Dust formation is most likely to happen on places where there is gravel surface, which also affects atmosphere.
Noise and vibration. Noise and vibration are a major factor of concern people day and night,

since lack of road coverage spreads the sound waves at great distances from the road and creates a high noise and vibration impact to the population at night and daytime. The most sensitive recipients are residents of nearby houses to the road, schools, kindergartens, hospitals, private facilities and cultural sites.

207. **Surface water.** In places, where the road crosses channels and bridges, we can observe destruction of given structures and erosion of banks. In case of accidental destruction of some culverts and erosion of banks, we may observe pollution of water body. Runoff from the road surface flows to channel and river by causing water bodies' pollution with oil products and oils. This impact will be expressed in possible soil contamination with oil products, oils and waste. This Section has a river Tugol-Say.

208. **Soil**. Impact on soil is expressed in soil disturbance due to destruction of roadbed and going of vehicles beyond the right of way on nearby areas. Erosion due to concentration of water flows by artificial structures, ditches and channels. Soil and water might be contaminated by oils, gasoline of vehicles.

Flora and fauna. Impact on flora and fauna will be negligible, as the road is existing and has already caused anthropogenic impact.

209. **LARP and social issues.** Economic relocation and resettlement is not applicable. Social aspect is expressed in affecting communication routes of local residents, increase in time spent on the road to places of work and leisure. Poor traffic conditions for agricultural machinery, animal-drawn transport, cyclists and cattle driving. High accident risk might be created on the road and intersections with other roads. Moving vehicle causes vibration of buildings and structures. Dust pollution and gas contamination.
Safety. The road is not equipped with traffic indicators, signs, markings, which create prerequisites for accidents among population and vehicles crash. Violation of speed limits results in collisions and runs over people, animals and vehicles. There is no established road crossing places for people and cattle

210. If zero option is implemented, the benefit will be less traffic density and few road accidents.
The negative side is increased noise and vibration, lack of proper road pavement, negative social aspect, and impossibility to develop the region's economy.

2. Alternative- the road reconstraction project

211. This Alternative is considering the reconstruction existing road of the section Epkin (Km 89) to Bashkugandy (km 159). The Road section from Epkin (km 89) to Bashkuugandy (km 159) will be reconstructed and the total distance will be 70 km. Main specifications of the projected road are given in **Section C the Project description**. During the pre-construction stage, reconstruction of the road will not have any environmental and social impacts. This period, the work will be associated with the design and proper planning of works, as well as informing the public and other stakeholders about the proposed work. During the construction period, air quality will be affected by vehicles, operation of road equipment and machinery, excavation works in mountain areas', soil, sandy gravel, crushed stone and operation of asphalt mixing plant. The impact will be provided by pollutant emissions from the operation of machinery and mechanisms and formation of dust. The impact will be exerted on the water bodies (irrigation channels, Tugol-Sai River) from operation of the machinery, construction camps, and possible contamination of water by oil and oil products, soil, residues of construction and household

waste products. The impact on soil and land resources expressed by extraction of soil, ground, temporary diversion of land, and contamination by oil products, construction and household waste, as well as disturbance of topsoil by its misuse and stockpiling. The impact on the historical and cultural heritage will be expressed in the physical impact (vibration and possible disturbance of construction workers) to the cemeteries and burial grounds located in the vicinity of the road. During the operation, the main impact will be on air, physical factors as noise and vibration will have an impact, especially in the settlements. More detailed analysis of the alternatives of the environmental and social impacts is given in **Section E. Environmental Impacts and Mitigation Measures.** Given that the reconstruction of the road will be carried out on the existing road and the environment has already formed anthropogenic ecosystem, it can be concluded that the impact of the projected road on the environment will be insignificant, but in social terms the impact will be positive.

G. Information Disclosure, Consultation, and Participation

212. Formal and informal public consultations were done for the project during the study period. During the site visits some informal discussions were done with the villagers and some village heads as field information were being gathered. The IPIG organized a formal public consultation was arranged with the district heads to invite people of affected villages to present and discuss with them environmental and social issues relevant to the rehabilitation of the road.

1. Public Consultations and Participation

213. For Epkin (Km 89) to Bashkugandy] (km 159), in accordance with ADB's Public Communications Policy (2011) and SPS (2009), Public Consultation meeting on the environmental aspects was undertaken on 18 March 2016 in Bashkugandy Village Office (see Photo below). This was organized by the IPIG-MOTR through official communication to the local leaders inviting stakeholders in the surrounding villages. As recorded there were 18 residents from the villages (see attendance sheet in Annex B) through which the road section will traverse.

214. During the public consultation the Consultant (Kocks Consult, GmbH), prepared PowerPoint presentation regarding the technical features of the project and explained the potential environmental and social impacts with corresponding mitigation measures. This event was organized by IPIG-MOTR representatives[4] with PPTA Consultants assistance. The representatives of the MOTR-IPIG answered questions and clarify any issues that were raised. In addition, the participants also were provided a sheet of paper on which the can write their questions and comments. Printed hand-outs of the presentation were prepared and distributed to the people for their information and as a way of disseminating the environmental concerns of the project to the general public. Below is a photo of the public consultation.

[4] Mr. Asylbek Abdygulov, environmental specialist of IPIG-MOTR; Mr. Ruslan Satybaldiev, project coordinator of IPIG-MOTR

Figure 5: Public Consultation in Bashkugandy (18 March 2016)

215. The questions raised verbally during the forum were responded right away. As mentioned above, the people who attended were provided with a sheet of paper on which to write their questions and comments on the project. The recorded questions and corresponding responses by the IPIG-MOTR were captured in a video with the transcript shown in Annex C. The verbal and written comments and questions that were raised were compiled and presented as follows and in Table 17: Comments/Recommendations:

(i) Traffic Safety:
(ii) Possibility of bypassing the villages/schools
(iii) Need to provide roundabout crossings
(iv) Additional Infrastructure:
(v) Need for irrigation ditch crossing the roads
(vi) For Contractor transfer old removed structures/pipes to the village authority
(vii) Need for water supply pipes
(viii) Improvement of bridges
(ix) Underpass connection between markets
(x) Need for street lighting and sidewalks along the road
(xi) Economic impact:
(xii) Need to connect market to road
(xiii) Environmental Concern:
(xiv) Protection of cemetery structures
(xv) Relocation and Compensation:
(xvi) To check property boundaries

Table 17: Summary Table on Public Consultation for Epkin–Bashkugandy

Data	Place	Participants	Questions	Answers	Note
March 18, 2016	Bashkugandy village Administration .	IPIG /MOTR Asylbek Abdygulov safeguard specialist RuslanSatybaldiev Regional Project coordinator Kocks Consult Sam Sapuay International safeguard consultant Lola Shatirishvili, resettlement specialist	Sidewalks along the project road	In the project design it is considered inclusion sidewalks in the residential areas.	-
			Construction standards in swampy areas	In accordance with national legislation on road construction	-
			Timing of Construction	3 year and 1 technical guarantee	-
			Usage of recovered pipe culverts	Transferred to Local RMU-24 of MOTR	IEE

216. Generally, the comments were minor with the following recommendations – possibility of bypass route, provision of roundabout crossings, irrigation ditches, water supply pipes, improvement of bridges, underpass connection between markets, street lighting, protection of cemetery structures, and confirmation of property boundaries with road corridor. The questions on the other hand were on construction standards on swampy areas, provision of sidewalks, timing of construction, and usage of recovered pipe culverts.

217. Several of the comments were already incorporated in this IEE/EMP such as concerns on damage to infrastructure and reconstruction of utilities. On the impact to infrastructure, provisions in the EMP were included to undertake good planning to enable infrastructure service not to be disrupted.

218. Formal and informal public consultations were done for the project during the study period. During the site visits some informal discussions were done with the villagers and some village heads as field information were being gathered. The IPIG organized a formal public consultation with the district heads to and invited people of affected villages for presentation and discussion with them environmental and social issues relevant to the rehabilitation of the road.

219. During the field works unofficial meetings were carried out by team of environmental specialists with the local population about the planned project and its possible impact on the environment. Public consultation on social issues were conducted earlier and the public were given information leaflets on Kyrgyz and Russian languages, also was presented presentation and carried out survey. During the public consultation on environmental issues was noted on a good awareness of the planned activity, but it was also noted that the local population is more interested in social issues, and only few questions were on environmental impact.

220. Reconstruction of the road is planned on the existing road alignment and related with its expansion. The existing road is anthropogenic ecosystem and has already impacted on the environment. As defined in the IEE the impacts have the same type of effects on the entire road. However, this section has the sensitive areas, such as historical and cultural sites (cemeteries and burial grounds).

221. The organization of public consultations conducted by IPIG, Ministry of Transport, together with environmental specialists of KOCKS. To the public consultation were invited stakeholders from 4 villages along the road. On the result of the meeting, it became clear that most of the attending people were representatives of various governments and municipal

structures and they were directed by local authorities. Following the meeting, representatives of the IPIG, Ministry of Transport have talked with representatives of the local administration about the composition of the participants in the public consultations and after that explanations were received. Local authorities decided that this work is on preliminary stage (feasibility study). During the detailed design stage environmental and social impacts will be more specific and Design Consultant will invite residents and other stakeholders. In this stage, for getting information on environmental issues, representatives of the structures and the elders of villages have been sent, who subsequently may inform awareness among concerned residents.

222. In order to more effectively engage local population in the process of informing on social and environmental impacts of the project, additional public consultation will be required. It is necessary to hold a public consultation at the detailed design stage for a representative stakeholder interaction. Carried out one meeting does not reflect the full understanding and awareness of the local population. Public consultation should involve all interested parties, including residents of settlements, which may be affected, or in some way can be subjected to the effects of the proposed activity. The route of the road passes through the villages and the reconstruction of the road and increasing the intensity of the movement, which can affect both positively and negatively on the people living in this area. In this regard, and according to the legislation of the Kyrgyz Republic, public discussion should involve all stakeholders, to identify their opinion, to give advice and suggestions on the proposed activity.

223. In order to inform a larger number of population of the villages along the road on the environmental and social issues of the project, IPIG/MOTR KR sent information letters with the results of the conclusions of IEEs to Rayon authorities, heads of village municipalities, and village elders for greater public awareness on possible types of environmental and social impacts during implementation of the road reconstruction project. This information letter is attached in Annex G. Also for more effective engagement with stakeholders, it is necessary to conduct public consultations in every village along the 70 km road.
The organization of public consultation is necessary to register participants, by indicating name, position, address and telephone number. Provide information for feedback to direct suggestions and comments.

224. Main representatives: Deputy of Village Council, Land specialist, Retiree, Head of Kuiruchuk v/a, Member of court of aldermen, Jumgal v/a, Court of Jumgal village, Architect of Jumgal region, Bash-Kuugandy v/a, Tugol-Sai v/a, Executive Secretary of Tugol-Sai v/a, Regional administration, Tugol-Sai residents. List of participants in Annex B.

2. Information Disclosure

225. ADB endorses the IEE it is made available as information to the public, both in English and in Russian languages.

226. The procedure for public hearings in Kyrgyz Rebublic includes the following steps:

(i) Public notification on public discussions;
(ii) Providing public access to the EIA documentation from the project initiator and / or in other accessible locations (local authorities, the territorial bodies of environmental protection), as well as disclosure of the EIA report on the website of the proponent (if website exists);
(iii) The general public familiarizes with the EIA documentation;
(iv) In case of public interest:

a. Public notice on the date and place of the meeting to discuss the EIA documentation;
b. Collection and analysis of comments and suggestions, summarizing the results of public discussion of the EIA documentation.

227. The Russian version of the IEE will be available in the IPIG-MOTR office and copies shall be made available to the people through the Ayil Okmotu offices along the project road. The IEE shall also be disclosed to a wider audience via the ADB website. During the project implementation, periodic environmental monitoring reports shall be submitted by Implementing/Executing Agencies and correspondingly also be uploaded in the ADB website.

228. Should additional information be required at any time about the project, the public may visit the IPIG-MOTR or interact with the future construction supervision consultant who will be selected for the project. On-site consultations will be held for clarifications and provision of necessary information to the public and the stakeholders on as need basis.

H. Grievance Redress Mechanism

1. Objectives

229. The Grievance Redress Mechanism (GRM) is a process through which the affected people need a trusted way to voice and resolve concerns about the project and the project also finds an effective way to address affected people's concerns. In this project, the grievance mechanism will be in place by which the affected people will be fully informed of their rights and procedures for addressing complaints whether verbally or in writing during consultation, survey, time of compensation and implementation of the project. Care will always be taken to prevent grievances rather than going through long redress process.

230. The GRM will cover issues related to social, environmental and other safeguard issues under ADB safeguard covenants and Kyrgyz Law.

2. Grievance Redress Group (RG)

231. The GRG will be established for the duration of project implementation. The GRG is tasked with all activities needed to discuss a grievance, assess its validity, assess the scope of eventual impacts, decide eventual compensation needed and instruct/facilitate the functioning of the Grievance redress mechanism.

2.1. Functioning of the GRG within the Grievance Redress Mechanism

232. The Grievance redress mechanism (GRM) involves the following 2 stages appeals:

<u>Stage 1, Local (Village) Level</u>
The grievances will first be lodged at the level of the complainant's village community. The complainant will report his case to the Local Point of Contact (LPC) The LPC will trigger the action of the Grievance Redress Group (GRG) which will assess the situation and seek a solution through consultation with complainants, local Roads Maintenance Unit (RMU) the oblast Ombudsman, and the selected AP representative.

<u>Stage 2, Central Level</u>

In case within additional 15 days the grievance is still not resolved at local level the complainant will further raise the issue to MOTR's headquarters in Bishkek again with the support of the LPC, AP representatives, and the oblast Ombudsman. The GRG will decide on the eligibility and on the complaint case and prepare the resolution, subject to IPIG/MOTR consent.

233. GRM proceedings will entail one or more meetings for each complain and may require field investigations by specific technical or valuation experts. Grievance cases shared by more than one complainant may be held together as a single case.

234. For deliberations at the local level, the meetings will be held in the village of the complainant. For appeals at central level, the meetings will be carried out at in MOTR office in Bishkek with field trips of GRG members to the village of the complainant.

2.2. Composition of GRG

235. GRG will be established by the order of MOTR. The GRG is composed at different levels of appeal by the following individuals/officers.

Local Level GRG

236. Local level GRG will be established at each Ayil-Okmotu along the project roads with the provision of members of following composition:

GRG Member	Position held
Head of Ayil-Okmotu	Chairman
Representative of RMU	Member
Female and Male APs	Members (2)
Local Point of Contact	Member
Ombudsman of the Oblast	Observer
Consultant	Invited Expert

Central Level GRG

The central level GRG will be represented by 5-7 members of the following composition.

GRG Member	Position held
Head of IPIG of MOTR	Chairman
Project Coordinator at IPIG	Member
IPIG safeguards unit representative	Member
Representative of the RMU	Member
Local Point of Contact	Liaison between Local & Central GRG
Ombudsman of the Oblast	Observer
Representatives of APs (Male & Female)	Additional Observers

237. At each level of appeal, the GRG will be assisted as needed by the professional capacity needed to solve each specific case. This will include among others:

(i) Representatives of State Rayon Administration
(ii) Representatives of the Rayon Branch of the State Agency for Architecture and Construction
(iii) State Registration Services of the Rayon
(iv) Ministry of Agricultural
(v) State Agency for Environment and Forestry
(vi) Ministry of State Property
(vii) Ministry of Emergency

(viii) Technical expertise from professional engineers, and Consultants with relevant experience in environmental safeguards.

2.3 Duties of GRG Members

Local Point of Contact

238. Once AP files a complaint, the LPC is to undertake and complete the following tasks:

(i) screen the complaint for eligibility and, if found eligible register it the Complaints Log;
(ii) draft a complaint memo to be signed by the complainant, indicating the name of complainant, date and place the case of complaint occurred, apply the date and place of complaint submission, and attach supporting documents, as necessary;
(iii) send the complaint memo to all members of GRG , agree the date of GRG meeting;
(iv) request the rural administration authorities to organize the meeting;
(v) facilitate the GRG meeting by providing a storyline for the complaint and provide factual details and relevant documents obtained;
(vi) communicate request and queries of the complaints to the members of GRG (on central level to GRG/IPIG/ADB);
(vii) maintain the records of the meetings and communications between GRG and complainants
(viii) ensure administrative and organizational support to GRG members;
(ix) raise awareness of project stakeholders, including CBOs, NGOs AHs and local authorities on the GRM, it functions and objectives. Liaise between local and central GRGs to convey the information of the case of complaint that was not resolved on local level and became the case to be reviewed on a Central Level.

Chairman of GRG / Head of Ayil-Okmotu

239. Once the GRG Chairman is informed about the meeting date and schedule he/she is responsible to:

(i) review the complaint(s) and supporting materials if any ahead of the GRG meeting;
(ii) manage to obtain any additional information prior to GRG meeting date;
(iii) involve relevant task expert if such need is obvious after review of the complaint(s);
(iv) ensure members attendance and chair GRG meeting;
(v) ensure simple complaints (like notification of when construction starts or a copy of the entitlement brochure etc.) are handled /resolved at the local level during the meeting;
(vi) ensure that records (of each meeting, communication between GRG and complainant(s)) is accurately recorder by assigned member (Meeting Secretary) and saved in the GRG files;
(vii) convey requests and enquiries of the complainants to GRG members on Central Level if not resolved on Local Level.

RMU Representative

240. Once notified of a complaint and summoned by the LPC to a grievance meeting the RMU representative will:

(i) Review all relevant recording of complaints and submitted documents of proof;
(ii) Participate to all grievance meetings, provide opinions and analysis, take minutes of the discussions (Secretary of the Meeting);
(iii) Accompany eventual assessment/valuation specialists in the field;
(iv) Ensure that claims from damages due to construction works are reviewed by the RMU and technical experts and assess the damages /losses incurred;
(v) Based on the position reports of GRG members and on his/her understanding of the case prepare the final grievance report and recommendations to be sent to complainant, other members of the GRG and if needed to IPIG as well. The summary report should determine, whether the case is:

a. solved without further action; or
b. solvable but requires compensation or other action; or
c. not resolved and requires pending actions, such as forwarding the complaint for review on the higher-Central Level, to the Court, or to investigation to prosecutor's office.

(vi) If the complaint is considered valid and the needed compensation/action is to be approved by IPIG the case is forwarded to GRG on Central Level with the request to proceed the review and ensure execution of the redress action; and
(vii) When the complaint remains unresolved by Local Level GRG, and a complainant offered to lodge claim on the Central Level agree to act so, RMU representative coordinates with LPC and GRG Chairman to assists the complainant in lodging the complaint at a higher appeal level;
(viii) In parallel inform IPIG/MOTR and proceed with the organization of the central level appeal meeting.

Representatives of the APs

241. Two representatives of the APs, male and female persons from the affected community will participate in all GRG meetings to:

(i) act as the full right member of GRG;
(ii) provide relevant information related to the submitted complaints; and
(iii) provide other GRG members as relevant with a position note to be reflected in the final meeting report.

Invited Consultant /Field expert

242. Once notified of Meeting time and location the Consultant will:

(i) Review all relevant recording of complaints and submitted documents of proof;
(ii) If feasible visit the place of complaint to visually observe the spot and be fully aware of important details to share with GRG members during the meeting;
(iii) assist the GRG members to get into the insight of the complaint and assist them in finding feasible, reasonable, mutually agreeable and doable solutions.

IPIG Project Coordinator

243. Once notified that a complainant has lodged an appeal case at the Central level IPIG project coordinator will:

(i) contact the complainant(s) and draft a note with his/her understanding of the complaint;
(ii) participate to the appeal meeting, provide opinions and analysis, take minutes of the discussions;
(iii) if needed summon again assessment/valuation specialists and accompany them in the field;
(iv) request the chairperson to organize meetings, as necessary;
(v) maintain communication between GRG and the complainants; and
(vi) Complaint Register is kept with IPIG and a copy shared with the Consultant.

Representatives of IPIG Safeguards Unit

244. Once notified that a complainant has lodged at central:

(i) participate to all grievance meetings, provide opinions and analysis;
(ii) accompany eventual assessment/valuation specialists in the field, and
(iii) provide other GRG members as relevant with a position note to be reflected in the final meeting report.

Ombudsman

245. Once notified of a complaint and a summoned by the LPC to a grievance meeting is submitted the Ombudsman will:

(i) monitor complaint handling process and ensure that decisions made by the GRP are equitable and objective;
(ii) provide independent opinions and recommendations related to the decision made on the case by the GRP team;
(iii) advise the complainant(s) on their rights and entitlements, as necessary;
(iv) participate to all GRG meetings and site visits;
(v) participate in eventual assessment/valuation in the field; and
(vi) prepare a position memo at the end of the meeting(s) and forward it to LPC/chairperson of the GRG.

GRG Chairperson/Head of IPIG of MOTR

246. Once notified that a complainant has lodged an appeal case at central level, the GRG chairperson will:

(i) contact the complainant(s) and draft a note with his/her understanding of the complaint;
(ii) trigger the GRG members through a letter of invitation;
(iii) chair the GRG meetings and ensure that minutes of the meeting are shared with all relevant parties;
(iv) review the content of each response prepared after deliberations to ensure accuracy as well as consistency of answers provided to the complainants;
(v) ensure the administrative and organizational support for GRG members to work;

and

(vi) support the decision made by the GRG and ensure that the follow-up actions are taken.

IPIG Project Coordinator

247. Once notified that a complainant has lodged an appeal case at central level project coordinator will:

(i) contact the complainant(s) and draft a note with his/her understanding of the complaint;
(ii) participate to the appeal meeting, provide opinions and analysis, take minutes of the discussions;
(iii) if needed summon again assessment/valuation specialists and accompany them in the field;
(iv) request the chairperson to organize meetings, as necessary;
(v) maintain communication between GRG and the complainants; and
(vi) Complaint Register is kept with IPIG and a copy shared with the Consultant.

Representatives of IPIG Safeguards Unit

248. Once notified that a complainant has lodged at central level, the representatives of IPIG safeguard and technical unit will:

(i) prepare the chronology of events to understand sequence of developments prompting the complaint;
(ii) provide environmental and resettlement opinion on impacts claimed by the claimant;
(iii) examine large claims over USD$10,000 with financial expert at Ministry and involve a qualified valuer;
(iv) request the chairperson to organize meetings, as necessary; and
(v) maintain communication between GRG and the complainants.

Technical Experts

249. Once summoned to provide expert advice for the assessment or valuation of an impact claimed by a complainant the relevant technical expert will carry out the needed investigations and prepare a report to be handed to the complainant and the other members of the GRG. The tasks will include:

(i) provision of relevant technical opinion for the case reviewed;
(ii) carry out the needed investigations relevant to their expertise; and
(iii) provide recommendation when the legal opinion from the relevant state agencies is necessary.

2.4. Grievance Resolution Process

250. The LPC of GRGs will be regularly available and accessible for APs to address concerns and grievances. He will assist the aggrieved APs in formally lodging their claims to the GRG. The complaints and grievances from the APs will be addressed through the process described below.

Steps	Action level	Process	Timeline
Step 1	Resolution	At initial stage, the LPC will give hearing to the aggrieved person and try to give acceptable solutions. If any aggrieved AP is not satisfied with the solutions, then the aggrieved AP will lodge grievances in written to the concerned local GRG within 3 days.	3 days
Step 2	GRG Resolution	After receiving written complaints of AP, the LFP will review and prepare a Case File for GRG hearing and resolution. A formal hearing will be held with the GRG at a date fixed by the LPC in consultation and the aggrieved APs. On the date of hearing, the aggrieved AP will appear before the GRG at the office of concerned Ayil-Okmotu and produce proof in support of his/her claim. The LPC will note down the statements of the complainant and document all proof. The decisions from majority of the members will be considered final from the GRG and will be issued by the LPC and signed by other members of the GRG. The case record will be updated and the decision will be communicated to the complainant AP by the LPC within 14 days of submission. If any aggrieved AP is not satisfied with the solutions, then the LPC will lodge grievances in written to the central GRG at MOTR with conclusion and supporting documents prepared at local level.	14 days
Step 3	Resolution of GRG Central	After receiving written complaints of AP, the GRG Chairperson of the central GRG will review and prepare a Case File for GRG hearing and resolution. A formal hearing will be held with the GRG at a date fixed by the GRG Chairperson and the aggrieved APs. GRG members will contact the complainant and visit his village. The IPIG Project Coordinator will note down the statements of the complainant and document all proof. The decisions from majority of the members will be considered final from the GRG and will be issued by the GRG Chairperson and signed by other members of the GRG. The case record will be updated and the decision will be communicated to the complainant AP by the IPIG Project Coordinator within 15 days of submission.	15 days
Step 4	Court of law	The court of law will be the last resort before the AP. Project Affected Persons can appeal to court should s/he disagrees with the decision of the Control Authority.	N/A

3. Additional Mechanisms Available for Grievance Redress

251. Any physical and legal person, any appellant can communicate his/her concern to the Court at any stage of grievance redress. The GRC will not restrict or influence the AP from applying to court for legal remedies. If the complaint is found invalid, the GRG formulates a response and sends a written letter to the complainant, explaining the reasons of rejection. The complainant can appeal the decision of the local Court and bring the case to the ADB Accountability Mechanism. The project level GRG does not in any way impede APs access to the ADB Accountability Mechanism (AM[5]) or to the judicial or administrative remedies the Kyrgyz Republic. The Information Pamphlet and Grievance Redress Form will carry the contact information for the Office of the Special Office Facilitator to be readily available once any AP may wish to register a complaint with the ADB AM.

[5] Link to access relevant web page: www.adb.org/site/accountability-mechanisn/contacts

Complaint Receiving Officer
Accountability Mechanism
Asian Development Bank
6 ADB Avenue, Mandaluyong City 1550
Metro Manila, Philippines
Tel: +632 632 4444 ext 70309
Fax: +632 636 2086 Email contact form

I. Environmental Management Plan

1. EMP

252. The EMP describes the various measures proposed under this Project, which were designed to avoid, mitigate, or compensate the adverse environmental impacts that may result from the Project. As such the EMP considers all phases of the Project cycle, namely the detailed design, construction and operational phases of the Project.

253. To ensure that the proposed mitigation measures will be carried out by the contractors during the construction stage, the design consultant will clearly set out in the tender and contract documents the contractor's obligation to undertake the respective environmental mitigation measures.

254. The EMP consists of two tables. Table 18 summarizes the environmental mitigation measures, and Table 19 provides an overview of the environmental monitoring. At the end is a statement which includes the timeframes and responsibilities for carrying out the environmental monitoring.

Table 18: EMP Mitigation Measures

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
DETAILED DESIGN PHASE				
Road alignment in areas of tree plantations. There are a number of tree losses involved. Approximately 100 trees need to be felled on the Epkin - Bashkugandy	Tree losses that cannot be prevented. Main species are Populus alba, Elm	Any tree losses are compensated by new plantations. Plantations shall be conducted after technical works have been completed. Planting time shall be restricted to spring (March till April) and/or autumn (September till October). Locations for tree plantings are within the existing Right of Way (ROW) at the locations where tree losses occur. Trees to be planted shall have the following parameters: 1,5 – 2 m height, age 5 – 6 years. Distance in between individual trees shall be 6 – 8 m. Species: Populus alba (30%), Elm (70%), and deciduous shrubs Lohan in the villages	Design Consultant	IPIG of MOTR
Rehabilitation and/or replacement of existing culverts, implementation of new culverts. In this section it is planned to replace / repair the 134 culverts	Potential damage to local irrigation system if new culverts should not be sufficiently dimensioned or in case that not all existing culverts should be rehabilitated in the course of the road rehabilitation.	- In the course of the road rehabilitation all existing culverts will be cleaned, repaired or replaced, depending on their respective conditions. - All culverts are sufficiently dimensioned in order to prevent any damages or blockages to the existing local irrigation systems.	Design Consultant	IPIG of MOTR
Rehabilitation / reconstruction of 1 bridge – Tugol-Say	Potential water erosion processes at bridge and river embankments.	Design of erosion protection measures at lower parts of bridge embankments. Prefabricated concrete protection plates prevent erosion processes at the lower and lateral parts of bridge and river embankments. Detailed design of the respective protection measure is drafted in the technical design documentation for the respective bridges.	Design Consultant	Construction supervision Consultant (CSC) IPIG of MOTR
Road traversing cattle crossings	Accidents because of collision with cattle	Further impacts from the road may include cattle crossing the road. This will be clarified during public hearings. Depending on the situation, mitigation measures will be specified as appropriate. - Possible mitigation measures would be the provision of warning signs in accordance with relevant road safety standards. In addition, reflectors may be provided on trees in the critical sections and the road fenced near pastures.	Design Consultant	CSC, IPIG of MOTR
Cultural and historical sites protection.	Potential Construction works impacts cultural and historical sites and chance of monuments finding.	The objects of historical and cultural heritage are the objects of study and protection of the Ministry of Culture, Tourism and Information of the Kyrgyz Republic (MoCIT KR). - To prevent exposure to these objects it is necessary to develop Management plan for cultural and historical sites, according to the law protection zone of objects is not less than 50 m. Therefore, all questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local self government. - On the basis of the findings of Archaelogical Study (Appendix F), during the detailed design stage, Consultant should send the road design along with the Management plan for objects of cultural heritage for MoCIT KR approval. - Conduct visual observation of the objects in cemeteries and mausoleums to document their state before the construction works jointly with MoCIT KR and local authorities.	Design Consultant	CSC, IPIG of MOTR, MoCIT KR
CONSTRUCTION PHASE				
Top soil preservation	Loss of top soil	Removing of top soil occurring within site clearing corridor. Topsoil shall be removed and stored for reuse.	Contractor	CSC, SETI, IPIG of

		Long-term stockpiles of topsoil will immediately be protected to prevent erosion or loss of fertility. For erosion protection it will be sawn with a fast growing vegetation, e. g. grass		MOTR
Road alignment in areas of tree plantations. Embankment filling of the tree stem area.	Tree losses due to embankment fill.	A maximum fill up of the tree stem area of 30 cm can be accepted. Fill up material in the tree stem area has to be organic soil. - A filling up of more than 30 cm will damage the tree. In this case cutting can't be prevented and a new tree is to be planted as a compensation measure at the respective location within the existing RoW. Species to be planted are walnuts, maple ash tree, elm tree, white poplars, white willow, white acacia. - Plantings shall be conducted after technical works have been completed. Planting time shall be restricted to spring (March till April) and/or autumn (September till October). Quality of newly to be planted trees shall be 16 to 18 cm of stem circumference at least in 1,5 m height.	Contractor	CSC, SETI, IPIG of MOTR
Bottom of embankment of designed road lying very close to tree rows.	Potential damaging of trees during construction activities	Implementation of a temporary vegetation protection fence during construction activities.	Contractor	CSC, SETI, IPIG of MOTR
The road crosses Watercourse Tugol-Say (148+874)	Alteration of surface water hydrology resulting in increased sediment by increased soil erosion at construction site	Implementation of settlement ponds at locations where construction site comes close to natural watercourses to retain sediments and mitigate possible impacts on water hydrology. Oil and solid waste management need to be described in the SSEMP and consider these sensitive receptors (rivers and their floodplains). No campsite are allowed near river floodplains.	Contractor	CSC, SETI, IPIG of MOTR
Prevention of water pollution water objects: Tugol-Say	Pollution of surface water	During the construction of bridges construction site dimensions shall be the minimum necessary. Construction site should be placed at levels that exclude them flooding. The discharge of polluted water, landfills, parking cars and the construction of temporary facilities within the water protection zones on the banks of rivers. On construction sites should provide capacity for the collection of sewage and garbage. In the water protection zones (not less than 50 m) of rivers it prohibits contamination of the surface of the earth, including the garbage dump, waste production, as well as parking, cleaning and repair of motor vehicles and road construction machinery, fueling. All works in water protection zone must be carried out based on permission from local authorities. It is prohibited extraction of local building materials in the water protection zones without permits of environmental authorities. The project documentation should include the restoration work after the construction of the bridge: the removal of the bed of the river islands, backfilled during the construction of towers; cleaning of the river bed and the flood plain from cluttering their objects, extracting and hauling piles of scaffolding and temporary supports; dismantling of temporary facilities on the construction site layout and land reclamation, including career and access roads.	Contractor	CSC, SETI, IPIG of MOTR
Operation of borrow areas and quarries	Potential disfigurement of landscape, vegetation losses and damage to access roads Increased dust emission Siltation and obstruction of surface waters	Some proposed borrow areas are already in operation. Therefore environmental impacts concerning potential disfigurement of landscape, vegetation losses and damage to access roads are kept to a minimum. New sites for quarries need to be developed in accordance with the requirements and procedures for obtaining permission Wet aggregates and/or provide cover on haul trucks to minimize dust emission and material spillage. Locate stockpiles away from surface waters. Prior to start material extraction the contractor shall submit his SSEMP through the Construction Supervisor (CS) to the Safeguard Department of the IPIG of the MOTR indicating the location of the proposed extraction	Contractor	CSC, IPIG of MOTR

		site as well as rehabilitation measures and implementation schedule for the borrow areas and access roads. Rehabilitation measures may not be necessary for borrow areas still in operation after road works have finished. The SSEMP needs to address the sensitive issues of avoidance of transportation thru residential areas as far as technically feasible and closure rehabilitation.		
Operation of aggregate crusher	Increased dust emission and noise emission	Careful site selection of aggregate crusher in order not to interfere with any sensitive receptor. Distance to next settlement and residential houses at least 300 m downwind. Site selection for aggregate crusher has to be approved by the Safeguard Department in the IPIG of the MOTR.	Contractor	CSC, IPIG of MOTR
Operation of asphalt plant	Odor emission and safety risks	Asphalt plants shall be 500 m downwind from any settlements and residential houses. Provide spill and fire protection equipment and submit an emergency response plan (in case of spills, accidents, fires and the like) to the authority in responsibility prior to operation of the plant. Secure official approval for installation and operation of asphalt plants from MOTR.	Contractor	CSC, IPIG of MOTR
	Water pollution due to spilled bitumen	Bitumen will not be allowed to enter either running or dry streambeds nor shall it be disposed of in ditches or small waste disposal sites prepared by the contractor. Bitumen storage and mixing areas must be protected against spills and all contaminated soil must be properly handled according to legal environmental requirements. Such storage areas must be contained so that any spills can be immediately contained and cleaned up.	Contractor	CSC, IPIG of MOTR
Site selection, site preparation and operation of contractor's yard	Potential soil and water pollution	The contractor shall submit documents for approval (short statement and site plan in appropriate scale) which indicate: Site location, surface area required and layout of the work camp. The layout plan shall also contain details of the proposed measures to address adverse environmental impacts resulting from its installation. Sewage management plan for provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses; Waste management plan covering provision of garbage tons, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations; Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination. Prior to the commencement of works the site installations shall be inspected for approval. The selected site will not be on top of ground water area or near surface waters.	Contractor	CSC
	Competition for water resources	Prior to establishment of the work camps, conduct consultations with local authorities to identify sources of water that will not compete with the local population.	Contractor	CSC
Site selection, site preparation and operation of contractor's yard (continuation)	Health and safety risks to workers and adjacent communities	For health and safety protection of workers and adjacent communities the following shall be provided: adequate health care facilities (including firstaid facilities) within construction sites; - Training of all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work; - Personal protection equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection in accordance with legal legislation;	Contractor	CSC, IPIG of MOTR

		- Clean drinking water to all workers; adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site to people whose settlements and access are temporarily severed by road construction; - Adequate drainage throughout the camps so that stagnant water bodies and puddles do not form; sanitary latrines and garbage bins in construction site, which will be periodically cleared by the contractors to prevent outbreak of diseases. Where feasible the contractor will arrange the temporary integration of waste collection from work sites into existing waste collection systems and disposal facilities of nearby communities;		
Work site operation / Operation of equipment maintenance and fuel storage areas	Worker's health and soil / water pollution	The contractor shall hire a qualified health and safety expert who will provide safety training to the staff according to the requirements of the individual work place. Prior to the commencement of works, the work site personnel shall be instructed about safety rules for the handling and storage of hazardous substances (fuel, oil, lubricants, bitumen, paint etc.) and also the cleaning of the equipment. In preparation of this the contractor shall establish a short list of materials to be used (by quality and quantity) and provide a rough concept explaining the training / briefing that shall be provided for the construction personnel. Locate storage facilities for fuels and chemicals away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination. Store and dispose waste/used oil consistent with environmental legal requirements. Work site restoration: After completion of construction works the contractor shall execute all works necessary to restore the sites to their original state (removal and proper disposal of all materials, wastes, installations, surface modeling if necessary, spreading and leveling of stored topsoil).	Contractor	CSC
Operation of construction camp	Road construction projects bear a high potential risk to affect local communities and the health and well-being of those that live in or near to the temporary work camps by supporting the spread of STD and HIV/AIDS. In addition, the transport sector itself actually helps the epidemic, as infrastructure and associated transport services give people and infections mobility.	Providing information to workers, encouraging changes in individual's personal behavior and encouraging the use of preventive measures. The goal of the information is to reduce the risk of HIV/ STD transmission among construction workers, camp support staff and local communities.	Contractor	CSC, IPIG of MOTR, local health units of the Ministry of Health
Earth works and various construction activities	Loss of topsoil	Topsoil on the sections to be used as a stockpile for surplus construction material shall be removed and stockpiled to reuse them to cover these areas upon completion of works. In addition a soil management plan shall be provided detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites.	Contractor	CSC
Earth works and various construction activities (continuation)	Siltation of surface waters and/or impact on soils due to improper disposal of excess	Mostly all excavated material will be reused. In addition the reclaimed asphalt pavement will be recycled for the 1. The transfer of old asphalt to Local RMU of MOTR for up-filling of the secondary roads;	Contractor	CSC

	materials	2. Use the old asphalt to strengthen the top coating of the road shoulders by adding the gravel-sand mixture with 15cm thickness. Thus potential impacts due to the need for disposal of excess material will be kept to a minimum.		
	Competition for water resources	Conduct consultation with local authorities to identify sources of water (for spraying and other construction requirements) that will not compete with the local population.	Contractor	CSC
	Air pollution due to exhaust emission from the operation of construction machinery	The contractor will maintain construction equipment to good standard and avoid, as much as possible, idling of engines. Banning of the use of machinery or equipment that cause excessive pollution (e.g., visible smoke).	Contractor	CSC
	Disturbance of adjacent settlements and archaeological sites due to elevated noise and vibration levels	Restrict speed limit to 30 km/hr within 500m of any settlements. Restrict work along the road close to any settlement between 7.00 as to 6.00 pm. Restrict work of large and noisy machinery in the vicinity of settlements to daytime and to agree the work schedule between the contractor and local communities. Compaction shall be made by certified machinery only which complies with all KR laws concerning noise and vibration at construction sites SN 2.2.4/2.1.8.562-96 "Noise at work sites, living premises, public buildings and within residence construction site"; SN 2.2.4/2.1.8.566-96 "Production vibration. Vibration in premises, residence and public buildings".	Contractor	CSC , Traffic police service of the Ministry of home affairs
	Soil compaction due to operation of heavy equipment	Confine operation of heavy equipment within the corridor that is absolutely necessary for the road construction to avoid soil compaction and agricultural used land close to the road.	Contractor	CSC
Earth works and various construction activities (continuation)	Traffic impairment	Submit a traffic management plan to local traffic authorities prior to mobilization. Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions Allow for adequate traffic flow around construction areas. Provide adequate signalization, appropriate lighting, well - designed traffic safety signs, barriers and flag persons for traffic control.	Contractor	CSC
Within settlements, encroachment into private and residential land	Dislocation or involuntary resettlement of people. Loss of businesses and income of people operating their business within the existing RoW	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure.	IPIG of MOTR, CSC	IPIG of MOTR
Within settlements, encroachment on business assets and / or Disturbance business, people, activities and socio-cultural resources due to construction work	Loss of businesses and income of people operating their business within the existing RoW	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure. In addition the following mitigation measures shall be implemented: Inform all residents and businesses about the nature and duration of work well in advance so that they can make necessary preparations Limit dust by removing waste soil quickly; by covering and watering stockpiles, and covering soil with tarpaulins when carried on trucks Increasing workforce and use appropriate equipment to complete the work in minimum time in the important areas Avoid construction work in sensitive times like festivals near religious places	IPIG of MOTR, CSC	IPIG of MOTR
Within settlements disproportionate encroachment on poor people's assets.	Loss of wealth and property of poor people. Poor and vulnerable households might be affected.	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure.	IPIG of MOTR, CSC	IPIG of MOTR
Construction activities in close vicinity to existing infrastructure such as	Damage to infrastructure, supply cuts of infrastructure	Measures will be ensured in engineering designing to avoid any disturbance to the existing infrastructure. Prior to construction start the respective service	Contractor	CSC, IPIG of MOTR

water supply pipes and other facilities, waste water discharge facilities, electricity lines etc.	services.	agencies shall be informed about the construction work. Coordinate with respective agencies and provide prior information to the public in case of any required disruption in services during construction		
Rehabilitation works within villages and along sensitive receptors such as schools, hospitals, cultural sites.	Noise exceeding applicable noise standards. Vibrations may result in damage to local infrastructure, including private property and local (haulage) roads	For sensitive receptors such as schools and hospitals applicable noise standards shall be complied with as far as technically feasible by means of noise measurements and in case of exceedence of standards, ascribe of time restrictions for construction activities between 6 am and 6 pm. For potential damages to local infrastructure, including private property and local (haulage) roads, compensation procedures will have to be established prior to the beginning of construction and approved by the engineer. In addition grievance redress procedures shall be put in place to facilitate communication between the contractor and potentially affected people. In addition haul routes and construction site access roads should be discussed and jointly approved between the contractor and local officials to minimize the risk of conflicts.	Contractor	CSC, IPIG of MOTR
Rehabilitation works along sensitive receptors such as cultural sites.	Vibrations may result in damage to cultural structures.	For sensitive receptors such as cultural sites, prior construction works, the Contractor should apply in writing to the local authorities in defining the protection zones around these sites. Applicable vibration standards shall be complied with as far as technically feasible by means of vibration measurements and in case of exceedence of standards, contractor should strictly utilize equipment with less vibration impact. In addition grievance redress procedures shall be put in place to facilitate communication between the contractor and potentially affected people. In addition haul routes and construction site access roads should be discussed and jointly approved between the contractor and local officials to minimize the risk of conflicts. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing archaeological sites, especially near the following : • 158 – 160 km Cemetery on the LHS, around 6 m. • 153 km -155 km Cemetery (RHS) on a hill 20-50 m away from the road. • 152 +300 km Cemeteries on the both sides for Tugol-Say village. The distance between the boundaries of the two cemeteries, 25m; width of the existing road 13.4m. From the border of the cemetery (RHS) to the road 3 m; opposite side (LHS) 3-5 m. • 141 km +300 Cemetery on the left side (LHS) of the road, 10-15 m from thr road. • 138 km Complex mausoleums, Clay mounds. Located close to the road on the right (RHS) 3-3,5m, and approximately 100 meters to the left (LHS). • 132 km Cemetery on the LHS located around road 20-30m from the road. • 131 km Cemeteries on the both sides (RHS -3m, LHS – 3,5 m).	Contractor	CSC , IPIG of MOTR
Provide work conditions for the CSC environment specialist	Monitoring of compliance by the contractor with the EMP requirements during construction works	In order to implement monitoring of compliance with the EMP requirements, the CSC environment specialist shall be provided with transport when required and a work place in the office at the construction site	Contractor	CSC, IPIG of MOTR
Cultural and historical sites protection.	Potential Construction works impacts on cultural and historical sites and chance of	In accordance with the Law of the Kyrgyz Republic on historical cultural heritage in the event of cultural monuments found, Contractor must stop all construction works and report the findings to the local municipal	Contractor	CSC, IPIG of MOTR, MoCIT KR

	monuments finding.	authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National Universtiy after Balasagyn), MoCIT KR. Also Contractor should employ techniques during construction works (vibration) with minimal or no impact to any cultural, historical or archeological structures along the road. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing archaeological sites		
OPERATION PHASE				
Increased traffic flow	Elevated levels of gaseous and noise emissions due to increased traffic. In addition increased pedestrian vs. vehicle accidents due to traffic volume and higher speed as a result of improved road design	Integrate in the engineering design safety features such as speed control signs, proper road markings, streetlights, pedestrian crossing, livestock crossing and other visual means.	Design Consultant, Road police service	CSC
Increased traffic volumes and higher vehicle speeds	Increased risk of accidents with possible spills of harmful substances	Spill-contingency plan A contingency plan or emergency response plan is a set of procedures to be followed to minimize the effects of an abnormal event on the Project roads, such as a spill of oil, fuel or other substances that may harm drinking water resources or have adverse effects on the natural balance of sensitive areas. Additional measures to mitigate risk of accidents and spill of harmful substances are speed control and weight stations.	RMU-24 of MOTR	IPIG of MOTR
Damaged drainage or uncontrolled erosion.	Harmful environmental impacts resulting from damaged drainage or uncontrolled erosion.	Routine monitoring of drainage and erosion control at least twice a year.	RMU-24 of MOTR	IPIG of MOTR

255. Prior to construction works, the contractor shall provide a comprehensive SSEMP covering the following aspects:

(i) Dust management which shall include schedule for spraying on hauling and access roads to construction site and details of the equipment to be used. The contractor shall pay a special attention to water spraying in settlements and at repair and construction sites.

(ii) Layout of the work campand details of the proposed measures to address adverse environmental impacts resulting from its installation

(iii) Sewage management including provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses

(iv) Waste management covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations

(v) Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination

(vi) Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles of topsoil and excess materials, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites for excess materials.

(vii) Emergency response plan (in case of spills, accidents, fires and the like) prior to

operation of the asphalt plant

(viii) Method statement or plan for the execution of bridge construction works including measures that will be undertaken to address adverse environmental impacts such as erosion of river embankment and siltation of watercourses that may result from such activities

(ix) Cultural and historical mamnagement plan

256. The SSEMP shall be submitted by the contractor for approval to the Construction Supervision Consultant.

2. Monitoring

2.1. Monitoring plan

257. Environmental monitoring is an important aspect of environmental management during construction and operation stages of the project to safeguard the protection of environment. During construction, environmental monitoring will ensure the protection of embankment from potential soil erosion; borrow pits restoration, quarry activities, location of work sites, material storages, asphalt plants, community relations, and safety provisions. During operation, air, noise, and surface water quality monitoring will be important parameter of the monitoring program.

Table 19: The Environmental Monitoring Plan

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to be monitored?	When is the parameter to be monitored? Frequency	Institutional responsibility
Construction stage					
Water quality in surface waters (rivers)	pH, dissolved oxygen, oil products, turbidity, total suspended solids, conductivity, temeperature, lead	Upstream and downstream where the Project road crosses the watercourse Tugol-Say (148+874)	Measurement either directly in river water with a suitable measurement device or sample taking and measurement in a certified laboratory	Second round of baseline monitoring measurements to be conducted before construction start. Than on a monthly basis during construction stage	CSC
Noise/ vibration Rehabilitation works within settlements at locations where the Project road runs close to sensitive receptors such as schools, hospitals, mosques, bazaars, cultural sites or other sensitive socioeconomic infrastructure.	Prior to construction and during construction activities within identified sensitive hotspots and sensitive receptots close vicinity of sensitive receptors regular control of noise level by portable measure instrument. In case noise standards are exceeded implementation of time restrictions for construction activities	At sensitive receptors within settlements • Jumgal village, near the school on the road, LHS; • Kuyruchuk village, near the Azamat shop, RHS; • Tugol-Sai village, near the shop Kutman, LHS; • Bashkugandy village, near the school adjacent to the road, RHS. • Cuitural sites (cemeteries)	By means of portable noise / vibration measurement device	Second round of baseline monitoring measurements to be conducted before construction start. Than a monthly basis during construction stage.	CSC
Phisical damage of the Cuitural sites (cemeteries)	Cuitural sites (cemeteries)	Cuitural sites (cemeteries): • 158 – 160 km Cemetery on the LHS, around 6 m from the road. • 153 km -155 km Cemetery (RHS) on a hill 20-50 m away from the road. • 152 + 300 km Cemeteries on the both sides for Tugol-Say village. The distance between the boundaries of the two	Visual observation	Second round of baseline monitoring measurements to be conducted before construction start. Visual observation in construction period where the cemeteries are indicated (in the km). Document the condition of the	CSC

		cemeteries, 25m; width of the existing road 13.4m. From the border of the cemetery (RHS) to the road 3 m; opposite side (LHS) 3-5 m. • 141 km +300 Cemetery on the left side (LHS) of the road, 10-15 m. • 138 km Complex of mausoleums - Clay mounds. Located close to the road on the right (RHS) 3-3,5m and approximately 100 meters to the left (LHS). • 132 km Cemetery on the LHS located around road 20-30m from the road. • 131 km Cemeteries on both sides of the road (RHS -3 m, LHS - 3.5m from the road)		cemeteries and mausoleums before constructions works.	
Air quality deterioration	Dust, noise, SO2, NOx, CO	Within settlements where the Project road comes close to sensitive receptors such as schools, hospitals, mosques, bazaars or other sensitive socioeconomic infrastructure. At asphalt plant and at aggregate crusher. Jumgal village, near the school on the road, LHS; Kuyruchuk village, near the Azamat shop, RHS; Tugol-Sai village, near the shop Kutman, LHS; Bashkugandy village, near the school adjacent to the road, RHS.	By means of suitable portable measurement device.	Second round of baseline monitoring measurements to be conducted before construction start. Than on a monthly basis during construction stage.	CSC
Potential tree losses because tree item area is subject to embankment filling.	Trees located within the newly designed embankment.	At respective tree locations.	Inspections; observation. An embankment fill of up to 30 cm at the bottom of the tree stem area can be accepted. A filling up of more than 30 cm will damage the tree and cutting will be necessary. Decision is to be made by the construction supervision engineer.	During construction phase.	CSC control by IPIG of MOTR
Top soil preservation	Stockpiling and means of protection	Job site	Inspections; observation	Upon preparation of the construction site, after stockpiling and after completion of works on shoulders	CSC control by IPIG of MOTR
Equipment servicing and fuelling	Prevention of spilling of oil and fuel	Contractor's yard	Inspections; observations	Unannounced inspections during construction	CSC control by IPIG ofMOTR
Worker's safety and health	Official approval for worker's camp; Availability of appropriate personal protective equipment; Organization of traffic on the construction site Provision of safety	Job site and worker's camp	Inspection; interviews; comparisons with the Contractor's method statement	Weekly site visits by the hired Health and safety expert. Unannounced inspections during construction and upon	CSC

	training to the staff according to the requirements of the individual work place			complaint.	
Worker's education on AIDS and STD	Has relevant education been provided?	To be determined by assigned Construction Supervision	To be determined by assigned Construction Supervision	After beginning of works and at appropriate intervals throughout construction	CSC, local health units of the Ministry of health
Material supply Asphalt plant	Possession of official approval or valid operation license	Asphalt plant	Inspection	Before work begins	CSC
Borrow areas	Possession of official approval or valid operation license	Sand and gravel borrow pit and / or quarry	Inspection	Before work begins	CSC control by IPIG of MOTR
Material transport Asphalt	Are the truck loads covered or wetted; Compliance with the Contractor's method statement (restricted working hours; haul routes) dust suppression methods where required	Job site / haul routes	Supervision	Unannounced inspections during work	CSC
Stone		Job site / haul routes	Supervision spot checks	Unannounced inspections during work	CSC
Sand and gravel		Job site / haul routes	Supervision	Unannounced inspections during work	CSC
Surface water protection watercourse Tugol-Say (148+874)	Contractor's compliance with his approved method statement	Bridges and Culverts 1 bridge and 134 culverts	Inspection	Unannounced inspections during bridge and culvert works	CSC, SAEPF
Air pollution from improper maintenance equipment Asphalt plant and Machinery	Exhaust fumes, dust	At site	Measurement at asphalt and crushing plants. Regular check certificate of vehicles and equipment.	Unannounced inspections during construction works	CSC
Planting of new road side trees	Regular monitoring and control of successful growth of new planted trees	At locations of new planted trees	Replanting of trees that have died	Monitoring to be conducted in autumn so as to allow for replacement of failures	1st Year, CSC, control by IPIG of MOTR
Operational stage					
Increased road kills of domestic animals due to higher traffic loads and vehicle speeds	Road kills of animals	Along the new road	Keep records of accidents. In the case that accident hot spots with large mammals are identified, appropriate protective measures shall be elaborated (e.g. reflectors / local fencing, warning signs, speed reductions etc.)	Throughout the Year	Regional Departments of State Road Administration (UAD, LUAD, and GDAD BO)
Increased traffic volumes may increase possible spills of harmful substances	Accidents that cause spills of harmful substances	Along the new road	Counting of accidents	Throughout the Year	MOTR jointly with Road police service of the KR Ministry of home affairs and KR Ministry of emergency situations
Damaged drainage or uncontrolled erosion	Leakages in drainage system and damages due to erosion	Culverts and drainage acilities	Documentation	Throughout the Year	Local MOTR departments
Tree maintenance along the road	Maintenance of newly planted trees	In locations of newly planted trees		Throughout the Year	Local MOTR departments joint with local authorities

2.2. Budget on Mitigation Measures

258. Most of the mitigation measures require the contractors to adopt good site practice, which should be part of their normal construction contract, so there will be no additional costs to be

included in the EMP. Costs of design-related mitigation measures are included in the budgets for the civil works.

259. The primary impact that needs to be mitigated in the overall implementation of the project will be on the affected trees which were due to widening of the carriageway. These trees are mainly common trees such elm, poplar and black locust. The RAP has identified individual trees to be cut. However in the vegetated areas, an estimate is presented based on accepted convention.

260. In order to have a higher degree of success for replacement of affected trees in the section, 2 saplings of the same or similar species is proposed to be planted. Accordingly, the estimated number of trees and cost for the affected trees to be to be substituted is shown below.

Table 20: Number and Cost for Mitigation of Affected Trees

#	Item	unit	QTY	Remarks
1	Affected trees due to widening	each	100	Indicated in field inspection for Cutting
2	For 1:2 Ratio of Replacement	Each	200	Estimated Trees to be Planted
3	Average cost of Replacement	Som	750	Cost of Sapling & Planting
	Total Cost	**Som**	**150,000**	**Budgetary Estimate**
	69 Som/ 1 USD	**USD**	**$2,173.9**	**Budgetary Estimate**

2.3. Budget on Monitoring Activities

261. The estimated cost for the environmental management and monitoring on the consultancy for the entire project construction period of three (3) years is shown in the Table 21 below. This will include fees and other associated cost for management and monitoring of the construction sites and affected areas in the project road. In addition, the main Contractor shall undertake periodic parametric measurements as basis for action to improve their performance on the implementation of measures. Hence, a budget for periodic parametric measurements is hereby included in the Table 22 below.

Table 21: Budgetary Cost for Environmental Monitoring Specialists

Item	Quantity	Unit Cost	Total Cost
Implementation of EMP		US $	US $
International Environmental Specialist (IES)	6 months / 3 years, 12 days fourth year	14,000	91,000
National Environmental Specialist (NES)	21months/3 years, 12 days fourth year	2,500	53,750
Others (travel, per diem, surveys/interviews, reporting, etc.)	LS	20,000	20,000
Total			**164, 750**

Note: This cost estimate is as of May 2016.

Table 22: Budgetary Cost for Environmental Monitoring Requirements

Item	Quantity	Unit Cost	Total Cost
Implementation of EMP		US $	US $
Periodic Parametric Measurements	78		10,400
6 month a year x 4* point (air) x 3 (years) 1** month	76	150***	11.400
6 month a year x 2* point (water) x 3 (years) 1** month	38	100***	3,800

6 month a year x 4* point (noise - vibration) x 3 (years) 1** month	76	150***	11,400
Total			**37,000**

* - the number of points and measurements may vary
** - 3 years a physical work and 1 year a technical survey (measurements 1 month a year)
** *- the cost of laboratory services may vary.

3. Mechanisms for implementation

3.1. Institutional Framework

262. The relevant institutional entities for the project include the KR's Ministry of Finance (MOF), Ministry of Transport and Communication (the EA), Investment Projects Implementation Group (IPIG) under MOTR, the State Agency of Environment Protection and Forestry (SAEPF), the State Inspection on Ecological and Technical Safety under the Government of the Kyrgyz Republic (SIETS), the Department for Disease Prevention and State Sanitation and Epidemic Control of the Ministry of Health Protection of the Kyrgyz Republic.

263. MOTR is responsible for transport sector development and is the EA for the project. IPIG is working under MOTR and will carry out the responsibilities assigned to MOTR. MOF is the responsible government body for coordination with ADB and other donors for foreign assistance.

264. SAEPF is a leading state environmental agency responsible for the environmental policy of the country and coordination of environmental activities of other state bodies. Its functions include:

(i) Development of environmental policy and its implementation;
(ii) Carrying out a state environmental expertise;
(iii) Issuance of environmental licenses;
(iv) Environmental monitoring;
(v) Delivery of environment information services.

265. SIETS carries out its activity in accordance with the Law "On Procedure for inspection of business entities". SIETS exercises control over compliance in established order of:

(i) environmental legislation, set rules, limits and standards of environmental management, standards for emissions and discharges of pollutants and waste disposal in the environment;
(ii) requirements of industrial safety in the construction, expansion, reconstruction, modernization, operation, conservation and liquidation of hazardous production facilities;
(iii) requirements of land legislation;
(iv) requirements for safe operation of equipment and facilities for storage and distribution of petrochemicals and gas, cranes;
(v) requirements of safe use rules in the construction, assembling and commissioning of electrical networks and electrical equipment.

266. The Department for Disease Prevention and State Sanitation and Epidemic Center (DDPSSEC) of the Ministry of Health supervises sanitary and epidemiological welfare of the population, safety of goods and products, environmental compartments and conditions, prevention of harmful impacts of environmental factors on human health. DDPSSEC establishes MPC of chemicals in the environment with regard to the human health safety.

267. The following measures will be taken by the Consultant and by IPIG to perform environmental compliance with the EMP and Monitoring Plan during Project implementation:

(i) The tender and contract documents will clearly set out the contractor's obligations to undertake environmental mitigation measures set out in the Environmental Management Plan.
(ii) The recommended environmental mitigation costs are included as separate items in the Bills of Quantities. This will ensure that there is specific environmental mitigation budget which will be implemented as required. During the procurement, contractors will be encouraged to include these costs in their rates and present the mitigation cost as a line item in the Bill of Quantities. There will be an identified extra payment in the contract to ensure measures are costed and carried out.
(iii) The contractor will recruit an environmental, health and safety manager, who will be responsible for implementing the contractors' environmental responsibilities. The manager will also be responsible for health and safety aspects of work sites. Before commencing physical construction, Contractor will prepare site-specific EMPs (SEMPs), submit to Construction supervision Consultant (CSC) for endorsement and IPIG for approval.
(iv) CSC will conduct environmental monitoring and assist IPIG in implementing EMP and supervising the implementation of mitigation measures by the contractors.

3.2. Reporting Requirements

268. MOTR will monitor and measure the progress of implementation of the EMP. In this regard semiannual monitoring reports during construction stage will be prepared by the Construction Supervision Consultant and submitted to MOTR within 1 month after the reporting period and then disclosed at ADB and MOTR websites. Contractor submits to CSC monthly reports and reports on compliance with mitigation measures and other corrective actions. CSC submits to IPIG quarterly reports containing a section on safeguard performance.

J. Conclusions and Recommendations

1. Conclusions

269. The IEE/EMP-EMoP as part of the contract documents shall be adhered to by the Contractor. Accordingly, the Contractor shall require all his Sub-Contractors should follow also the EMP and such stipulations be shown in Sub-contracting agreements to be verified by the Engineer (or the CS Consultants).

270. The proposed Environmental Management and Monitoring Plans in this IEE will ensure that the good quality for surface water, air and noise in the general area is maintained, primarily during the construction phase. The focus of the assessment is to avoid (especially during design phase), reduce (during construction) and mitigate or compensate (also during construction) the impacts to physical and/or social environment. Adequate public consultations were done in introducing the project as well as presentation of environmental and community impacts and the stakeholder concerns were incorporated into the IEE. The IEE will be disclosed to the public and can be viewed on ADB websites.

271. With a proposed alignment of the road is maintained at Environmental Category B, since the predicted impacts are "site-specific, few if any of them are irreversible, and in most cases

mitigation measures can be readily designed (SPS 2009) and to be incorporated in the detailed designs.

272. As per the Kyrgyz Law, the proposed project will require permits from the government regulatory agencies: The Environmental Permit will be processed by the IPIG with the State Agency on Environment Protection and Forestry after the IEE is cleared with the ADB.

2. Findings and Recommendations

273. The environmental impacts of the Project Road have been assessed and described in the previous sections of this document. Potential negative impacts were identified in relation to design, location, construction and operation of the improved road. Mitigation measures have been developed for finalization in the detailed design phase, for implementation in the construction phase and subsequently for the operations phase to reduce all negative impacts to acceptable levels.

274. As per assessment in this IEE, the proposed Road Project is unlikely to cause significant environmental impacts because:

(i) The proposed project activities are focused on the improvement and reconstruction of the road restricting the works along the Right-of-Way with the main intent to improve the quality of life and quality of environment of the impacted districts;
(ii) The potential negative impacts associated with the design, construction and operation of the proposed Project activities will be temporary, and localized in extent and can be mitigated to acceptable levels;
(iii) Sources of materials can be adequately investigated at the project sites and the projected excess cut materials will be sufficient to cover for the fill requirements. The materials can be stockpiled and stabilized in nearby areas without posing environmental issue, however subject to permission by legitimate owners;
(iv) There will be no Project activities that will involve permanent or temporary loss of income and/or livelihood but rather redound to possible improvement of household earnings due to possible employment of local people in the construction;
(v) The institutional framework has been developed to specify the procedural requirements and responsibilities to ensure environmentally sustainable implementation, i.e. involving IPIG (Client), CSC and Contractor; and
(vi) All construction and operation activities will be monitored and reported by IPIG (by employing CSC) in accordance with the Environmental Monitoring Plan.

275. To ensure environmental and social safeguards, the IEE presents the following recommendations:

(i) The EMP will be followed carefully and required reporting completed in a timely fashion.
(ii) The tree management and maintenance function should be passed to local communities or RMD, until trees have reached 8+ years and do not need careful maintenance.
(iii) CSC and IPIG will deliver the training to all active project participants and concentrate giving sound advice to the contractor, especially on the preparation and implementation of the CEWP.

(iv) Shortly after the operating period starts, the CSC and contractor will conduct safeguards compliance check to be sure that all measures required of thecontractor have been met.

(v) This IEE is “living” document and if required, it will be updated taking into account all environmental requirements, and any significant changes will be discussedand agreed to with ADB.

276. It is important that the Contractor and his Subcontractor that successful implementation entails not only provision of the infrastructure but also preservation of the environment within the framework of Sustainable Development.

ANNEXES:

Annex A: Alignment Sheet

The result of the site visits by the international and local environmental specialists are summarized in an Alignment Sheet. This shows relevant environmental features which can be of concern during the implementation of the road. For the section Epkin (Km 89) to Bashkugandy (km 159), the Alignment Sheet is shown below.

Alignment Sheet Information

№	Section	Description	Parameter	Comments
Section: «Epkin (Km 89) to Bashkugandy (km 159)"				
1	91 km	Five (5) trees may have to be cut down (LHS/RHS)		To be verified with the design
2	94 km	Old borrow pit with sandy-gravel material (RHS)		Potential Material source to be verified
3	99 km	Two (2) trees may have to be cut down		To be verified with the design
4	101 km	There is an old borrow pit with sandy-gravel material (RHS).		Potential Material source to be verified
5		This borrow pit is roosted by wild pigeons seemingly for all year round. This area is a habitat of European hare, foxes, snakes, harvest mice, chukars, ravens, magpies. There are wolves and lynxes in the mountains. From 101 to 111 km there are swamplands and water outcrops on the sides of the road.		Special measures for habitat protection
6	107 km	The road up to Kyzart Pass is unpaved. On the left there is a Jumgal cattle market which is working 1-2 days a week. Cars raise dust on the road.		Dust control measures to be more intensive here
7	108 km	There is a rock deposit with sandy-gravel ground which can be used as a borrow pit.		Potential Material source to be verified
8	111 km	There is an old borrow pit with sandy-gravel materials (RHS)		Potential Material source to be verified
9	114 – 116 km	The road narrows between the mountains; therefore blasting works may have to be done. The area is generally rocky.		To be verified with the design
10	113 km, Kyzart Pass	Kyzart pass. There are small tributary rivers along the road.		Measures to protect water quality will be needed
11	122 km	There is an old borrow pit with sandy-gravel ground (LHS) in 125 m away from the road		Potential Material source to be verified
12	124 km	Eighteen (18) trees to cut down in the general area		To be verified with the design
13	128 km +700, Jumgal village	Jumgal village has a local health post, school, mosque and club. There are 11 grades in school and around 400 students. Drinking water is obtained from rivers and springs. Irrigational network is going through the village; the water source of which is Koldu-Suu River.		Possible extra measures for social impacts/ concerns
14	129 km +200 129 km + 400	Location of administrative building, a mosque (RHS) School, shop (LHS). Sensitive receptor. 	Dust, Noise, Vibration, SO2 NOx CO	Physical analysis and instrumental measurements Possible extra measures for social impacts/ concerns
15	131 km	On the both sides of the road there are cemeteries of Jumgal village. The first part of the cemetery starts at the LHS -3.5 m, and ends on the RHS - 3.0 m. The width of the		To be verified with the design Special measures should be in place to protect

		roadway is 12 m. The distance from the road to the boundary cemetery is 7.9 m. 		structures
16	132 km	Cemetery on the LHS for Jany-Aryk village located around road 20-30m from the road. Jany-Aryk village itself is 2km away from the road, LHS. There is an old borrow pit with sandy-gravel ground (RHS).		Special measures should be SSEMP to protect structures Potential Material source to be verified
17	138 km	Possible existence of historical/ old cemetery Clay mounds were found. Located close to the road (3 -3,5 m) on the right (RHS) and approximately 100 meters to the left (LHS).		Special measures should be SSEMP to protect structures
18	138 km + 800	Around 50 m from the road (LHS) - reservoir and gate to regulate water to Jumgal River		Special measures to protect water quality
19	139 km, Kuyruchuk village	Village Kuyruchuk located at a great distance from the road and the track does not pass.		
20	140 km +700	One (1) tree may be cut down at RHS located 8.2 m from the center of the road		To be verified with the design
21	140 km +900	Around 15 trees may be cut down at LHS located 4.8 m from the center of the road		To be verified with the design
22	141 – 142 km	Around 20 trees may be cut down at RHS located 5.5 m from the center of the road		To be verified with the design
23	141 km +300	Cemetery on the left side (LHS) of the road, 10-15 m.		Special measures should be SSEMP to protect structures
24		Old quarry loamy soil (RHS) 150 meters from the road		Potential Material source to be verified
25	141 – 142 km	Around 50 trees to cut down in the area. Kuyruchuk village is far away from the road.		To be verified with the design
26	148 km	Adjacent to the road: Shop "Azamat", 2 cafes and a source "Kuyruchuk Bulagy". Sensitive Receptor. 	Dust, Noise, Vibration, SO2 NOx CO	Physical analysis and instrumental measurements
27	148+874, Bridge through river Tugol-Say.	Bridge through river Tugol-Say. 	Warter guality measuremaents	Water quality protection measures will be needed
28	149-150 km, Tugol-Say village	Tugol-Say village has a health post, school and a mosque. Sensitive receptor.	Dust, Noise, Vibration,	Physical analysis and instrumental

			SO2 NOx CO	measurements Possible extra measures for social impacts/concerns
29	151 km	Shop "Kutman» (LHS). Sensitive Receptor.		
30	151 km + 300	Mosque, 2 shops (RHS). Sensitive receptor.		
31	152 +300 km	Cemeteries on the both sides for Tugol-Say village. The distance between the boundaries of the two cemeteries, 25m; width of the existing road 13.4m. From the border of the cemetery (RHS) to the road 3 m; Opposite side (LHS) 3-5 m. Sensitive receptor.		Special construction techniques to utilize and measures should be SSEMP to protect structures
32	153 km -155 km	There is a cemetery (RHS) on a hill 20-50 m away from the road.		Special measures should be SSEMP to protect structures
33	157 km	One (1) tree may be cut down at RHS located 6.7 m from the center of the road; while 3 small trees on LHS; additional 9 more in the area may be affected.		To be verified with the design
34	158 – 160 km	Cemetery on the LHS, around 6 m from the road, 2 trees to cut down.		Special measures should be SSEMP to protect structures To be verified with the design for impacts

Annex B - List of Attendees in the Public Consultation iin Bashkugandy

18 Mar. 2016

Attendance Sheet

No.	Full name	Position	Place of residence / Telephone	Signature
1	Chokoev Kylychbek	Deputy of Village Council	Kuiruchuk village /0772456414	/signed/
2	Korgoldaev A.	Land specialist	Kuiruchuk v/a /0773050049	/signed/
3	Nazarov Sharynbai	Retiree	Kuiruchuk v/a /0707813257	/signed/
4	Abylabekov B.	Head of Kuiruchuk v/a	Kuiruchuk village 0778715471	/signed/
5	Dyikanov B.	A.K Deputy	Jumgal /0708940053	/signed/
6	Tursunov Jalil	Member of court of aldermen	Jumgal village	/signed/
7	Bolotaliev Uzak	Jumgal v/a	Jumgal village /0771310580	/signed/
8	Sydykov Jeenbek	Court of Jumgal village	Jumgal village	/signed/
9	Smodiyarov Tynybek	Architect of Jumgal region	Chaek village	/signed/
10	Jumukov Rahatbek	Bash-Kuugandy v/a	Bashkugandy village	/signed/
11	Nusubalieva Nurbubu	Tugol-Sai v/a	Tugol-Sai village	/signed/
12	Bektemirova Baktygul	Tugol-Sai v/a	Tugol-Sai village	/signed/
13	Kokbalaev Kylychbek	Tugol-Sai v/a	Tugol-Sai village	/signed/
14	Jeenaliev Toktosun	Retiree	Tugol-Sai village	/signed/
15	Junushov Zamir	Executive Secretary of Tugol-Sai v/a	Tugol-Sai village	/signed/
16	Sadybakasov Iskender	Regional administration	Chaek village	/signed/
17	Botokanova Jibek	Bash-Kuugandy v/a	Bashkugandy village	/signed/
18	Saparov Adyl	First deputy of head of v/a	Chaek village	/signed/

Список присутствующих

ФИО	Должность	Место проживания / телефон	Подпись
Чоков. Кожобек	Депутат Айтиев кодин	с. Кыркчуу 0772456414.	
Коргоолов Адил	мир орис	Кыркчуу а/о 0773050049	
Назаров Шарипбай	пенсионер	с. Кыркчуу а/о 0707813257	
Кыдыкеев Б.	Кыркчуу а/о Башчысы	с. Кыркчуу 0778715471	
Дыйканов Б	А.Ч. Депутат.	Жумгал 0709940053	
Турсунов Жолдош	Аксакалдар сотунун мүчөсү	Жумгал	
Балталиев. Узак	Жумгал а/о	Жумгал айылы 0-771-31-05-30	
Сыдыков. Жаныбек	Жумгал айылдык Кен	Жумгал айыл	
Сыдыкова Гульбек	Жумгал рай-к прокурор	Чаек айылы	
Жумуров Рахатбек	Баш-Кыргыз а/о	Баш-Кыргыз айыл	
Нусупалиева Нурбюбү	Тюргөн-Сай а/о	Тюргөн-Сай айылы	
Бектемирова Бактагул	Тюргөн-Сай а/о	Тюргөн-Сай айыл	
Кокеева Е. Калтабек	Тюргөн-Сай а/о	Тюргөн-Сай айылы	
Жаныкулов Бактыгул	пенсионер Т-Сай	Тюргөн-Сай айылы	
Жумушев Замир	Тюргөн-Сай. ө.к. катчы	с. Тюргөн-Сай	
Содиконов Искендер	Райондук администрация	с. Чаек	
Водоканова Жыйбек	Баш-Кыргыз а/о	с. Баш-Кыргыз	
Сапаров Адыл	1-жер аймак	с. Чаек	

Annex C – Written Comments, Recommendations and Questions

Name: Sharypbai Nazarov
Residential address: Kuiruchuk village authority
Proposals concerning the road rehabilitation project:
Please build a ditch along the shoulder of the road, which will be needed for watering agricultural land plots.
Questions related the road rehabilitation project:

Name: Kylychbek
Residential address: Kuiruchuk village
Proposals concerning the road rehabilitation project:
Build ditches along the road inside the village.
Provide for opportunities of connecting two markets.
Transfer old removed structures to the village authority.
Lay sleeve pipes for drinking water to be used by new rural communities
Questions related the road rehabilitation project:
Are there standards for prevention of road collapse in swampy areas?

Name: Nurbubu Turdalieva
Residential address: Tugol-Sai village authority
Proposals concerning the road rehabilitation project:
It would be good not to destroy cemeteries along the road to avoid discontent of local people.
It would be good if the road went around the village.
Questions related the road rehabilitation project:
Will the Contractor arrange for sidewalks?
Is it possible to build a road on swampy area?

Name: Bektemirova Baktygul
Residential address: Tugol-Sai village authority
Proposals concerning the road rehabilitation project:
Expand the road; build eight bridges, one big bridge and seven small bridges on Tugol-Sai and Epkin road.
Questions related the road rehabilitation project:
When will the construction be started?

Name: Aslanbek
Residential address: Kuiruchuk village, Zhumgal region
Proposals concerning the road rehabilitation project:
Please lay two pipes for drinking water on two places.
Please connect two markets through an underpass.
Questions related the road rehabilitation project:
Will the Contractor turnover concrete pipe culverts, old pipes to the village authority and use the same for improving roads inside the village?

Name: Zheenbek Sadykov
Residential address: 11 Rysbaev Sydyk Street, Zhumgal village
Proposals concerning the road rehabilitation project:
As the road inside the village is located close to the school, we request you to change the route of the road, for example towards Chet-Bulak.
Questions related the road rehabilitation project:

Name: Tursunov Jalil
Residential address: Zhumgal village authority
Proposals concerning the road rehabilitation project:
Please check if my house is located very close to the road. Please arrange for subway or install a traffic light in front of the school.
Questions related the road rehabilitation project:

Name: Saparov Adyl
Residential address: Baizak village
Proposals concerning the road rehabilitation project:
Please install lighting lamps inside the village.
Turn over old removed concrete pipe to the village authority.
Questions related the road rehabilitation project:

Name: Zamir Zhumushov
Residential address: Tugol-Sai village
Proposals concerning the road rehabilitation project:
Tugol-Sai – Epkin section of the Bash-Kuugandy – Kyzart road will cross the farmlands; so please provide for roundabouts. It would good if the Contractor built five bridges within the Tugol-Sai – Epkin section.
Questions related the road rehabilitation project:

Annex D – Transcript of the video recording: in Bashkuugandy, Kochkor District

Mr. Ruslan, IPIG/MOTR:
As I said, heads of village authorities should take measures to provide the list of utilities to be laid under the road to the MOTR as soon as possible. Specialists shall soon start preparing detailed project design. If you submit your proposals/requests before the start of detailed project, specialists shall identify whether it is possible to meet your requirements or not. It would be good if you have submitted your proposals/requests before April 15.

Local specialist with scale map /plan (architect):
I am holding in my hand a scale map/general plan, where every utilities and places thereof are specified in detail. We need to cooperate closely with heads of each village authority and do our best to include utilities that we need into the project, even if it is a reserve pipe for future needs. Did you understand what these people said? If we fail to submit our proposals/requests before deadline, everything will be done at the expense of our village authorities. To avoid it, we need to start working on it right now.

Local resident:
My house is between the standpipe and road. If the width of the road becomes 15 m, then my house will be destroyed, am I right?

Local specialist with scale map/plan (architect):
You have heard that specialists were working right now. They will identify whether a house/structure will be removed or not. In any case, owners of structures to be removed will be compensated. For example, I am afraid that my warehouse will be removed. Do not think that 16 m width will be coated with asphalt; there will be a shoulder uncoated with asphalt. So vehicles will not be moving close to your structure.

Mr. Ruslan, IPIG/MOTR:
You need to check that against the map. If your fence is on the road, then it will be removed. Otherwise, your fence shall stay where it is. Actually, specialists shall consider whether it is possible to expand the road to opposite side, where there is no any structure. During detailed design, specialists shall take topographic mapping and identify how many electric poles should be shifted. The same is about standpipes. If water supply pipes are under the asphalt-coated part of the road, then they will be shifted. If they are under shoulder or far from it, they will remain in their places.

Local resident:
Last summer I was cultivating my potato. A car parked close to my land and American person with translator got off the car. They asked me if I was local resident. When I said yes, they asked if there was pipe of clean water. I showed them the place where it was. Then they asked about the road to be reconstructed. I answered that the road would be reconstructed and I did not know about its dimensions. They told that they built clean water supply system and they would be controlling it.

Mr. Ruslan, IPIG/MOTR:
That was just a provocation. You know that many years have passed since this road was built. We need to find out if that was licensed or not.

Head of Bashkuugandy village authority:

Every village authority has its land specialist, architect, pasture specialist, etc. They need to cooperate closely and discuss the village's needs concerning utilities.

Local resident:
Thank you very much for your efforts. You are improving our life through improving the road. I am the elder of the Jumgal village. Since I heard that the road would be reconstructed I did not know whom I should apply to. The road shall pass near the school. The school is two-storey building. You said that heavy machines would be operating during construction of the road. Is it possible to provide for bypass? We old people know where the bypass road could be arranged and can show the place. Bypass road should start from Chet-Bulak and end with Kyzart.

Mr. Ruslan, IPIG/MOTR:
Does that road cross arable lands? We need to study its soil composition and many factors. However, you may write down your request. I would like to underline that we shall reconstruct the old, existing road. We will not build a new road. You need to understand it as related to financing. Transformation of road will require much time, bureaucracy issues will arise etc. Contractor will reconstruct road according to standards inside villages. The same standards were applied during construction of the road in the city. Therefore, there is no need to worry about it. In no way shall the Contractor damage public structures, he carry out construction operations according to standards and with due care.

Head of Bashkuugandy village authority:
We already applied concerning a bypass road. Specialists came, examined that road you were telling about and drew a conclusion that it was unsuitable. Mr. Ruslan you should be honest, you are asking us to write down our proposals despite the content thereof. If you are not able to fulfill them, you should not say so. You should be straight and tell that the old/existing road will be reconstructed and no bypass is allowed. (Addressing to local residents) If we, local residents, request to arrange for a bypass road, transformation process will take 6 months-1 year at least and we will lose 2-3 years as a result. Donors' specialists came and examined all possible bypass roads, conducted physical analyses and concluded that they were unsuitable. In addition, they told that if reconstruction of old road required for instance 900 000 000 USD, constructing additional bypass roads would require 3 times as much. Therefore, they refused to build bypass roads.

Local residents are discussing:
Mr. Ruslan told to write down your request concerning the bypass road just to be polite. In fact, no by pass road will be arranged. We need to tell so to our people.

Local resident:
My question is whether our Bashkugandy village will be covered by the project. You were telling that the road would be reconstructed to Bashkugandy village.

Translator:
We were telling that the section 2 would end in Bashkugandy village. However, there are sections 3 and 4 and Bashkugandy village road will surely be reconstructed.

Mr. Ruslan, IPIG/MOTR:
Do not be confused. We divided the road into sections just for the reason that one donor cannot finance all sections. There might be 4 different donors, or might be 3, which will finance by one or two sections of the road. Bashkugandy is surely included into the project. Currently specialists are identifying how many structures will be removed in your village. I hope that financing matters

will have been solved by the end of the President's period of service and our President is also making great efforts in that direction.
Last time I asked to provide your proposals in written. Unfortunately, the MOTR has not received any proposal/request by now. I currently do not know how many pipes should be laid and how many traffic lights should be installed in your village. Once again, I repeat make sure that you have submitted your written proposals by April 15, so we could be able to include them into detail design.
As for underpasses, please decide at first, which is better for you – traffic light or underpass; and then include it into your official request. I would like to note that underpass eventually turn into toilets, for example those in the city. Therefore, you need to decide about it.

Local resident (woman):
Thank you for your coming. We understood your purpose; you are trying to help us. We, local residents, try to include our little requests into your project as usual. (Addressing to local people) We need to sit down and prepare a list of our proposals within two days instead of doing the same until April 15. You may be concerned about cemeteries, I am sure builders are smart people; if they need to expand the road they will do it to opposite side, where there is no structure. The same is about the school you were telling. If you keep on quarrelling, you will lose time and make donors to lose their time. Stop doing so and calm down.
(Addressing to local translator) Please say great thanks to our guest for his assistance in reconstruction of the road.

Head of Bashkuugandy village authority:
We have been looking forward for reconstruction of Jumgal's road. Thanks God, it is about to be reconstructed. Therefore, all residents, we need to support this process by correct explaining it to our villagers. Heads of each village authorities, please support the resettlement/removal process through your land specialists, accompany donors' specialists and explain everything to owners of structures to be removed/shifted to speed up the reconstruction process.

Annex E – Results of laboratory analysis

1. Air quality

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик-Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПРОТОКОЛ
АНАЛИЗА ПРОБ АТМОСФЕРНОГО ВОЗДУХА

№ 220-235

1. Наименование предприятия, организации (заявитель):
Иссык-Кульская, Нарынская, Чуйская области
Автодорога «Балыкчы – Кочкор – Жумгал - Суусамыр»

2. Место отбора проб:

220-Кольцевая г.Балыкчы(нач.уч.)	*228-с.Дыйкан(школа)*
221-с.Таш-Сарай (жил.дом)	*229-с.Байзак(маг.Адилет)*
222-с.Кок-Жар(маг.Рахат)	*230-с.Чаек (дом ветеранов)*
223-с.Чекилдек (маг.Ак-Жол)	*231-с.Кызыл-Жылдыз(спорт.компл.)*
224-с.Ак-Учук (мечеть)	*232-с.Кызыл-Ой (школа)*
225-с.Жумгал (школа)	*233-с.Кожомкул (школа)*
226- с.Куйручук(маг.Азамат)	*234-с.Суусамыр(мил.пункт)*
227-с.Туголсай (маг.Кутман)	*235-с.Тунук (школа)*

3. Цель отбора проб: *Определение концентраций загрязняющих веществ в атмосферном воздухе*

4. Кем отобраны пробы: *гл.спец. Райкеевой Р.Н., спец. Жаманаковой А.Н.*

5. Дата и время отбора проб: *30.11.- 02.12.2015г., с 10ч.00мин.-17ч.00мин.*

6. Характер отобранных проб: *разовый*

7. Метод анализа: *1. Руководство по контролю загрязнения атмосферы РД 52.04. 186-89*

8. Даты проведения испытаний: *04.12.- 10.12.2015г.*

стр.1 из 3

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПАСПОРТ НА ПРОБУ

1. **Наименование, адрес объекта:** Иссык-Кульская, Нарынская, Чуйская области автодорога „Балыкчы - Кочкор - Жумгал - Сусамыр"
2. **Место отбора проб:** 1. Женьисская г. Балыкчы, 2 с. Тюп - Сарай (нар жол орнов), 3 с. Кок-Жар (маг. „Рахат"), 4 с. Чолпон (маг. „Ак-Ордо"), 5. с. Ак-Чий (мечеть), 6 с. Жумгал (школа), 7 с. Кутурук (маг. „Ырмат"), 8 с. Тюлкий (маг. „Мутман"), 9 с. Онтосай (школа) 10. с. Бейшек (маг. „Рахат"), 11 с. Чаек (дом вечер.), 12. с. Кызыл-Жылдыз (спорт. площ.), 13. с. Сноп (школа), 14 с. Кашка-Суу (школа), 15. с. Сусамыр (маг. нурел), 16. с. Эрмек (школа)
3. **Цель отбора:** Определение концентрации загрязняющих веществ в атмосферном воздухе
4. **Характер отобранных проб:** разовые
5. **Условия окружающей среды:** ясно, солнечно
6. **Условие отбора проб:**
7. **Дата отбора проб:** 30.11 - 02.12.2015г., с 10^00 - 14^00
8. **Метод отбора проб:** 1.РД 52.04.186-89 "Руководство по контролю загрязнения атмосферы". 2.ГОСТ Р 50820-95 Оборудование газоочистное и пылеулавливающее. Методы определения запыленности газопылевых потоков.

Представитель УЭМ (должность, фамилия) Гл. спец. Райсова Р.Н.

Госинспектор (должность, фамилия) спец. Шамшакова А.Н.

Представитель предприятия (должность, фамилия) инж. химлаборатории КОСРЭ Ашапова Н.

Наимен-е ингред-я	Ед. изм.	Данные анализа по точкам												
		220	Прев. ПДК макс. раз.	221	Прев. ПДК макс. раз.	222	Прев. ПДК макс. раз.	223	Прев. ПДК макс. раз.	224	Прев. ПДК макс. раз.	225	Прев. ПДК макс. раз.	ПДК макс. раз.
Диоксид серы	мг/м³	0,03± 0,006	-	<0,03		<0,03	-	<0,03	-	<0,03	-	<0,03	-	0,5
Диоксид азота	мг/м³	0,022± 0,004	-	0,027± 0,005	-	<0,02	-	0,027± 0,004	-	0,017± 0,003	-	0,018± 0,003	-	0,085
Нитробензол (пары)	мг/м³	0,28± 0,07	-	<0,26	-	<0,26	-	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,5
Наимен-е ингред-я	**Ед. изм.**	**226**	**Прев. ПДК макс. раз.**	**227**	**Прев. ПДК макс. раз.**	**228**	**Прев. ПДК макс. раз.**	**229**	**Прев. ПДК макс. раз.**	**230**	**Прев. ПДК макс. раз.**	**231**	**Прев. ПДК макс. раз.**	**ПДК макс. раз.**
Диоксид серы	мг/м³	<0,03		<0,03	-	<0,03	-	0,03± 0,006	-	<0,03	-	<0,03	-	0,5
Диоксид азота	мг/м³	<0,02	-	0,017± 0,002	-	0,029± 0,003	-	0,025± 0,005	-	0,013± 0,003	-	0,011± 0,002	-	0,085
Нитробензол (пары)	мг/м³	0,29± 0,07	-	0,28± 0,07	-	<0,26	-	0,29± 0,07	-	0,29± 0,07	-	<0,26	-	0,5

стр.2из 3

Наимен-е ингред-я	Ед. изм.	Данные анализа по точкам											
		232	Прев. ПДК макс. раз.	233	Прев. ПДК макс. раз.	234	Прев. ПДК макс. раз.	235	Прев. ПДК макс. раз.			ПДК макс. раз.
Диоксид серы	мг/м³	0,03± 0,004	-	0,043± 0,005	-	0,04± 0,005	-	0,037± 0,007	-			0,5
Диоксид азота	мг/м³	0,021± 0,004	-	0,027± 0,005	-	0,031± 0,006	-	0,035± 0,006	-			0,085
Нитробензол (пары)	мг/м³	<0,26	-	0,28± 0,07	-	<0,26	-	<0,26	-			0,5

Главный специалист **Т. Садыкбеков**

Исполнитель не несет ответственности, если проба отобрана самим заказчиком
Перепечатка протокола без разрешения испытательной лаборатории запрещена
Протокол испытаний касается только образцов, подвергнутых испытаниям

стр.3из 3

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ
КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК
АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА
ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И
ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик- Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

05/178 от 03.12.2015г

Директору
KOCKS CONSULT GMBH
Карстен Гризе

Управление экологического мониторинга ГАООС и ЛХ при ПКР не может выдать результаты по окиси углерода (СО) в атмосферном воздухе по причине непригодности газоанализатора ПГА-200.

Справка о непригодности прибора ПГА-200 прилагается на 1 л.

Начальник **Б.Маматаиров**

2. Water quality

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ
КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА
МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА
ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И
ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик- Батыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

Аттестат аккредитации
№ KG 417/КЦА.ИЛ.049
от 05. 04. 2013 г.
А-метод не аккредитован

ПРОТОКОЛ
АНАЛИЗА ПРОБ ВОДЫ

№ 513-519

1. **Наименование предприятия, организации (заявитель);** *Иссык-кульская, Нарынская, Чуйская обл., автодорога Балыкчи-Кочкор-Жумгал- Суусамыр.*

2. **Место отбора проб;**
513- р.Чу, с. Таш-Сарай (мост)
514-р.Чу, гидропост
515-р. Джоон-Арык, с.Кок-Жар(мост)
516-р.Жумгал, с. Чаек (мост)
517- р. Кокомерен, с. Арал (мост)
518- р. Кокомерен, с.Кызыл-Ой (мост)
519-р.Каракол, с. Кожомкул (мост)

3. **Цель отбора проб;** *Определение прозрачности, нефтепродуктов*

4. **Кем отобраны пробы;** *Спец.УЭМ Жаманаковой, Райкеевой*

5. **Дата и время отбора проб;** *30.11-02.12.2015 г., 10.00-17.00*

6. **Дата(ы) проведения испытаний;** *02.12.2015 г.*

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИГИНИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПАСПОРТ НА ПРОБУ
(ВОДА)

1. **Наименование, адрес объекта:** Иссык-Кульская, Нарынская, Чуйская области автодорога Балыкчи - Боконбаева - Кочкор - Суусамыр
2. **Место отбора проб:** 1 р. Чу, с Таш-Сарай (мост), 2. р. Чу, гидропост, 3 р. Джон-Арык, с Кок-тор (мост), 4 р. Кошоолу, с Таш (мост), 5. р. Кокомерен, с Арал (мост), 6. р. Кокомерен, за с Кызыл-Ой (мост), 7. р. Кирпичи, за с Боконбаевы (мост)
3. **Цель отбора:**
4. **Характер отобранных проб:** разовый
5. **Условия окружающей среды** ясно, солнечно
6. **Дата отбора проб:** 30.11 - 02.12.2015г, с 10.00 - 14.00
7. **Метод отбора проб:** *ГОСТ Р 51592-2000 «Вода. Общие требования к отбору проб»; НВН 33-5.3.01-85 Инструкция по отбору проб для анализа сточных вод*

Представитель УЭМ (должность, фамилия) Специалист Томилакова А.Н.

Госинспектор (должность, фамилия) Лукошова Н.

Представитель предприятия (должность, фамилия) Жалал колдоолин КОСКС

1 экз (л.)

Наименование ингредиентов	Ед. изм.	Данные анализа по точкам							ПДК		НД
		513	*514*	*515*	*516*	*517*	*518*	*519*	+	++	
Прозрачность*	См.	*41*	*37*	*43*	*36*	*40*	*37*	*32*			СЭВ ч.1 М. 1977
Нефтепродукты	мг/л	*<0,05*	*<0,05*	*<0,05*	*<0,05*	*<0,05*	*<0,05*	*<0,05*	**0,05**	**0,3**	ПНД Ф 14.1:2:4.128-98

Главный специалист **С.В.Янова**

+Перечень рыбохозяйственных нормативов ПДК и ОБУВ вредных веществ для воды водных объектов, имеющих рыбохозяйственное значение. Контроль качества поверхностных вод. Госкомитет России по рыболовству, Москва 1999 г.

++ГН 2.1.5.1315-03. ПДК химических веществ в воде водных объектов хозяйственного и культурно-бытового водопользования, Минздрав России, Москва. 2003 г.

Исполнитель **не несет ответственности**, если проба отобрана самим заказчиком.
Перепечатка протокола без разрешения испытательной лаборатории **запрещена**.
Протокол испытаний касается **только** образцов, подвергнутых испытаниям.

3. Noise

Аттестат аккредитации Кыргызского центра аккредитации
№KG 41/КЦА .И.L097 от 06.10.2010г.

Группа по контролю физических факторов Департамента госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики

ПРОТОКОЛ ИЗМЕРЕНИЕ ШУМА
№ 81 от «03» декабря 2015 г.

Юридическое лицо, индивидуальный предприниматель или физическое лицо, где производятся измерения **KOCKS проект АБР TA 48401-002**

(наименование и юридический адрес)

Объект, где производятся измерения. **Альтернативная автодорога Север-Юг**
(наименование, фактический адрес)
Балыкчы-Кочкор-Чаек-Суусамыр ч-з суусамыр

Наименование средств измерений и сведения о государственной поверке:

Наименование средства измерения	Номер	Свидетельство о поверке		Поверено до
		номер	дата	
Октава 101А	№ 04А445	№592	16.03.2015г.	16.03.2016г.

1. Нормативная документация, в соответствии с которой проводились измерения

СН 2.2.4/2.1.8.562-96 «Шум на рабочих местах, в помещениях жилых, общественных зданий и на территории жилой застройки»

Источники физических факторов и их характеристики:
автомашины

общее количество страниц 3 : страница 1

Результаты измерений:

№	Место измерений	Характер шума						Уровни звукового давления в дБ в октавных полосах со среднегеометрическими частотами в Гц										
		По спектру		По временным														
		Широкопо	Тональный	постоянный	Колеба	прерывистый	импульсный	31,5	63	125	250	500	1000	2000	4000	8000	Уровень звука (дБ А)	
1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	20	
1	Г. Балыкчы	+				+											43,1	Факт
																	70	ПДУ
																		прев
2	С. Таш-Сарай	+				+											40,2	факт
																	70	ПДУ
																		прев
3	С.Кок-Жар	+				+											57	факт
																	70	ПДУ
																		прев
4	С.Чекилдек	+				+											68,1	Факт
																	70	ПДУ
																		прев
5	С.Ак-Учук	+				+											67,3	Факт
																	70	ПДУ
																		прев
6	С.Жумгал	+				+											69	факт
																	70	ПДУ
																		прев
7	С.Куйручук	+				+											58	факт
																	70	ПДУ
																		прев
8	С.Туголсай	+				+											53	факт
																	70	ПДУ
																		прев
9	С.Дыйкан	+				+											42,7	Факт
																	70	ПДУ
																		прев
10	С.Байзак	+				+											63,2	факт
																	70	ПДУ
																		прев
11	С.Чаек.	+				+											53	факт
																	70	ПДУ
																		прев
12	Конец с. Кызыл Жылдыз	+				+											55	факт
																	70	ПДУ
																		прев
13	с.Кызыл-Ой	+				+											52	факт
																	70	ПДУ
																		прев

общее количество страниц _3_: страница _2_

Результаты измерений:

№	Место измерений	Характер шума						Уровни звукового давления в дБ в октавных полосах со среднеметрическими частотами в Гц										
		По спектру		По временным														
		Широкопол.	Тональный	постоянный	Колеба.	прерывистый	импульсный	31,5	63	125	250	500	1000	2000	4000	8000	Уровень звука (ДБ А)	
1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	20	
14		+				+											42	факт
	С.Кожомкул																70	ПДУ
																		прев
15		+				+											55	факт
	С.Суусамыр																70	ПДУ
																		прев
16		+				+											54	факт
	С.Тунук																70	ПДУ
																		прев
		+				+												
		+				+												
		+				+												
		+				+												

Уполномоченный представитель объекта, присутствующий при проведении измерений: фамилия, имя, отчество, должность Асаналиева Н. Эколог проекта
подпись

	Должность	ФИО	Подпись
Измерения проводил(и)	Санитарный врач	Арзыкулов Ж.Т.	
Руководитель лаборатории:			

Протокол составляется в двух экземплярах, 1-й экземпляр выдается по месту требования, 2-й экземпляр остается в лаборатории.

Заключение По результатам измерений уровень шума вдоль дороги не превышает предельно-допустимого необнаружены.

Основание: СН 2.2.4/2.1.8.562-96 «Шум на рабочих местах, в помещениях жилых, общественных зданий и на территории жилой застройки»

Санитарный врач **Арзыкулов Ж.Т.**

общее количество страниц _3_ : страница _3

4. Vibration

Аттестат аккредитации Кыргызского центра аккредитации
№KG 41/КЦА .И.1.097 от 06.10.2010г.

Группа по контролю физических факторов Департамента госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики

ПРОТОКОЛ ИЗМЕРЕНИЕ ВИБРАЦИИ
№__82__ от «03 » декабря 2015 г.

Юридическое лицо, индивидуальный предприниматель или физическое лицо, где производятся измерения **KOCKS проект АБР ТА 48401-002**
(наименование и юридический адрес)

Объект, где производятся измерения **Альтернативная автодорога Север-Юг**
(наименование, фактический адрес)
Балыкчы-Кочкор-Чаек-Суусамыр ч-з суусамыр

Наименование средств измерений и сведения о государственной поверке:

Наименование средства измерения	Номер	Свидетельство о поверке		Поверено до
		номер	дата	
Октава 101в	№ 04А445	№ВА-06-05 7551	02.12.2014г.	02.12.2015г.

1. Нормативная документация, в соответствии с которой проводились измерения
СН 2.2.4/2.1.8.566-96 "Производственная вибрация, вибрация в помещениях жилых и общественных зданий

Источники физических факторов и их характеристики:
Грузовые автотранспортные средства и производственные оборудования завода

общее количество страниц __3__: страница 1

Результаты измерений:

№	Место измерений	Характер шума						Уровни звукового давления в дБ в октавных полосах со среднеметрическими частотами в Гц									Уровень звука (ДБА)	
		По спектру		По временным														
		Широкополосный	Тональный	Постоянный	Колеба.	прерывистый	импульсный			1,0	2,0	4,0	8,0	16,0	31,5	63		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20	
1	Г. Балыкчы																92,4	Факт
																	108	ПДУ
																	-	прев
2	С. Таш-Сарай																91,7	Факт
																	108	ПДУ
																	-	прев
3	С.Кок-Жар																90	Факт
																	108	ПДУ
																	-	прев
4	С.Чекилдек																91,1	Факт
																	108	ПДУ
																	-	прев
5	С.Ак-Учук																91,2	Факт
																	108	ПДУ
																	-	прев
6	С.Жумгал																92	Факт
																	108	ПДУ
																	-	прев
7	С.Куйручук																91	Факт
																	108	ПДУ
																	-	прев
8	С.Туголсай																92,3	Факт
																	108	ПДУ
																	-	прев
9	С.Дыйкан																95	Факт
																	108	ПДУ
																	-	прев
10	С.Байзак																88	Факт
																	108	ПДУ
																	-	прев
11	С.Чаек.																90	Факт
																	108	ПДУ
																		прев
12	Конец с. Кызыл Жыллыз																87	Факт
																	108	ПДУ
																		прев
13	с.Кызыл-Ой																88	Факт
																	108	ПДУ
																		прев
14	С.Кожомкул																86	Факт
																	108	ПДУ
																		прев

Результаты измерений:

№		Характер шума						Уровни звукового давления в дБ в октавных полосах со среднегеометрическими частотами в Гц									Уровень звука (ДБА)	
		По спектру		По временным														
		Широкопол.	Тональный	Постоянный	Колебл.	прерывист.	импульсн.			1,0	2,0	4,0	8,0	16,0	31,5	63		
1		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20	
15	С.Суусамыр																92	Факт
																	108	ПДУ
																	-	прек
16	С.Тунук																91	Факт
																	108	ПДУ
																	-	прек

уполномоченный представитель объекта, присутствующий при проведении измерений:
фамилия, имя, отчество _____ должность **эколог** Асанкулова И.А.
подпись _____

	Должность	ФИО	Подпись
Измерения проводил(и)	Санитарный врач	Арзыкулов Ж.Т.	

Заключение: Согласно инструментальным замерам вибрация непостоянное, уровень вибрации по виброскорости на измеренных точках не превышает предельно-допустимого уровня.

Основание: Санитарные нормы СН 2.2.4/2.1.8.566-96 "Производственная вибрация, вибрация в помещениях жилых и общественных зданий

Санитарный врач _____ **Арзыкулов Ж.Т.**

общее количество страниц _3_ : страница _3_

Annex F: Conclusion of the Ministry of Culture and Tourism, KR

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН МАДАНИЯТ, МААЛЫМАТ ЖАНА ТУРИЗМ МИНИСТРЛИГИ

МИНИСТЕРСТВО КУЛЬТУРЫ, ИНФОРМАЦИИ И ТУРИЗМА КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720040, Кыргыз Республикасы
Бишкек ш., Пушкин көч. 78
ААК "ЭСК" Бишкек шаары, Бишкек филиалы
Эсеп-айрык № 12005223818101048
р/с 20220121
ИНН 00872200410076 ОКПО 23546641
тел.+996(312) 62-04-82, факс 62-35-80

720040, Кыргызская Республика
г. Бишкек, ул. Пушкина, 78
Бишкекский филиал ОАО РСК
расчет № 12005223818101048
к/с 20220121
ИНН 00872200410076 ОКПО 23546641
тел.+996(312) 62-04-82, факс 62-35-80

«27» 04 2016 ж.
Чыгыш (кат.) № 04-3/1565
Информация (кат.) №

Компании
KOCKS Consult GMBH

Koblenz
Stegemannstr, 32/38
тел.: +49 261 1302-0

Министерство рассмотрев отчет «Археологического обследования на территории соединительных дорог – Альтернативная дорога Север-Юг, коридоры ЦАРЭС 1 и 3, общей протяженности 260 км на территориях Тонского района Иссык-Кульской области, Кочкорского и Жумгальского районов Нарынской области, Жайылского района Чуйской области Кыргызской Республики» выполненный Чаргыновым Т. – доцентом Кыргызского национального университета имени Ж. Баласагына, согласно Открытого листа формы № 3 и заключения комиссии от 25 апреля 2016 года образованного приказом Министерства культуры, информации и туризма Кыргызской Республики № 164 от 21 апреля 2016 года, сообщает следующее:

Заказчику согласно законодательства Кыргызской Республики в сфере историко-культурного наследия необходимо провести археологические раскопки и документирование «на спас» с привлечением специалистов-археологов на нижеследующих недвижимых объектах историко-культурного наследия, расположенных в зоне проектируемого строительства автодороги:

– могильник Куйручук 1 **(N41°58'41.0" E074°51'56.0")** (79-ый км. по обе стороны автодороги от Кочкора к Чаеку);

– могильник Кыргын 1 **(N41°52'24.2" E074°19'45.3")** (3,5 км. от поворота на право, мост через реку Кокомерен);

- могильник Кырчын 2 **(N41°52'59.4" E074°19'20.3")** (в 6-ти км. от поворота на право, мост через реку Кокомерен);

- могильник между селами Кырчын и Кызыл-Ой **(N41°54'46.8" E074°15'15.5")** (в 14-ти км. от поворота на право, мост через реку Кокомерен).

Также Заказчику обеспечить сохранность нижеследующих недвижимых объектов историко-культурного наследия с изменением маршрута проектируемого строительства автодороги в радиусе не менее 50 метров от могильника и организацией работ по разработке их охранных зон и представить на согласование. При не возможности исполнения вышеуказанных требований необходимо провести археологические раскопки и документирование «на снос» с привлечением специалистов-археологов, расположенных в зоне проектируемого строительства автодороги:

- объекты каменно-земляной насыпью **(N42.18314 E75.45456)** (27-ой км. автодороги от Кочкора к Чаеку);

- могильник **(N42°06'21.9" E075°12'00.5")** (44-ый км. автодороги от Кочкора к Чаеку (перевал Кызарт));

- могильник Кызарт **(N42°05'39.7" E 075°08'13.4")** (50-ый км. автодороги от Кочкора к Чаеку);

- могильник Куйручук **(N41.98436 E74.79124)** (86-ой км. автодороги от Кочкора к Чаеку);

- могильник **(N41°51'39.5" E074°20'00.4")** (в 2-х км. от поворота на право, мост через реку Кокомерен).

Заказчику разработать проект дороги в обход на тех территориях, где расположены и находятся под риском разрушения нижеследующие недвижимые объекты историко-культурного наследия (оседлого населения средневековья и этнографические погребально-поминальные сооружения) с привлечением представителей органов местного самоуправления и специалистов-археологов:

- Сары-Бузунский караван-сарай **(N42.400664 E76.099044)** (8-ой км. от г. Балыкчы по направлению Кочкор);

- комплекс мавзолеев **(N41.97764 E74.91014)** (75-ый км. автодороги от Кочкора к Чаеку);

- комплекс мавзолеев **(N41.99129 E74.64144)** (100-м км. автодороги от Кочкора к Чаеку между селами Байбак и Дыйкан);

- **Кумбез Кожомкула** у въезда в село Кожомкул со стороны села Кызыл-Ой.

Кроме того, Заказчику организовать повторное археологическое обследование на наличие или отсутствие объектов историко-культурного наследия на отрезке автодороги от села Кожомкул до автодороги Бишкек-Ош.

В связи, с вышеизложенным с учетом выполнения вышеуказанных мероприятий будет рассмотрен вопрос проектируемого строительства «Соединительных дорог – Альтернативная дорога Север-Юг, коридоры

ЦАРЭС 1 и 3, общей протяженности 260 км на территориях Тонского района Иссык-Кульской области, Кочкорского и Жумгальского районов Нарынской области, Жайылского района Чуйской области Кыргызской Республики».

Статс-секретарь. **Б. Секимов**

Х. Дуйшеев, 56-40-21

Annex G: Information letter from MOTR

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ТРАНСПОРТ ЖАНА ЖОЛДОР МИНИСТРЛИГИ

720017, Бишкек ш., Исанов көч., 42
тел: +996 (312) 31-43-85, 31-43-13,
факс: +996 (312) 31-28-11
E-mail: mtk@mtk.gov.kg
http://www.mtk.kg

МИНИСТЕРСТВО ТРАНСПОРТА И ДОРОГ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720017, г. Бишкек, ул. Исанова, 42
тел. +996 (312) 31-43-85, 31-43-13,
факс: +996 (312) 31-28-11
E-mail: mtk@mtk.gov.kg
http://www.mtk.kg

№ 14-8/5879 «20» 08 2016 ж. (г.)

На № _____

КР Өкмөтүнүн Чүй облусундагы ыйгарым укуктуу өкүлчүлүгү

КР Өкмөтүнүн Нарын облусундагы ыйгарым укуктуу өкүлчүлүгү

КР Өкмөтүнүн Ысык-Көл облусундагы ыйгарым укуктуу өкүлчүлүгү

Жайыл районунун мамлекеттик райондук администрациясы

Кочкор районунун мамлекеттик райондук администрациясы

Жумгал районунун мамлекеттик райондук администрациясы

Балыкчы ш. мэриясы

Бишкек – Ош автожолун Бишкек-Нарын-Торугарт автожолу (Балыкчы ш. – Кочкор а. – Арал а. – Суусамыр а.) менен коридор аралык бириктирүүчү жолду реабилитациялоо долбооруна карата Техникалык-экономикалык негиздемени даярдоо үчүн Азия Өнүктүрүү Банкы тарабынан бөлүнгөн техникалык жардамды ишке ашыруунун алкагында, бул иштер үчүн Азия Өнүктүрүү Банкы тарабынан «KOCKS» консультациялык компаниясы тандалган.

Сунушталып жаткан долбоор Кыргыз Республикасынын региондорунун төмөндөгү социалдык-экономикалык көрсөткүчтөрүн жакшыртат:

- Түштүк региондордон Нарын жана Ысык-Көл облустарына адамдардын жана товарлардын жылуусунда жолго кеткен убакыттын кыскарышы;
- каттамды кыскартууга жана жакшы жол шарттарына байланыштуу транспорт чыгымдарын азайтуу;
- жергиликтүү жана эле аралык ташууларды жана кыймылдарды көбөйтүү;
- жергиликтүү жашоочулар үчүн кошумча киреше алып келүүчү мүмкүнчүлүктөрдүн пайда болушу.
- жаңы жумушчу орундарын түзүү;

- транспорт каражаттарынын (ТК) оң абалы/ пайдалануу чыгымдарын кыскартуу.

Техникалык-экономикалык негиздемени даярдоонун алкагында «KOCKS» консультациялык компаниясынын адистери тарабынан КР ТжКМ Инвестициялык долбоорлорду ишке ашыруу тобунун өкүлдөрү менен биргеликте "Курчап турган чөйрөгө таасирлерин баалоо отчетун" жана "Көчүрүү жана жерлерди алуу планын" даярдоо боюнча иштер аяктады.

Бул документтер менчик ээлеринин укуктарын коргоого, курчап турган чөйрөнү коргоого багытталган КР ченемдик-укуктук актыларына ылайык жана АӨБ Коргоо чаралары боюнча саясатынын талаптарын эске алуу менен даярдалды.

Азыркы убакта Техникалык-экономикалык негиздемени даярдоо боюнча иштер аяктап калды жана пландалган долбоордун таасирин тийиши мүмкүн, реабилитациялануучу автожол участогунун жээгинде жашаган, жергиликтүү калктын арасында пландалган долбоорго байланыштуу маалыматты жайылтууга тиешелүү Азия Өнүктүрүү Банкынын талабын аткаруу керек.

Жогоруда берилгендердин негизинде, КР "КР мамлекеттик органдарынын жана жергиликтүү өз алдынча башкаруу органдарынын жүргүзүүсүндө турган маалыматтарга жетүү мүмкүндүгү жөнүндө" мыйзамынын талаптарын аткаруу, ошондой эле Азия Өнүктүрү Банкынын Коргоо чаралары боюнча саясатынын талаптарын сактоо максатында. Сиздерден долбоордун мүмкүн болуучу таасири жөнүндө маалымдуулукту жогорулатуу максатында жергиликтүү калк арасында түшүндүрүү иштерин жүргүзүүнү өтүнөбүз. Бишкек – Ош автожолун Бишкек-Нарын-Торугарт автожолу менен коридор аралык бириктирүүчү жолду реабилитациялоо долбоору төмөндөгү калктуу пунктттарды камтыйт:

Чүй облусунун Жайыл району:
- Кызыл-Ой а.,Кожомкул а., Суусамыр а., Тунук а., Суусамыр айыл аймагы.

Нарын облусунун Кочкор району:
-Көк-Жар а., Көк-Жар айыл аймагы;
- Чекилдек а., Семиз-Бел айыл аймагыа;
- Эпкин/Ак-Учук а., Чолпон айыл аймагы.

Нарын облусунун Жумгал району:
- Жумгал а., Жумгал айыл аймагы;
- Куйручук а., Куйручук айыл аймагы;
- Түгөл-Сай а., Түгөл-Сай айыл аймагы;
- Баш-Кууганды а., Кырчын а., Баш-Кууганды айыл аймагы;
- Байзак а., Байзак айыл аймагы;
- Чаек а., Чаек айыл аймагы;
- Кызыл-Жылдыз а., Кызыл-Жылдыз айыл аймагы.

Балыкчы ш., Ысык-Көл облусу:

Тиркеме: Долбоор жана долбоордун мүмкүн болуучу таасири жөнүндө маалымат - 5 барактa.

Урматтоо менен,

Министр **З.Айдаров**

Аткар. Абдыгулов А. Тел. 31-43-56

1-тиркеме

Долбоор жана долбоордун мүмкүн болуучу таасири жөнүндө маалымат
(экологиялык жана социалдык маселелер).

Балыкчы ш., Таш-Сарай жана Орто-Токой айылдары.

Кочкор району:

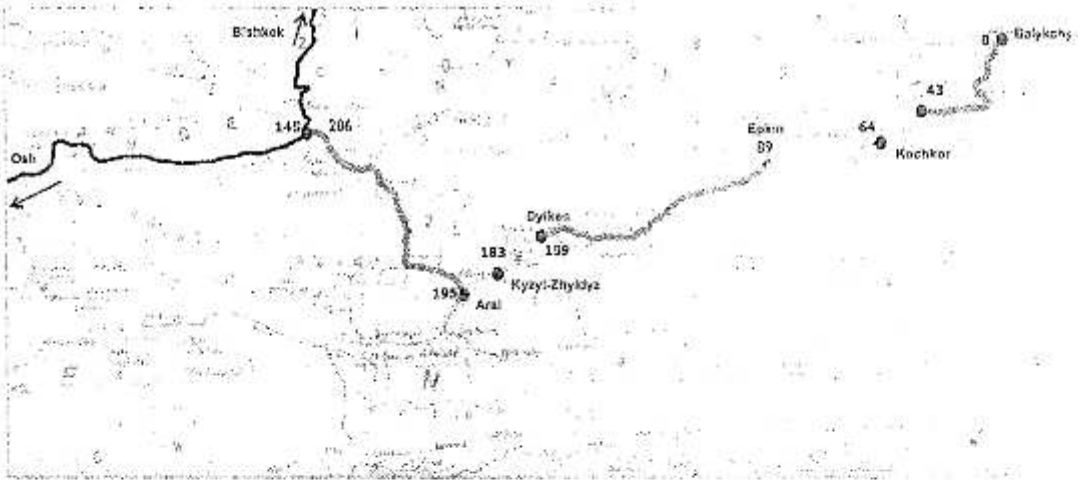
1. Көк-Жар а/а – Көк-Жар айылы
2. Семиз-Бел а/а – Чекилдек айылы
3. Чолпон а/а – Эпкин/Ак-Учук айылы

Жумгал району:

1. Жумгал а/а – Жумгал айылы
2. Куйручук а/а – Куйручук айылы
3. Түгөл-Сай а/а – Түгөл-Сай айылы
4. Баш-Кууганды а/а – Баш-Кууганды, Кырчын айылдары
5. Байзак а/а – Байзак айылы
6. Чаек а/а – Чаек, Ак-Татыр айылы
7. Кызыл-Жылдыз а/а – Кызыл-Жылдыз айылы

Жайыл району:

Суусамыр а/а – Кызыл-Ой, Кожомкул, Суусамыр, Тунук айылдары



Кыргыз Республикасынын Өкмөту Азия өнүктүрүү банкына (АӨБ) БАРЭК алкагында 1 жана 3-коридорлорду бириктирүүчү жолду жакшыртуу боюнча долбоорго кайтаруу кредитти жана/же грантты аныктоо, иштеп чыгуу жана даярдоо өтүнүчү менен кайрылган. ТППП негизги жыйынтыгы донорлордун каржылоосу үчүн ылайыктуу техникалык-экономикалык негиздемени даярдоо болуп саналат.

ТППП 5 участокту камтыйт:

- Балыкчыдан (км) 43 километр белгисине чейин (км 0 - км 43), болжол менен 43 километр (км);
- Кочкордон Эпкин айылына чейин (км 64 – км 89), болжол менен 25 км;
- Эпкинден (89 км) Баш-Кууганды чейин [мурдагы Дыйкан] (159 км), болжол менен 70 км;

- Дыйкан айылынан тартып (159 км) Кызыл-Жылдыз айылына чейин (183 км), болжол менен 24 км, мында Чаек айылын жана Кызыл-Жылдыз айылынын бир бөлүгүн айланып өтүү үчүн айланма жолду куруу каралууда; жана
- Аралдан тартып (195 км) Төө-Ашуу ашуусуна чейин (286 км), болжол менен 91 км.

Долбоордун алкагында корголбогон компоненттердин гармактык койгойлөрү жагы чечилет. Өкмөт менен айрым деталдарда макулдашууга жетишүү талап кылынат, аларга төмөндөгүлөр кирет: (i) Кыргыз Республикасында жол активдерин башкаруунун натыйжалуулугун жогорулатуу, (ii) өкмөттү транспорт секторундагы институционалдык реформалар менен колдоо, (iii) натыйжалуулукка негизделген тейлөөгө контракттарды жүргүзүү жана (iv) Кыргыз Республикасында жол коопсуздугун жогорулатуу.

Транспорт жана коммуникация министрлигине (ТжКМ) карштуу Инвестициялык долбоорлорду ишке ашыруу тобу (ИДИТ) курулуш баскычында ушул долбоор боюнча Аткаруучу орган (АО) катары чыгат. Мүмкүн болуучу финансылык жардамдын баштапкы бөлүгү катары, АӨБ бүтүндөй долбоор үчүн техникалык-экономикалык негиздемени жана болжолдуу долбоорду даярдоо үчүн «Кокс Консульт Гмбх», Германия, жалдады. Консультациялык кызмат көрсөтүүлөрдүн көлөмү баштапкы экологиялык изилдөөнү (БЭИ); жана социалдык талдоону жана жакырчылыкты талдоону жана 2009-жылдагы АОБ Кепилдиктер саясаты жөнүндө биллдирүүгө (КСБ) ылайык кесепеттерин баалоону камтыйт.

Сунушталып жаткан долбоор Кыргыз Республикасынын региондорунун төмөндөгү социалдык-экономикалык көрсөткүчтөрүн жакшыртат:

- Түштүк региондордон Нарын жана Ысык-Көл облустарына адамдардын жана товарлардын жылуусунда жолго кеткен убакыттын кыскарышы.
- Каттамды кыскартууга жана жакшы жол шарттарына байланыштуу транспорт чыгымдарын азайтуу.
- Жергиликтүү жана эле аралык ташууларды жана кыймылдарды көбөйтүү.
- Жергиликтүү жашоочулар үчүн кошумча киреше алып келүүчү мүмкүнчүлүктөрдүн пайда болушу.
- Жаңы жумушчу орундарын түзүү.
- Транспорт каражаттарынын (ТК) оң абалы/ Пайдалануу чыгымдарын кыскартуу.

Кыргыз Республикасынын мыйзамдарына ылайык курчап турган чөйрөгө таасирине баалоо жүргүзүү керек. ТЭН баскычында курчап турган чойрого таасирин баалоону изилдөө Техникалык-экономикалык негиздемеге (ТЭН) карата Курчап турган чойрого таасирин алдын ала баалоо (КЧТАБ) катары каралат жана КЧТБ отчету менен тарифделет.

АОБ Коргоо Саясаты боюнча Жобосунун жиктемесине ылайык (2009) долбоор В [би] категориясына кирет жана курчап турган чөйрөгө таасирин толук баалоону (КЧТБ) талап кылбайт. АӨБ «В» категориясындагы долбоорлор үчүн саясатынын алкагында Баштапкы экологиялык баалоону (БЭБ) даярдоо керек.

Кыргыз Республикасынын мыйзамдарына ылайык долбоорду категориялаштыруу өткөрүлбөйт, бирок БЭБ жана КЧТАБ документтерин бирдей мазмунда катары карооого болот.

<u>Экологиялык жана Социалдык Баалоонун максаттары</u>

- Ар кандай түз жана кыйыр экологиялык тобокелдиктердин деңгээлдерин аныктоо жана баалоо жана алар менен байланыштуу кесепеттерди жумшартуу боюнча сунуштар
- Долбоордун БЭБ/КЧТАБ даярдоо
- Жарыгыныштыкоргоо ич-чараларынын планын (ЖКП) даярдоо.

Ушул БЭБ/КЧТАБ максаты сунушталып жаткан долбоордун курчап турган чойрого, дей соолукка, коопсуздукка потенциалдуу таасирин баалоо жана социалдык таасирин баалоо болуп саналат. Экологиялык баалоо процессинде, курулуш иштеринин, кутулуп жаткан

көлөмүнө байланыштуу курчап турган чөйрөгө эч кандай олуттуу жагымсыз жана кайтарымсыз таасирлер белгиленген жок. БЭБ/КЧТАБ боюнча ушул документ өзүнө бүтүндөй долбоордук цикл аралыгында жүргүзүлө турган минималдаштыруугa, кыскартууга жана жумшартууга (же жабыркаган тараптарга компенсация голов берүүгө) багытталган, кесепеттерди жумшартуу боюнча тийиштүү чаралар менен аныкталган потенциалдуу таасирлердин, алардын мүнөздөмөлөрүнүн, чөлдүгүнүн, жайылуусунун жана узактыгынын, сезгич рецепторлордун жана көзгөлгөн топтордун негизинде Курчап турган чөйрөнү башкаруу планын (КЧБП) камтыйт.

Бардык участоктор үчүн БЭБ/КЧТАБ изилдоо болгон булактардын катарынан экинчи маалыматтын негизинде өткөрүлөт. Ошондой эле суунун, абанын сынамдарын алуу, ызы-чууну жана вибрацияны өлчөө өткөрүлдү.

Долбоорду сүрөттөө

Төмөндө көрсөтүлгөн жол участоктору жолдун II техникалык категориясына чейин реконструкцияланат:

- Балыкчыдан (км) 43 километр белгисине чейин (км 0 - км 43), болжол менен 43 километр (км);
- Кочкордон Эпкин айылына чейин (км 64 – км 89), болжол менен 25 км;
- Эпкинден (89 км) Баш-Куугандыга чейин [мурдагы Дыйкан] (159 км), болжол менен 70 км;
- Дыйкан айылынан тартып (159 км) Кызыл-Жылдыз айылына чейин (183 км), болжол менен 24 км, мында Чаек айылын жана Кызыл-Жылдыз айылынын бир бөлүгүн айланып өтүү үчүн айланма жолду куруу каралууда.

Аралдан тартып (195 км) Төө-Ашуу ашуусуна чейинки (286 км), болжол менен 91 км, жол участогу жолдун III техникалык категориясына чейин реконструкцияланат.

Долбоорлорго жолдун участогу тууралуу кененирээк төмөндө берилген:

- Кыргызстандын мамлекеттик стандартына ылайык, долбоорлонгон жол участокторун II, III техникалык категорияга чейин реконструкциялоо.
- Көпүрөлөрдү жана суу өткөрүүчү түтүктөрдү калыбына келтирүү, өндөө жана/же алмаштыруу
- Каптал арыктарды жана башка дренаждык курулмаларды куруу.
- Тирегич дубалдарды жана зарыл болгондо дарыяларды коргоо боюнча чараларды камсыздоо
- Талаптагыдай жол белгилерин жана белги салууларды камсыздоо
- Коргоочу тосмолорду камсыздоо.

Жол Кыргызстандын геометрикалык долбоордук ченемдерине ылайык иштелип чыгышы керек жана ал болжолдонгон кызмат өтөө мөөнөтү аралыгында жол кыймылынан болгон жүктөмдү натыйжалуу көтөрүү үчүн туруктуу болушу керек. Жол өтмө бөлүктүн кеңдигинен (тилкелердин туурасынын суммасы) жана жол жээгинин кеңдигинен турган, кыймылдын эки тилкеси менен жол болот. Төмөндө кесилиш боюнча конструктивдүү элементтер берилген:

- <u>II долбоордук жолу үчүн:</u>
- Тилкелердин саны: 2
- Тилкенин кеңдиги: 3,5-3,75 м
- Өтмө бөлүктүн кеңдиги: 7,00-7,50 м
- Жолдун четинин кеңдиги: 3,25-3,75 м (анын ичинде 0,50-0,75 м салынган)

- Жолдун жалпы узундугу: 15.00 м

➢ <u>III долбоордук жолу үчүн</u>:
- Тилкелердин саны: 2
- Тилкенин кеңдиги: 3.5 м
- Отмо бөлүктүн кеңдиги: 7.00 м
- Жолдун четинин кеңдиги: 2.5 м (анын ичинде 0.50 м салынган)
- Жолдун жалпы узундугу: 12.00 м

Курчап турган чөйрөгө күтүлгөн таасирлери жана жумшартуу боюнча чаралар

Таасирлери.

Жол долбоорунун таасиринин олуттуу бөлүгү түздөн-түз курулуш иштеринен келип чыгаары болжолдонууда, ал эми айрым таасирлер пайдалануу убагында пайда болот. Бул таасир кыймылдын интенсивдүүлүгүнүн жана транспорт каражаттарынын кыймылынын ылдамдыгынын жогорулашы менен шартталган жана газдардын чыгындыларынын деңгээлинин жогорулашына жана ызы-чуу таасирине, ошондой эле жөө жүрүүчүлөрдүн жана транспорт каражаттарынын катышуусу менен ЖТК потенциалдуу өсүшүнө кирет. Мындан тышкары зыяндуу заттардын топтолушу менен байланыштуу өзгөчө кырдаалдардын жогорку тобокелдиги болот.

<u>Таасирлердин төмөндөгүдөй түрлөрү аныкталган</u>:

(i) ызы-чуу таасири, булгоочу заттардын абага чыгындылары, ошондой эле вибрация, бул Долбоордун жолго жакын калктуу пункттардын чегинде жана мектеп, оорукана, мечит ж.б. (мисалы: жолго жакын жайгашкан үй чарбалары; карьерлер, базарлар, маданий жана тарыхый баалуулуктар, чөп кесилиштер) сыяктуу, таасир этүүнүн сезгич реципиенттери жайгашкан жерлерде өзгөчө мааниге ээ;

(ii) сууларга жана дарыяларга таасири;

(iii) карьерлерде толуктагычтардын булактарын издөөнүн жыйынтыгындагы таасир;

(iv) топуракка жана өсүмдүктөргө таасири, анын ичинде участокторду тандоо боюнча иштерден улам долбоордук жолдун жанындагы дарак көчөтторгө таасири;

(v) көпүрөлөрдү жана дренаждык курулмаларды реабилитациялоонун жыйынтыгындагы таасир;

(vi) асфальт өндүрүү (асфальт заводдору) жана толуктагычтарды майдалоо үчүн оркотмолордон болгон таасир;

(vii) подрядчынын жумушчу лагерлери тарабынан таасир. Мындан тышкары, таасирлер төмөндөгү топторго бөлүнгөн: долбоорлоо этабындагы таасир, куруу этабындагы таасир жана жумушчу этабындагы таасир.

Иш-чаралар.

Алдын ала долбоорлоонун жүрүшүндө жана долбоорлоо баскычында талаптагыдай пландоо/даярдоо аркылуу таасирлерден алыс болуута болот.

Таасирлерди жумшартуу боюнча чаралар төмөндөгүлөрдү камтыйт:

(i) эрозияга каршы иш-чараларды пайдалануу;

(ii) даректарды кыюудан алыс болуу үчүн, аймиергиталуу кенейтүү;

(iii) жумушчулар үчүн катуу нускамаларды берүү менен маданий жана тарыхый объекттерге кол салуунун алдын алуу

Initial Environmental Examination

Project Number: TA 8887-KGZ
July 2016

KGZ: CAREC Corridors 1 and 3 Connector Road Project (Bashkugandy [formerly Dyikan] [Km 159] to Kyzyl-Zhyldyz [Km 183]")

Prepared by Kocks Consult GmbH / Finnish Overseas Consultants Ltd. / CAC Consulting for the Ministry of Transport and Roads of Kyrgyz Republic for the Asian Development Bank.

ABBREVIATIONS

ADB	-	Asian Development Bank
ADT	-	Average Daily Traffic
AIDS	-	Acquired Immune Deficiency Syndrome
AP	-	Affected People
BoQ	-	Bill of Quantities
CAREC	-	Central Asia Regional Economic Cooperation
CEWP		Construction Environmental Work Plan
CITES	-	Convention on International Trade in Endangered Species
CO	-	Carbon Monoxide
CSC	-	Construction Supervision Consultant
CW	-	Civil Works
dBA	-	A-weighted decibels
DO	-	Dissolved oxygen
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EIP	-	Environmental Impact Permit
EMoP	-	Environmental Monitoring Plan
EMP	-	Environmental Management Plan
FCM	-	Family Medicine Centres
GRM	-	Grievance Redress Mechanism
h, hr	-	Hour
Ha	-	Hectare
HIV	-	Human Immunodeficiency Virus
IA	-	Implementing Agency
IEE	-	Initial Environmental Examination
IES	-	International Environmental Specialist
IPIG	-	Investment Projects Implementation Group
KDTP	-	Kyrgyzdortransproekt
Kg	-	Kilogram
Km	-	Kilometer
Kpa	-	Kilopascal
LAR	-	Land Acquisition and Resettlement
LARP	-	Land Acquisition Resettlement Plan
LHS	-	Left Hand Side
Ls	-	Lump Sum
M2	-	Square Meter
M3	-	Cubic Meter
Max.	-	Maximum
MESD	-	Ministry of Economic and Sustainable Department
Min.	-	Minimum
MOF	-	Ministry of Finance
MoTR	-	Ministry of Transport and Road of the Kyrgyz Republic
MoCIT		Ministry of Culture, Information and Tourism of the Kyrgyz Republic
MPC	-	Maximum Permissible Concentrations

NES	-	National Environmental Specialist
NGO	-	Non-Governmental Organization
No.	-	Number
NO2	-	Nitrogen Dioxide
PAM	-	Project Administration Manual
PAP	-	Project-Affected Person
PBM	-	Performance-based maintenance
PER	-	Public Environmental Review
PPMS	-	Project Performance Management System
PPTA	-	Project Preparatory Technical Assistance
RAP	-	Resettlement Action Plan
RHS	-	Right Hand Side
ROW	-	Right-of-Way
RP	-	Resettlement Plan
SA	-	Social Assessment
SAEPF	-	State Agency on Environment Protection and Forestry
SER	-	State Environmental Review
SO2	-	Sulfur Dioxide
SPS	-	Safeguard Policy Statement
SSEMP	-	Site Specific Environmental Management Plan
TA	-	Technical Assistance
TMP	-	Traffic Management Plan
TOR	-	Terms of Reference
TPH	-	Petroleum Hydrocarbon
TSP	-	Total Suspended Particulates
UNFCC	-	United Nations Framework Convention on Climate Change
WHSP	-	Worker’s Health and Safety Plan

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A. ExecutiveSummary

1. The Government of the Kyrgyz Republic has requested the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and/or grant for the CAREC Corridors 1 and 3 Connector Road. The main outcome of the PPTA is to prepare a feasibility study suitable for donors financing. The Section «Bashkugandy (Formerly Dyikan) (km 159) to Kyzyl-Zhyldyz (km 183)" will be financed by Islamic Development Bank (IDB) and the Saudi Fund for Development (SFD).

2. The project scope also includes soft components to tackle sector-wide issues. Agreement needs to be reached with the government on the exact details, including: (i) improve efficiency of road asset management in the Kyrgyz Republic, (ii) support the government with institutional reforms in transport sector, (iii) introduce performance based maintenance contracts, and (iv) improve road safety in the Kyrgyz Republic. The proposed Project will improve the following socio-economic indicators of the regions of the Kyrgyz Republic:

(i) Reduce the cost of passenger and cargo transportation between southern and Issyk-Kul and Naryn regions by providing direct access.
(ii) Reduce transport costs due to route cutting and better road conditions.
(iii) Increase in local and international transportation and movement.
(iv) Origination of additional income-generating opportunities for local residents
(v) Creation of new jobs
(vi) Good state of vehicles/Reduction of operating costs

3. According to the categorization of ADB Safeguard Policy Statement, the project belongs to category "B" and doesn't require full Environmental Impact Assessment (EIA). As a part of the ADB Policy, the project requires Initial Environmental Examination (IEE). In accordance with the legislation of the Kyrgyz Republic, this stage is considered as a preliminary environmental impact assessment (Pre-EIA) to feasibility study and shall be documented by EIA report. The Project will not be categorized according to Kyrgyz Republic legislation, however these IEE and Pre-EIA documents might be considered as equivalent.

4. The purpose of this IEE is to assess potential environmental, health, safety and social impacts of the proposed road project. With the expected construction scope, no significant adverse and irreversible environmental impacts had been noted in the environmental assessment process. This IEE document includes an Environmental Management Plan (EMP) based on the identified potential impacts, their characteristics, magnitude, distribution, and duration, sensitive receptors and affected groups with corresponding mitigation measures designed to minimize, reduce and mitigate (or compensate the affected parties), to be implemented for the entire project cycle.

5. The IEE study for Section «Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183)" is being conducted based on secondary information from a number of available sources, while primary data were obtained from field parametric measurements along with the observations gathered from several field visits. Environmental public consultation was done and was attended by residents of the communities mentioned as well as those from surrounding villages.

Policy, Legal, and Administrative Framework

6. The IEE study was in conformance with the national legal framework of Kyrgyzstan consisting of the important laws in environmental protection, water protection, cultural heritage,

public health, and other national environmental legislations. In addition, International Treaties that Kyrgyzstan was a signatory were also considered as part of the overall framework.

7. The Environmental assessment in the Kyrgyz Republic is founded on two subsystems: (i) OVOS (the Russian acronym for "Assessment of Environmental Impacts"), and (ii) Ecological Expertise (State Environmental Review, SER). The resulting EIS is then presented for public consultations, after which revisions are done according to the public's feedback. Subsequently, the OVOS report, Statement of Environmental Consequences, and other supporting documentations are submitted for the State Environmental Review (SER). After which the project may be approved, rejected or send for re-examination.

8. Under ADB approval requirements, a set of specific safeguard requirements are required to be met by the Borrowing Country in addressing environmental and social impacts and risks. The project would undergo Screening and Categorization, formulation of Environmental Management Plan and Public Disclosure. Public Consultations for Category B would be required so that views of affected groups are taken into account in the design of the Project and within the mitigation measures proposed.

Description of the Project

9. The project road Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) is a 24 km, portion of the east to west highway. This Section's starting point, designated at Km 159+200, begins at the outskirts east of Bashkugandy. Following the existing alignment, it will go through the villages of Bashkugandy, and Baizak before it enters Chaek options were considered – to pass through the village of Chaek or to have a bypass road. Then at Km 179.6 the road rehabilitation continues along the existing alignment and terminates at to Km 183+99. The entire of this section is within Naryn Oblast and it traverses only one district - Jumgal (with Chaek as the capital).

10. The details of the proposed road project are:

(i) Rehabilitate and pave the project road to Technical Category II from Bashkugandy (Km 159) to Kyzyl-Zhyldyz (Km 183+99) according to Kyrgyzstan National Standard with Geometrical and Structural Requirements.
(ii) Rehabilitation, repair and/or replacement of bridges and culverts.
(iii) Construction of side drains and other drainage structures.
(iv) Provision of retaining walls and river protection measures, where necessary.
(v) Provision of adequate road signing and marking.
(vi) Provision of safety barriers

11. The road is to be designed according to Kyrgyz geometric design standard, and accordingly, it shall be sufficient to carry the traffic loading efficiently within its projected service life. Effectively, these will be a two-lane road consisting of a carriageway width (sum of the width of lanes) and the width of the shoulders. The design elements for the cross section of the project road are as follows:

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

Description of the Environment

12. The entire 24 km from Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) runs over Jumgal depression. The width of the valley is from 5.0 km to 16 km. The depression is located between the mountain ranges to the south of Moldo-Too, and from the north, the Jumgal Too. The surface of the cavity is irregular, dissected by frequent logs sais. In many areas these sais are permanent watercourses, with depth reaching 30-40 m. The road crosses the Jumgal River in one (1) place; i.e. within the Bypass Road at Km 174.2 necessitating a 30 m bridge. On both banks of the river are floodplains with terraces with a total height of up to 20-25 m of cut side logs and sais

Environmental Impacts and Mitigation Measures

13. The anticipated environmental impacts of the proposed road project are likely to be resulting directly from construction activities. The identified impacts include (i) noise impacts, emission of pollutants to air and vibration, which is especially of high significance within the settlements alongside the Project road and where sensitive receptors are located such as schools, shops, households and cultural and historical properties located near the road (ii) impacts on water courses, rivers and swamps (iii) impacts from aggregate sourcing at borrow sites; (iv) impacts on soil and vegetation, inclusive tree plantations alongside the Project road due to site clearance activities; (v) impacts to flora and fauna; (vi) impacts from bridge and drainage facilities rehabilitation; (vii) impacts from asphalt plant and aggregate crushers and (viii) impacts from contractor's working camps and road safety. Impacts have been decided in to design phase, construction phase, and operation phase impacts.

14. The construction entails a number of activities which are expected to introduce impacts and disturbances to the general environment, especially during the construction period. Most of these impacts are confined within the right-of-way, construction sites, and facility sites; while some activities can affect the outlying areas or even a wider area, especially if not properly mitigated. These include the Jumgal River bridge point at PK 1742, and the 1.32 km Jumgal River floodplain (PK 1744+600 to PK 1757+720) as an Option 2A. The Option 2B (PK 1743 to PK 1758) more environmentally friendly because allow to avoid the impacts on the Jumgal River floodplain so as it goes 1.5 km on the foothills (PK 1743) until it connects back to Segment 2 (PK 1758).

15. Avoidance of impacts can be executed by proper planning/preparation during the Pre-engineering and design phase. The mitigation measures will consist fo the following: (i) use of green measures for erosion; (ii) asymmetric widening to avoid felling of trees; (iii) avoidance of encroachment to archaelocial and historical sites with strict instructions to workers; (iv) provision of road safety measures and traffic plan to avoid accidents and maintain access to people; (v) gaseous emissions will be minimized and controlled by proper and regular maintenance of equipement; (vi) dust is controlled by regular water spraying on exposed areas; (vii) noise is minimized at the vicinity of sensitive receptors by proper scheduling of works and provision of noise mufflers to trucks and equipment; (viii) surface water contamination is mitigated by avoiding petroleum spills and soil droppings in water and situating contaminating substances away from waterways and construction of settling ponds for clarifying water prior to discharge; (ix) material sources should be reinstated after usage; (x) ensure usage and installation of safety measures at work sites and along the road; (xi) strictly avoid possible habitat areas of biological organism and prohibit workers from harming indigenous local species.

Analysis of alternatives

16. Two alternatives were considered in this IEE :

(i) Zero option - inaction / do nothing
(ii) The road reconstruction project

17. The “Zero option” alternative scenario will mean that the road stays “as is”, in which no rehabilitation works. Considering the mentioned reasons and along with those presented in the “Country and Regional Strategy” and “Locality Specific Rationale”, the benefits of rehabilitating and reconstructing the road generally outweigh the expectations of the “Zero option” alternative.

18. The second Alternative is considering the road reconstruction in the section Bashkugandy - Kysyl-Zhyldyz, which consists of three parts.
Part 1: from km 159 + 200 to km 172+400 – The road is to rehabilitate along its current alignment and will pass through the residential areas of Bashkugandy and Baizak.
Part 2: from km 172+400 to Km 179+600 – Option portion for (i) existing road rehabilitation or (ii) Bypass Road.
Part 3: from km 179 + 600 to km 183+99 – The road is to rehabilitate along its current alignment and will pass through the residential areas of Kyzyl-Zhyldyz. It will join up with an almost competed the section of the road being funded by the Chinese Exim Bank.

Consultation, Participation and Information Disclosure

19. In accordance with ADB’s Public Communications Policy (2011) and SPS (2009), Public Consultation meeting for this section on the environmental aspects was undertaken on 18 March 2016 at 2PM in the village hall in Chaek. During the public consultation organized by IPIG, with the assistance of PPTA consultants (Kocks Consult, GmbH), prepared PowerPoint presentation regarding the technical features of the project and explained the potential environmental and social impacts with corresponding mitigation measures. At these instances, the participants were able to express what they thought about the project and were given a chance to ask clarificatory questions during the open forum. Forms were provided to the people for them to write in their own comments which incorporated in the IEE and serve as recommendations in the design phase.

20. Details of the Public Consultation are provided in Section G. Consultation, Participation and Information Disclosure of this document. The IEE shall also be disclosed to a wider audience via the financiers’ website. During the project implementation, periodic environmental monitoring reports shall be submitted by IDB and SDF’sproject implementation unit (PIU) on behalf of MOTR and correspondingly also be uploaded in the IDB and SDF website and in KGZ on MOTR website.

Grievance Redress Mechanism

21. The Grievance Redress Mechanism (GRM) is a process through which the affected people need a trusted way to voice and resolve concerns about the project and the project also finds an effective way to address affected people’s concerns.

22. With two stage appeals – the Local (village) Level and Central Level, along with greater participation of the local people, resolution of complaints will be better ensured. The complainant can appeal the decision of the local Court. The project level GRG does not in any way impede

APs access to the administrative remedies the Kyrgyz Republic.

Environmental Management Plan

23. The Environmental Management Plan (EMP) for the project road, consisting of impact mitigation and monitoring plan, has been prepared as part of this IEE. A program of monitoring, the Environmental Monitoring Plan (EMoP), is also developed herein to ensure that all concerned agencies take the specified action to provide the required mitigation, to assess the level of project impacts on environmental quality and to determine whether any additional measures may be necessary. This EMP will be part of the contract documents consisting of specified measures covering most of the possible issues that can occur will enable the avoidance, reduction, and mitigation of adverse impacts in the project cycle. The Contractor shall adopt the mitigation measures, particularly those for the construction into his Site Specific Environmental Management Plan (SSEMP) consistent with their own work program. Supplementary Plans will also be drawn up by the Contractor for specific situations to ensure a focused action on any problem that might arise.

24. Operational framework of the EMP involves the national agencies (-MoTR&SAEPF), Financiers' Safeguard Specialists, Construction Supervision Consultant, Contractor, with the local governments and recognizing roles of NGO's and people's organization at the project site.The cost for implementing EMP will be financed by the loan, specifically the costs of mitigation measures will be included in the construction contracts, and the cost for environmental monitoring will be included in the consulting service of the CSC. Mitigation measures and a monitoring plan have been developed and incorporated into the EMP. Under the guidance of CSC, the contractor will have to submit site-specific Environmental Management Plans (SSEMP) for the following prior to commencing operations: (i) SSEMP in the sensitive sites such as main residential areas, cultural and historical sites including cemeteries, riverbanks or other waterways; (ii) layout of the work camp with sewage management and waste management plan; (iii) sitting and description asphalt and crashing plants, equipment maintenance and storage facilities; (iv) spoil soil management plan; (v) borrow site management including restoration; and (vi) method statement for bridge reconstruction works. The SSEMPs shall be endorsed by the construction supervision consultant before submission to MOTR for approval.

25. PIU will promptly inform IDB and SDF of the occurrence of any risks or impacts, with detailed description of the event and proposed corrective action plan if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE. PIU will report any actual or potential breach of compliance with the measures and requirements set forth in the EMP promptly after becoming aware of the breach. Monitoring and reporting. CSC will submit quarterly project progress report reflecting environmental safeguard compliance. CSC will assist PIU in compiling and submitting semiannual monitoring reports (EMR) during project construction within one month after each reporting period. EMRs will be disclosed at IDB and SDF website and to local authorities.

Conclusions and Recommendations

26. The IEE/EMP-EMoP, as part of the contract documents, shall be adhered to by the Contractor. Accordingly, the Contractor shall require all his Sub-Contractors to follow also the EMP and such stipulations should also be shown in Sub-contracting agreements and which will be verified by the Engineer (or the CS Consultants).

27. With a proposed alignment to the hillside of the middle portion of the Bypass Road, the

project is maintained at Environmental Category B; since the predicted impacts are «site-specific», with few irreversible, and in most cases mitigation measures can be readily designed and to be incorporated in the detailed designs.

28. Mitigation measures have been developed to be utilized for finalization in the detailed design phase, for implementation in the construction phase, and subsequently for the operations phase, to reduce all negative impacts to acceptable levels. As per assessment in this IEE, the proposed Road Project is unlikely to significant environmental impacts. To ensure environmental and social safeguards, the IEE recommends that:

(i) Proper design should be produced;
(ii) The strict monitoring is done;
(iii) Measures be implemented;
(iv) Avoid socioeconomic impact – hire local people;
(v) Contractor should have SSEMP approved before commencing construction works;
(vi) Baseline measurements and periodic monitoring be done;
(vii) Contractor to designate environmental staff;
(viii) CSC to provide sufficient training on EMP implementation and compliance monitoring for the CSC engineers and to the Contractor's staff;
(ix) CSC to assist PIU in monitoring and reporting on EMP implementation
(x) PIU-MoTR shall oversee environmental compliance and ensure that reporting requirements are followed.

B. Policy, Legal, and Administrative Framework

(i) Introduction

29. The Government of the Kyrgyz Republic (the government) has requested for a project preparatory technical assistance (PPTA) from the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and/or grant for the CAREC Corridors 1 and 3 Connector Road. The main output of the PPTA is a feasibility study suitable for donors financing. The study will cover five (5) sections:

(i) Balykchi (Km 0) to kilometre-post 43 (Km 43), approximately 43 kilometres (km),
(ii) Kochkor (Km 64) to Epkin (Km 89), approximately 24 km,
(iii) Epkin (Km 89) to Bashkugandy (km 159), approximately 70 km;
(iv) Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), approximately 24 km, where a Bypass Road is being envisioned to avoid the village of Chaek and part of Kyzyl-Zhyldyz; and
(v) Aral (Km 195) to Too-Ashuu pass (Km 286), approximately 91 km.
The Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) will be financed by IDB and SFD.

30. The IDB and SDF's PIU within the Ministry Transport and Communication (MoTR) that shall be the Executing Agency (EA) for this project during the construction stage. As initial part of the possible funding assistance, the ADB has engaged Kocks Consult GmbH, Germany, to prepare a Feasibility Study and Preliminary Design for the entire project. The consultancy scope also includes an Initial Environmental Examination (IEE); and a social and poverty analysis and impact assessments, in accordance with ADB's Safeguard Policy Statement (SPS) 2009. With reference to the Contract Agreement for Consultancy Services for the engagement, one of the main tasks of the Consultant is to prepare the Initial Environmental Examination (IEE) for the

project in accordance with the requirements of the ADB's Safeguard Policy Statement (SPS) 2009; and also the relevant legislation of the Government of the Kyrgyz Republic. Such environmental safeguard requirements specify that the borrowers/clients are to undertake an environmental assessment process which entails assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking consultation establishing a grievance mechanism, and monitoring and reporting. The IEE document shall also include particular environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resources.

31. This IEE document includes an Environmental Management Plan (EMP) based on the identified potential impacts, their characteristics, magnitude, distribution, and duration, sensitive receptors and affected groups. The EMP shall address the potential impacts and risks identified by the environmental assessment with the corresponding mitigation measures designed to minimize, reduce and mitigate (or compensate the affected parties) and to be implemented for the entire project cycle.

(ii) Extent of IEE Study

32. This Initial Environmental Examination (IEE) Report is for the Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), which has a distance of around 24 km. This road section shall be rehabilitated into Category II road. Accordingly, with its setting and mode of rehabilitation, the project undertaking is classified under the ADB Safeguard Policy Statement 2009 as environment Category B, requiring an Initial Environmental Examination. The purpose of this IEE is to assess potential environmental, health, safety and social impacts of the proposed road project. With the expected construction scope it is expected that few impacts, if any, are irreversible, and in most cases mitigation measures can be designed to avoid or minimize them. The IEE study is being conducted based on secondary information from a number of available sources, while primary data were obtained from field parametric measurements along with the observations gathered from several field visits.

33. Public Consultations meeting on the environmental aspects for Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), in accordance with Kyrgyz legislation on public access to the information and ADB’s Public Communications Policy (2011) and SPS (2009), was undertaken on 18 March 2016 in Chaek Village Administration Office. This was organized by the IPIG-MoTR through official communication to the local leaders inviting stakeholders in the surrounding villages.

(iii) Environmental protection legislation of Kyrgyz Republic

34. Environmental impact of the Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) Road Rehabilitation Project is regulated by a number of environmental legislative acts of the Kyrgyz Republic.

Table 23: Relevant Laws and Regulations on the Environmental Impacts of Road Projects

#	Legislation	Number & Year of adoption	Purpose/content
Main laws on environmental protection			
1	The Constitution of the Kyrgyz Republic	2010	Land, its mineral resources, airspace, waters, forests, flora and fauna and other natural resources are used, but at the same time are under protection. Everyone is obliged to take care of the environment, flora and fauna of the country.
2	The Environmental Safety Concept of KR	No.506 dtd. 23.11.2007	It establishes the basic principles of environmental policy and determines global, national and local environmental issues; priorities in the field of environmental protection at the national level as well as tools to ensure environmental safety.
3	National Sustainable Development Strategy of the Kyrgyz Republic for 2013-2017	No.11 dtd. 21.01.2013	Provides a conceptual sustainable development framework aimed to satisfy the needs of current generations and not to endanger at the same time the needs of future generations.
4	Law of KR “On Environmental Protection”	No.53 dtd. 1999 in the wording dtd. 27.04.2009	Establishes the basic principles of environmental protection and provides legal authority to establish environmental quality, designate special protected areas, promulgate rules and procedures for the use of natural resources, establish environmental monitoring and control system and reinforce procedures for overcoming emergency situations. Among the standards and norms of environmental quality authorized under this law and related to the project there are: Standards of Maximum Safe Concentration of Hazardous Substances In Air, Water; Standards of Natural Resources Use; Standards of Maximum Safe Noise, Vibration Levels and Other Hazardous Physical Impacts. This law establishes the requirements for environmental examination (environmental assessment) intended by economic or other activities to prevent potential adverse environmental impacts. In addition, it prohibits financing or implementation of projects related to the use of natural resources without obtaining approval from the State Environmental Expertise.
5	Law of KR "On Environmental Impact Assessment"	No.54 dtd. 1999, in the wording dtd. 04.05. 2015	The main law related to environmental assessment. Its task is to prevent negative impacts on human health and environment occurring as a result of economic or other activities, and to ensure compliance of these activities with environmental requirements of the country.
6	Law of KR "General technical rules and regulations for environmental safety in the Kyrgyz Republic"	No.151 dtd. 2009	Is meant to protect the environment. It determines the main provisions for technical regulation of environmental safety and establishes general requirements for ensuring environmental safety during design and operations of businesses and other facilities of all legal and physical entities.
7	Regulation on procedure for conducting environmental impact assessment in the Kyrgyz Republic	No. 60 dtd. 13.02.2015	Establishes the procedure for assessing the environmental impact of the proposed activity (hereinafter EIA). The purpose of EIA is to prevent and/or mitigate the environmental impacts of the proposed activity and other related social, economic and other consequences.
8	Regulation on Water Zones and Strips of Water Bodies Protection in the Kyrgyz Republic	No.271 dtd. 7.07. 1995	Defines the procedure for establishing water zones and strips of water bodies protection in the Kyrgyz Republic, establishes a regime of economic activity and land use located in the water protection zones and strips. This law also defines responsibility for keeping them in proper shape
9	Rules for the protection of surface waters in KR	on March 14, 2016 № 128	These Rules govern the protection of surface waters from pollution and depletion, in the implementation of the water users of different types of business activities that have or may have an adverse impact on the status of surface waters, irrespective of their legal form, as well as regulate the procedure for implementation of measures for the protection of surface water.
10	Law of KR "On Protection of Atmospheric Air"	No.51 dtd. 1999, in the wording dtd. 09.08.2005	Governs the relations on use and protection of atmospheric air.
11	Law of KR "On Production and Consumption Waste"	No.89 dtd. 2001	Defines the national policy in production and consumption waste management. It is aimed at preventing negative impacts from production and consumption waste on the environment and human health while handling it and their maximum involvement in the economy as an additional source of raw materials.

#	Legislation	Number & Year of adoption	Purpose/content
12	Law of KR "On Protection and Use of Flora"	No.53 dtd. 2001	Establishes the legal framework for ensuring effective protection, rational use and reproduction of flora resources.
13	Law of KR "On Wildlife"	No.59 dtd. 1999, in the wording dtd. 24.06.2003	Establishes the legal relations in the context of protection, use and reproduction of wildlife.
14	Law of KR "On local self-government and local state administration"	No.101 dtd. 2011	Establishes the principles for setting-up local authorities at the level of administrative and territorial units of the Kyrgyz Republic.
Legislation on Land Acquisition			
15	The Constitution of the Kyrgyz Republic	2010	Clause 12 recognizes a diversity of forms of ownership and guarantees equal legal protection of private, state, municipal and other forms of property (Clause 12, paragraph 1). Land can be of private, municipal and other forms of ownership except for pastures, which cannot be privately owned (Clause 12, paragraph 5). Property is indefeasible. No one can be arbitrarily deprived of his property. Seizure of property by the state against the will of the owner is allowed only by court decision (Clause 12, paragraph 2). Seizure of property for public purposes specified in the law is possible by the court decision with fair and advanced compensation of property cost and other damages caused as a result of such alienation. (Clause 12, paragraph 2).
16	Civil Code	No.16 dtd. 8.05.1996 in the wording dtd. 30.05.2013	Determines that the person whose right is violated can demand full compensation for damages, unless the law or agreement consistent with the law says otherwise (Clause 14, paragraph 1). The Civil Code specifies the following losses subject to compensation: expenses incurred or to be incurred by the person whose right is violated in connection with restoration of violated rights (Clause 14, paragraph 2); loss or damage to property (Clause 14, paragraph 2); lost income that would be received by the person under normal civil turnover conditions if his right was not violated (lost profits) (Clause 14, paragraph 2); Compensation for loss of profits along with the other costs, at least in the amount of such income, to the person loosing land, assets or livelihood.
17	Land Code	No.45 dtd. 2.06.1999 in the wording dtd. 26.05.2009	Governs land relations in the Kyrgyz Republic, basis for the origin, procedure for exercise and termination of rights to land and their registration, and also aimed to create land and market relations in state, communal and private ownership of land and efficient use and protection of land. The Land Code is the main document, which regulates land use.
18	Law of KR «On transfer (transformation) of land»	No. 145 dtd. 15.07.2013	This law is developed in accordance with the Land Code of the Kyrgyz Republic and other normative legal acts of the Kyrgyz Republic. It defines the legal basis, conditions and procedure for transfer (transformation) of land from one category to another or from one type of land to another.
19	Law «On Highways»	No.72 dtd. 2.06.1998	According to Clause 4 the public roads are owned by the state and not subject to sale and cannot be passed into private ownership. This law (Clause 27) also provides that without prior approval of the State Automobile Inspectorate and the Ministry of Transport and Roads of the Kyrgyz Republic the following is prohibited among others: trade on the roadside; placement of kiosks, pavilions and similar structures; and, unauthorized use of road lands (Clause 23)
20	Regulation on valuation of assets	No.537 dtd. August 21, 2003 No.217 dtd. April 3, 2006	Valuation of assets is made based on the Provisional Rules of activities of valuators and valuation organizations (Government Resolution), property valuation standards (Government Resolution) and other national legislative provisions.
Law On Protection And Use Of Historical And Cultural Heritage			

#	Legislation	Number & Year of adoption	Purpose/content
21	The Law "On protection and use of historical and cultural heritage"	No.91 dtd. 26.07.1999	Establishes legal norms for protection and use of tangible historical and cultural heritage on the territory of the Kyrgyz Republic, which is of unique value for people. The law is mandatory for all legal entities and individuals. It defines their rights and obligations in the context of protection and use of tangible historical and cultural heritage. Historical and cultural heritage are the historical and cultural monuments associated with historical events in the life of the people, development of society and the state, material and spiritual creative works representing historical, scientific, artistic or other value.
Law on Access to Information			
22	The Law "On access to information held by public bodies and local self-government of the Kyrgyz Republic"	No.213 dtd. 28.12.2006	This law regulates the rights and obligations of public authorities to provide information to the local population, in order to achieve transparency of work of public awareness
International Conventions and Agreements			
1	UN Framework Convention on Climate Change	2000	Combating global climate change and its consequences.
2	Aarhus Convention on access to information, public participation in decision-making and access to justice on environmental issues	2001	To support the protection of human rights to a healthy environment and wellbeing, access to information, public participation in decision-making and access to justice on issues related to the environment.

35. Ratification of international legal acts involves implementation of international requirements into the national legislation and harmonization of the Kyrgyz legislation with the international legislation. However, this process is moving very slowly in Kyrgyzstan given that conventions are really frameworks that need to be translated into national laws, a process that is time consuming and complicated.

(iv) Required ADB Environmental Approval

36. ADB requires the consideration of environmental issues in all aspects of its operations. Superseding the previous environment and social safeguard policies, ADB's Safeguard Policy Statement, 2009 (SPS, 2009) sets out the policy objectives, scope and triggers, and principles for three key safeguard areas: (i) environmental safeguards, (ii) involuntary resettlement safeguards, and (iii) Indigenous Peoples safeguards. ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks. Borrowers/clients comply with these requirements during project preparation and implementation. The environmental safeguard requirements are indicated in Appendix 1 of SPS 2009 (Safeguard Requirements 1: Environment). This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.

37. In the ADB's Screening and Categorization, the nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact are assigned to one of the following four categories[6]:

(i) Category A: Projects with potential for significant adverse environmental impacts. An environmental impact assessment and a summary EIA (SEIA) are required to address significant impacts.
(ii) Category B: Projects judged to have some adverse environmental impacts, but of

[6]ADB. 2003. *Environmental Assessment Guidelines*, Manila.

lesser degree and/or significance than those for category A projects. An initial environmental examination and a summary IEE are required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.

(iii) Category C: Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed.

(iv) Category FI: Projects are classified as category FI if they involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all subprojects will result in insignificant impacts.

38. The Section Bashkugandy – Kyzyl-Zhyldyz was classified based on ADB's Safeguard Policy Statement (2009), and ADB Methodological Guidelines on Environmental Assessment (2003) as a category "B", and IEE is required and regarded as the final environmental assessment report.

39. Public Disclosure: ADB will post the following safeguard documents on its website so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

(i) For environmental Category A projects, draft EIA report at least 120 days before Board consideration;
(ii) Final or updated EIA and/or IEE upon receipt; and
(iii) Environmental Monitoring Reports submitted by Implementing/Executing Agencies during project implementation upon receipt

40. ADB also requires public consultation in the environmental assessment process. For Category-B projects, the borrower must consult with groups affected by the proposed Program and with local nongovernmental organizations (NGOs) if possible. The consultation for this needs to be carried out as early as possible in the Program cycle so that views of affected groups are taken into account in the design of the Program and within the mitigation measures proposed. In this IEE report is considered grievance redress mechanism (GRM), in Section H.

(v) **Permitting Processes in Kyrgyz Republic**

41. The assessment of the possible effects of economic and other activities on the environment and human health, as well as the development of a list of measures to prevent adverse effects (destruction, degradation, damage and depletion of natural ecological systems and natural resources), and improve the environment are carried out in the framework of environmental impact assessment provided the environmental legislation of the Kyrgyz Republic. Environmental impact assessment is carried out according to the

(i) Regulations on the procedure for environmental impact assessment in the Kyrgyz Republic (13 February, 2015, #60);
(ii) Regulations on the procedure of the state ecological examination in the Kyrgyz Republic (7 May, 2014, #248);
(iii) Law "On Ecological Expertise" No.54 dtd. 1999, (with amendments as of 04 May 2015),
(iv) Law "On Environmental Protection" No.53 dtd. 1999, and
(v) Law "General technical regulation on environmental safety."No.151 dtd. 2009.

42. The Environmental Management Plan (EMP) is developed on the basis of the EIA, design

solutions and refined, is specified on each next stage of the project. EMP reflects all the possible negative impacts that have been identified EIA and includes mitigation measures these effects. Environmental assessment in the Kyrgyz Republic is founded on two subsystems: (i) OVOS (the Russian acronym for “Environmental Impacts Assessment”), and (ii) Ecological Expertise (State Environmental Review, SER). The ecological assessment based on a “list”, project screening is done to determine whether a project is the subject to environmental assessment or not. For cases that this is required, an OVOS is conducted by an OVOS consultant hired by a Project Proponent. The environmental assessment process with produce EIA documents which will be subjected for further reviews.

43. The resulting EIA is then presented for public consultations, after which revisions are done according to the public’s feedback. Subsequently, the OVOS report, Statement of Environmental Consequences, and other supporting documentations are submitted for the SER. After which the project may be approved, rejected or send for reexamination.

44. The outputs of the public consultation are incorporated in the Public Environmental Review (PER) which can be done both stage of the OVOS or also initiated in parallel to the SER. The SER duration depends on the complexity of the project, but should not exceed 3 months after submission of all the OVOS documents for the SER by the Project Proponent.

(vi) Environmental Standards

45. The following environmental standards are applied to the Project.

6.1. Air quality

46. Maximum permissible concentrations of harmful substances in ambient air according to Kyrgyz and international standards below in the Table 2.

Table 24: Maximum permissible concentrations of harmful substances

Pollutants	Maximum permissible concentration (mg/m3)		Concentration averaging period.	
	According to national legislation	According to IFC*	According to national legislation	According to IFC*
Particulate Matter	0,5	0,02	daily average	1 year
Sulphur Dioxide (SO2)	0,5	0,02	daily average	24 hours
Nitrogen Dioxide (NO2)	0,085	0,04	daily average	1 year
Carbon monoxide (CO)	3,0	0,1	daily average	Maximum daily 8 hour mean

*World Health Organization (WHO). WHO Ambient Air Quality Guidelines.

6.2. Noise

Table 25: International (IFC) Noise Standards (dB)

Noise Level Guidelines*		
	One Hour LAeq (dBA)	
Receptor	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational**	55	45
Industrial; commercial	70	70

*Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999.
**For acceptable indoor noise levels for residential, institutional, and educational settings refer to WHO (1999).

Table 26: Kyrgyz Republic Noise Standards (dB)

Description of activity/category	Leq		Lmax	
	Day	Night	Day	Night
Areas directly adjacent to hospitals and sanatorium	45	35	60	50
Areas immediately adjacent to dwellings, polyclinics, dispensaries, rest homes, holiday hotels, libraries, schools, etc.	55	45	70	60
Areas immediately adjacent to hospitals and dormitories	60	50	75	65
Recreational areas in hospitals and sanitariums	35		50	
Rest areas at the territories of micro-districts and building estates, rest houses, sanitariums, schools, homes of aged, etc	45		60	

SN (Sanitary Norms) 2.2.4/2.1.8.562-96 “Noise at workplaces, in dwelling rooms, in public buildings and at the area of residential development”.

6.3. Surface water

Table 27: Surface Water Quality Standards

Pollutants	Maximum permissible concentration (mg/m3)	
	According to national legislation	According to EC legislation
Turbidity	Not less than 20 cm	Not less than 1,0 metres/depth
Petroleum oils	0,3 мг/л	not visible in the form of a film

GN 2.1.5.1315-03 with changes GN 2.1.5.2280-07 and SanPiN2.1.5.980-00

Directive 2006/44 / EC of the European Parliament and of the Council of 6.09 in '06 on the quality of fresh waters needing protection or improvement of quality in order to maintain fish life

C. Description of the Project

(i) Need for the Project

47. Since Kyrgyzstan is a mountainous, landlocked country, regional commerce depends heavily on road transport, which dominates the Kyrgyz transport system and heavily dependent on road transport. As mentioned in Country Partnership Strategy with ADB[7], the road infrastructure has been routinely affected by climate-induced extreme events, including extreme temperatures, landslides, and mudslides. It is for this reason that further investment will be needed in the rehabilitation and maintenance of the road infrastructure.

48. The proposed project will help link the southern regions of Osh, Batken, and Jalal-Abad with the northern regions of Naryn, Issyk-Kul, Chui, and Talas, and then further connect to the regional corridors. The project will: (i) reduce the cost of passenger and cargo transportation between southern and northern regions by providing direct access, (ii) provide a more direct transit route between Kazakhstan and Tajikistan, and (iii) help stimulatetrade.

(ii) General information on project facility

49. This Section’s starting point, designated at Km 159+200, begins at the outskirts east of Bashkugandy. Following the existing alignment, it will go through the villages of Bashkugandy, and Baizak before it enters Chaek options were considered – to pass through the village of Chaek or to have a bypass road. Then at Km 179.6 the road rehabilitation continues along the existing alignment and terminates at to Km 183+99. The entire of this section is within Naryn Oblast and it traverses only one district - Jumgal (with Chaek as the capital). The road section has three parts:

- Part 1: from km 159 + 200 to km 172+400 – The road is to rehabilitate along its current alignment and will pass through the residential areas of Bashkugandy and Baizak.

[7] Country Partnership Strategy: Kyrgyz Republic, 2013–2017 ADB, 2014.

- Part 2: from km 172+400 to Km 179+600 – Option portion for (i) existing road rehabilitation or (ii) Bypass Road.
- Part 3: from km 179 + 600 to km 183+99 – The road is to rehabilitate along its current alignment and will pass through the residential areas of Kyzyl-Zhyldyz. It will join up with an almost competed the section of the road being funded by the Chinese Exim Bank.

50. With the bypass road, the village of Chaek is actually being avoided in this project section by the proposed diversion. One obvious good reason for this is to minimize impact during the construction phase as well as during the operation phase. However, since some part of the Bypass Road will be going through a new alignment in a "green field area", a more detailed assessment was done to as certain its Environmental Category by scrutinizing its type, location, scale, and sensitivity and the magnitude of its potential environmental impacts according to ADB's – SPS 2009[8].

The Table below shows the Geographical Jurisdictions that the road section traverses or is near to.

Table 28: Geographical Jurisdictions along the Road Section

Oblast	Rayon	Town	Village	Segment/ km	Section / km
Naryn	Jumgal	Chaek	Bashkugandy Baizak	Km 159 – Km 172.4	Km 159 - Km 183.9
				Km 172.4 - Km 179.6 (Bypass Road)	
			Kyzyl-Zhyldyz	Km 179.6 - Km 183.9	

Source: The Consultant

The map of the project road is shown in the following page.

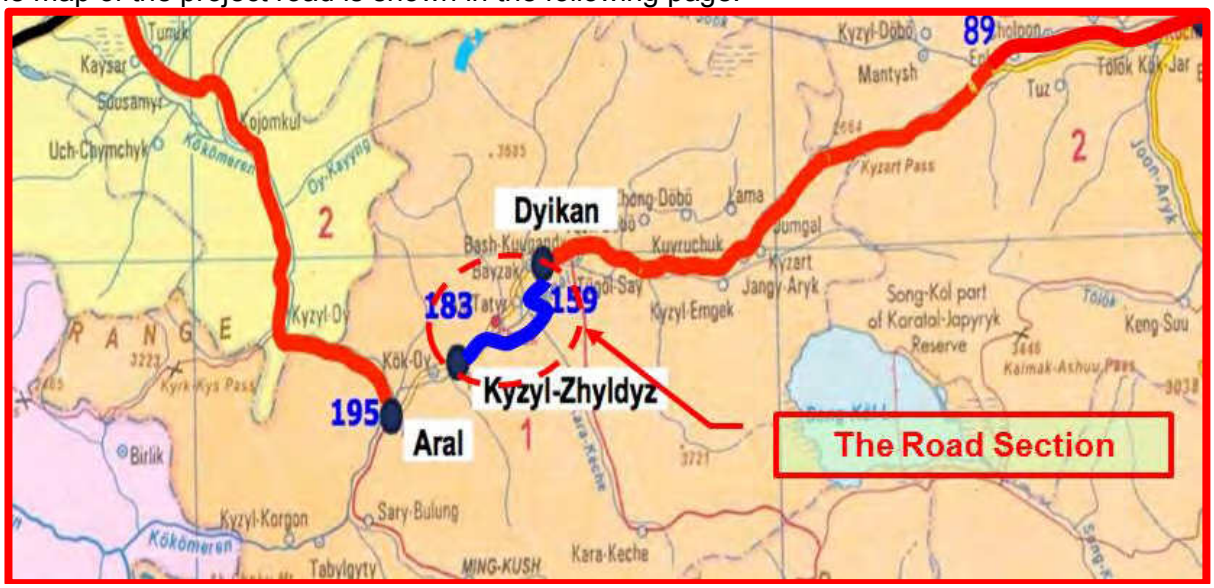


Figure 6: Location Map of the Road Section

Source: The Consultant

51. Engineering-geological conditions of subgrade construction on the North-South Alternative road on the section between Bashkugandy and Kyzyl-Zhyldyz are favourable. Base line with a length of 23,899 km is laid mainly on the existing roadbed with gravel envelope, in space PC-PC 1592+00-1725+00, 1796+90- 1830+99 with asphalt coat. Coating is asphalt, mainly with a thickness of 5-6 cm, rarely 9-10 cm.Base of road pavement and is constructed from gravel, pebble and crushed-stone soils with sandy-loam, sandy fillers.

[8]Para. 50. ADB SPS 2009

52. The road is in poor condition, the surface is bumpy with numerous patches, covered with frequent transverse and longitudinal cracks, often with crack network. The road crosses the Jumgal River, as well as many feed and irrigation ditches and low places.

53. Where settlements are on both or one side of the road, there are forest plantations in one or two rows represented by poplar, maple, willow and shrub. After trees strip there are farmlands on flat terrain (irrigated arable land), where vegetables, cereals and forage grasses are cultivated. On non-irrigated land (bogharic land) - natural grass, feather grass, rare trees and shrubs.

(iii) **Characteristics of project section**

54. For the Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), consisting of the 3 parts (Part 1, Part 2 and Part 3, see above) will be rehabilitated into Category II road, practically along the existing alignment. The details of the proposed road project are:

- Rehabilitate and pave the project road to Technical Category II from Bashkugandy (Km 159) to Kyzyl-Zhyldyz (Km 183+99) according to Kyrgyz National Standard with Geometrical and Structural Requirements (pavement works – replacement and/or construction of new pavement structure; road curvature improvements – for improve drivability and safety, curvatures and gradients will be improve, especially at existing narrow curves; carriage way widening – in a number of spots the road width will be widened to allow for safe two-way traffic, and pedestrian access; slope cuts – due to necessary widening and safety; slope stabilization – cuts will be stabilized by structural works);
- Rehabilitation, repair and/or replacement of bridges and culverts (bridge construction/repair – mostly repairs of bridge decks);
- Construction of side drains and other drainage structures (culverts and drainage works – replacement of old culverts and improvement of existing ones with installation of side ditches;
- Provision of retaining walls and river protection measures, where necessary.
- Provision of adequate road signing and marking (installation of road furniture – necessary safety features and furniture shall be installed at strategic locations along the road.
- Provision of safety barriers.
- The envisioned service life of the pavement based traffic load forecast is set at 20 years, with the normal routine and periodic maintenance

55. The Section Bashkugandy - Kyzyl-Zhyldyz, km 159+200-km 183+099, with a length of 23,899 km was designed by “Kyrgyzdortransproject” Design Institute according to the standards of II-technical category (amended and supplemented SNiP KR 32-01:2004) with the following parameters:

II- technical category

• Number of traffic lanes	2
• Width of traffic lane	3.5-3.75m
• Width of carriageway	7.0-7.5m
• Width of curb strengthening	0.50-0.75m
• Width of pavement	9.0-15.5m
• Width of roadside	3.25-3.75m
• Width of subgrade	15.0m
• Minimal radius in plan	150m
• Minimal radius in plan in settlements (city conditions)	50m
• Maximum grade of longitudinal profile	80‰

56. Permanent land allocation for the subgrade is required on the sections between settlements. Additional permanent allocation of the subgrade was 19.28 hectares. Temporary land allocation for 4 quarries is 9.6 hectares.5 stockpile sites for vegetation layer- 1.5 ha. During the construction the design provides arrangement of the construction site on PC 1712+00, and allocation for construction site - 1.0 hectares. Traffic during the construction will be carried out by one lane of the existing road. Before the beginning of the road rehabilitation works it is necessary to fulfill the following worksfor preparation of the territory:

- Restoration and consolidation of alignment (stakeout)
- Coordination of the initiation and terms of construction works (with the traffic police, road administration, ecology administration, etc.);
- Preparation of the construction site;
- Preparation of sites for placing road equipment in the working area;
- Preparation of specialized areas for fuel storage;
- Felling of tress and clearing of areas;
- Demolition of existing engineering structures;
- Dismantling of fences;
- Demolition of buildings.

57. Planned volume of earthworks:

Table 29: Planned Volume of Earthworks

Description	Unit	Quantity
Excavation to spoil of unsuitable and surplus material, common soil	m3	1,873
Formation of embankment, common material from cut	m3	88,608
Formation of embankment from borrow area	m3	107,600
Provision of Subgrade, selected material	m3	82,000

58. On the designed section where the Meteorological station comes to the Chaek bypass PK 1788+00, according to the normative data the station should be located on the open space without any structures around. On the basis of the letter No. 14-6/4785 the design includes the estimate cost of station shift, calculated by the Agency of Hydrometeorology letter No. 12/3647 (Project documentation of “Kyrgyzdortransproject” Design Institute). During subgrade construction, it is necessary to pay attention to thorough layer-by-layer compaction of soil. Filling-up of the subsequent layer is allowable only after leveling and compaction of under layer by rollers up to required density. Reasoning from opportunities of potential suppliers of road building materials, road pavement with crescent-shaped profilewas worked out.

The ensuing Figures are typical cross-sections for Technical Category II Road.

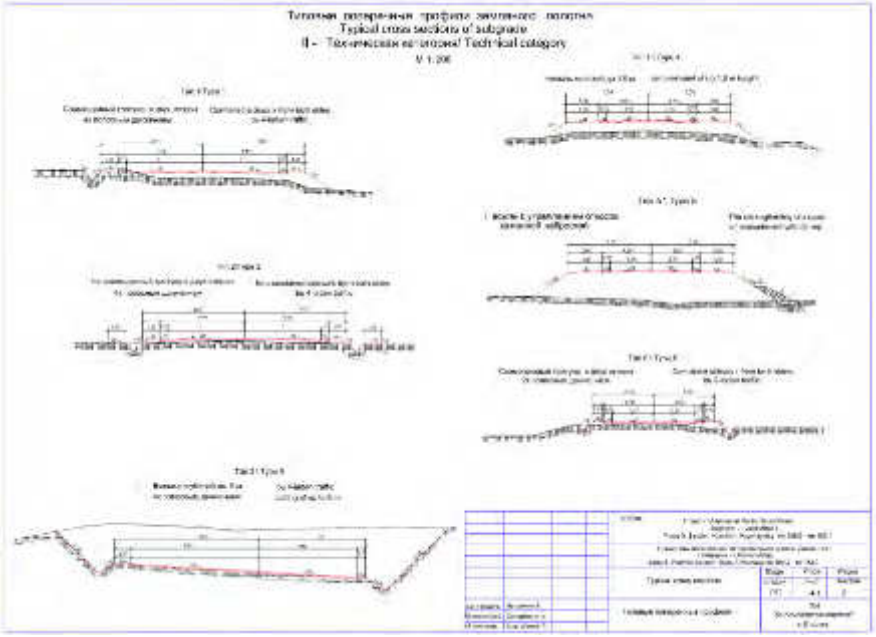


Figure 7: Technical Category II Road (Type 1-6)

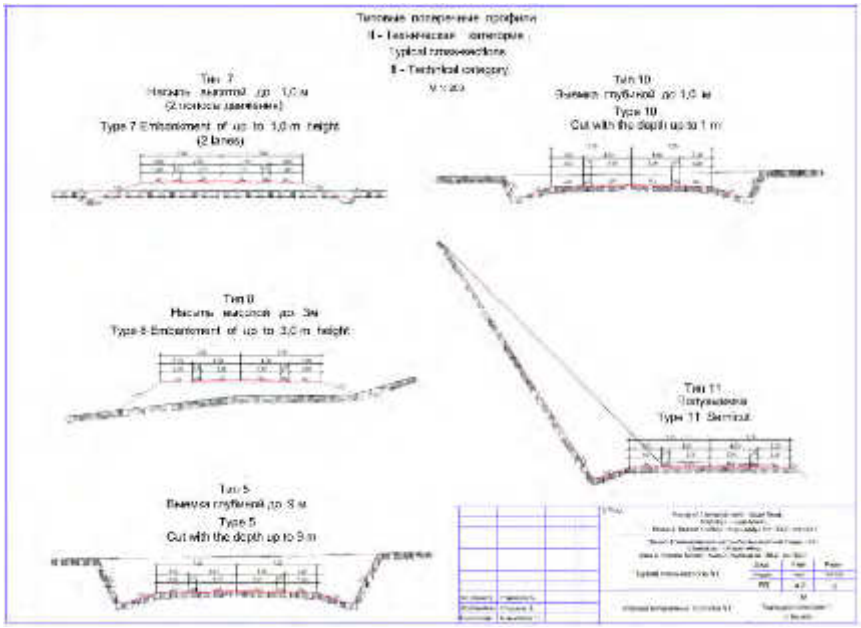


Figure 8: Technical Category II Road (Type 7-11)

3.1. Bridges and Culverts

59. On this section will be replacement 41 culverts and the new bridge that crosses the Jumgal River along the Bypass Road as shown in the Table below.

Table 30: Bridge in the Section

No.	Location	Description/ Remarks
1	Jumgal River bridge point at PK 1742	New Highway bridge over Jumgal River in the bypass road.

(iv) **Temporary Ancillary Facilities**

4.1. Material Sources and Cut & Fill

60. Considerable volume of materials will be obtained from borrow areas and will be used for construction of road embankments and bridge approaches. Several potential borrow areas are quite apparent in the general vicinity. Contractors involved in the recent road reconstruction works also can readily identify potential areas for borrow materials which can be used for the bridge approach roads. The prospective contractor will probably identify his own source of materials. However, the materials need to be approved by the construction supervision engineer prior to using them for the project.

61. Should the Contractor be sourcing the materials from existing and operational quarry site, the contractor should exert influence on the operator that all required permits from local authorities, get approval from territotrial departments of SAEPF are obtained and proper operational and management measures be instituted to minimize impacts to the general environment. On the other hand, should the Contractor decide to open a new borrow site, government permits are also required and borrow pit management plan will be developed as SSEMP. The guidelines indicated below should be followed in order to minimize impacts associated with the operation of borrow areas:

- All of the required environmental approvals should be secured and extraction and rehabilitation activities consistent with the requirements of SAEPF and/or permit conditions be carried out;
- Prior to operation of the borrow areas, the contractor should submit to SAEPF and construction supervision consultant (CSC) the following:
  - ✓ A plan indicating the location of the proposed extraction site as well as rehabilitation measures to be implemented for the borrow areas and access roads upon project completion;
  - ✓ A dust management plan which shall include schedule for spraying water on access road and schedule of the equipment to be used;
  - ✓ A schedule of regular dust suppression on all unpaved access roads during the construction period, particularly in sections wheresensitive receptors, such as settlements, are located;
  - ✓ Location map of stockpiles which should be away from watercourses to avoid obstruction of flow and siltation;
  - ✓ Cover on haul trucks to minimize dust emission and material spillage;
  - ✓ Plan to undertake regular maintenance and repair of access roads to their original condition whenever necessary.

62. During the field investigations by the material specialist, suitable construction materials were located and inspected. However, near the road section, no suitable materials were found. During to construction period, the contractor should perform his own material survey and process the corresponding permits for the operation of material sources.

4.2. Construction materials

63. For the construction of Alternative road North-South on the section Bashkugandy - Kyzyl-Zhyldyz it is recommended to use construction materials from the following existing borrow areas:

- “Gryadovoe” deposit of pebble soil is located in 30 m right and left from km 158+250.
- “Kara-Tau” deposit of gravel is located in 600 m right from km 171+000.
- “Kairma” deposit of gravel, in 500 m left from km 189+000.

64. For strengthening of banks itis recommended using material from “Kapchygai” and “Glybovoe” rock deposits.

- ”Kapchygai” rock deposit is located 10 km right from km 168+000.
- “Glybovoe” rock deposit is located in 30 m right from km 204+000.

4.3. Asphalt and Cement Batching Plants

65. In establishing asphalt plant at the site for the road pavement basically the binder course and the surface course; the Contractor should be guided by a number of items to protect the environment. Emissions will be produced in producing the asphalt mix likewise bitumen spill may occur during handling and mix preparation. For the cement batching plant for concreting works such as bridges, culverts and drainage works, cement dust can contaminate the air. In addition, the preparation, mixing and loading of concrete mix into the transit mixer and subsequent washing of trucks will result into soil and water contamination.

66. These two facilities should be situated at appropriate distances from the residences (not less then 500m) as well as the river (not less then 100m) so as not to result to water contamination. Within the project road, since the area is rural, there are ample spaces to set up these plants. The Contractor should obtain the necessary permits, negotiate properly with the landowners and reinstate the area after usage at the end of the project.

5. Construction Camp

67. The proper maintenance of all the service and sanitary facilities at the construction camp falls under the direct responsibility of the Contractor under the supervision of the construction supervision engineer for the project. The sanitary facilities or ablution include toilets, urinals, showers, washstands and a laundry area. In addition, equipment and maintenance yard will also have to be sited accordingly. Waste water should not be discharged into the river unless treated in compliance to local effluent standards. Solid waste collection and disposal should be planned properly. For construction camps, there are ample spaces in the area that the Contractor can select to set them up. It will be up to the Contractor to select the land parcels required, negotiate directly with the landowner and obtain the necessary permits for his facilities.

6. Alternatives

68. Two alternatives were considered in this section:

1. Zero option – the «Inaction»/ do nothing alternative
2. The road reconstruction project

The “Zero option” alternative scenario will mean that the road stays “as is”, in which no rehabilitation works. Considering the mentioned reasons and along with those presented in the “Country and Regional Strategy” and “Locality Specific Rationale”, the benefits of rehabilitating and reconstructing the road generally outweigh the expectations of the “zero option” alternative.

The second Alternative includes consideration of 3 parts of the section Bashkugandy - Kyzyl-Zhyldyz. Part 2 has additional options for the road reconstruction.

69. **Part 1 from km 159 + 200 to km 172+400** – The road is to rehabilitate along its current alignment and will pass through the residential areas of Bashkugandy and Baizak. As it enters Bashkugandy, the road descends on the valley floor with the Jumgal River on the right hand side. Most of the rural areas are agricultural areas devoted to local crops, vegetables, orchards and animal rising. Tributary streams cross the road and joins Jumgal River. After Baizak, the road turns southward to avoid steppe hills and continue along the Jumgal valley floor.

70. **Part 2 (from km 172+400 to Km 179+600)** alternatives for the reconstruction or construction have two (2) options as follows:

Option 1: Rehabilitation of existing road through the center of Chaek Village via the existing road. The road will be rehabilitated along its existing alignment following design standard for Category II.

Option 2: Bypass Road described as follows:

Segment 1:

- *Option 2A*: PK1724 to PK 1758 (3.4 km) – Bypass road goes through a new alignment (along farm road track as local access), crosses hayfields, the Jumgal River and river floodplain (PK 1744+600 to PK 1757+720 (1.32km);
- *Option 2B*: Bypass road from PK1724 to PK 1743 goes as Option 2A, and from PK 1743 it goes toward the foothills until in connects back to Segment 2 at PK 1758. This sub-alignment is viewed as an environmentally friendly option since it avoids the Jumgal River floodplain which harbors local flora and fauna species.

Segment 2: PK 1758 to PK 1773 (1.5 km) – Bypass road is goes through local interior road in Chaek; and

Segment 3: PK 1773 to PK 1796 (2.3 km) – Bypass road goes through farm access road in Chaek and new alignment in Kyzyl-Zhyldyz and merge back onto the main road

71. **Part 3 from km 179 + 600 to km 183+99** - The reconstruction of the road from end of the bypass to 183 km (Kyzyl-Zhyldyz)

7. Traffic Volume

72. Results of the Manual traffic counting converted into AADT by each vehicle type (Year 2015) in view of seasonal and daily correlation reflected in the table.

Table 31: Traffic study results

Analysis section	Name of the section	Vehicle Type	Car	Light Bus/Van	Medium Bus	Large Bus	Light Truck Pick Up	Medium Truck 2-axle	Heavy Truck 3-axle	Truck trailer	Truck Semi trailer	Total
2B	Bashkugandy 159km-Kyzyl-Zhyldyz 183km	Counting result	827	30	81	2	66	38	63	43	37	1187
		Day/Month Factor (Wednesday/August) = 0.814										
		AADT	673	24	66	2	54	31	51	35	30	966
2C	KyzylZhyldyz 183km-Aral 195km	Counting result	204	4	7	2	6	7	10	22	12	274
		Day/Month Factor (Tuesday/August) = 0.885										
		AADT	181	4	6	2	5	6	9	19	11	242

73. As per estimate in the traffic study the growth rate are as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After computations the maximum traffic can be around 2,400 vehicles per day. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category II road will be sufficient to service the future traffic.

8. Proposed Schedule for Implementation

74. The schedule for the construction activities is at preliminary stage. The detailed design consultant will have to be recruited who will undertake the necessary design finalization along with all the contract documents. This IEE will form a part of the contract with specific provisions to form part of the Technical Specifications. The anticipated start of construction will be around March 2017.

D. Description of the Environment (Baseline Data)

(i) Geomorphology

75. In terms of geomorphology, this entire 24 km from Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) runs over Jumgal depression. The width of the valley is from 5.0 km to 16 km. The depression is located between the mountain ranges to the south of Moldo-Too, and from the north, the Jumgal Too. The surface of the cavity is irregular, dissected by frequent logs sais. In many areas these sais are permanent watercourses, with depth reaching 30-40 m. The road crosses the Jumgal River in three places. On both banks of the river are floodplains with terraces with a total height of up to 20-25 m of cut side logs and sais. Between villages Tugol-Sai and Aktadyr, existing road is with frequent turns and variable gradients of roads in horizontal and vertical relation. Absolute elevations vary within 1490-2240 m above sea level.

(ii) Soil and geology

76. Black dark chestnut soils, mainly along the Jumgal River, arewidelyspread in the study area. Thetopsoilisof 0.15-0.25 m thickness. Natural vegetation is highly developed in floodplains and on slopes and is represented by poplar, birch, willow, out of which shrubs- buckthorn, barberry, etc. In urban areas there is developed gardening (apples, apricots, pears, etc.). In settlements, there are ornamental plants (poplar), whereas gardening and horticulture is developed in homestead lands.The oldest rocks in the survey area are the Upper Ordovician granites (O3), which are widely distributed on the Kyzartpass and on its western slope.The rest of the surveyed section is prevailed by upper-quaternary and modern quaternary deposits, presented by large-fragmental soils and in the form of case from pulverescent-clayey soils. Depth of occurrence is more than 10.0 m. According to the map of seismic regionalization of Kyrgyz Republic territory, the surveyed section relates to 8 point seismic zone (SNiP KR 20-02:2009).

(iii) Climate

77. A climatic characteristic of surveyed section is given according to long time observations of “Chaek” weather station located at16-18 km westward from the beginning of section, km 195+500. The “Chaek” weather station is located at 1642 m above sea level. Climate of the region is continental with cold long winter; average monthly negative temperature keeps 5 months a year. Summer is warm. Absolute maximum and minimum temperature degree is 42.7°C and minus 34.4°C. Precipitation is not too much –average perennial amount is 253 mm. Detailed climatic data is given in Table 10.

By climatic characteristics the surveyed road sections relates to IV road climatic zone (SNiP KR 32-01:2004, Appendix B, table B.1)

Table 32: Climate

Name of weather station (WS)	Absolute altitudeof weather station,m	Coverage area of weather stations, from km to km	Air temperature, 0C			Average rainfall in mm / year	Maximum depth of soil freezing, cm	Average height of snow cover, cm	Average annual wind speed, m/s
			Average annual	Absolute peak	Absolute minimum				
Chaek	1642	105-257	4.0	42.7	-34.4	253	242	20	1,9

(iv) Hydrology

78. In the western watershed after the Kyzart pass, melting glaciers, snowfields and rain supply the surrounding regions tributaries of rivers such as Jumgal, Ortho Kuugandy, Kyzart, and Turuk. Jumgal River is the east-left tributary of the Kokomeren River with maximum flow rate of

80m3/sec. Its catchment area is 2390 km2, with an average elevation of 2670 m and average slope of the river 24%. The river is hydrologically well investigated with observations carried out at the river gauging station located at a distance 78 km away from the headwater source. The volumetric flow is shown for Jumgal River is shown below

Table 33: Jumgal River's volumetric flow (m3/s)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg. Annual
Avg.	8.88	9.13	9.73	9.73	10.8	17.1	10.3	8.25	8.35	8.58	9.41	9.64	9.91
Max.	11.5	12.8	13.6	15.6	25.4	35.8	26.3	25.6	15.8	15.3	14.2	11.4	15.5
Min.	7.30	7.42	7.58	5.50	4.69	4.56	3.38	4.40	4.62	5.34	6.78	7.40	6.39

(v) **Fauna**

79. The territory of the project area is desert and semi-desert. By geographical zoning, the territory refers to inner Tien Shan and midland. Representative species of the given territory are:

- Reptiles: desert lidless skink, lizard, arrow-snake, copperhead;
- Birds: little owl, mongolian plover, short-toed lark, tawny pipit, common chats, black redstart, rocky nuthatch, desert mongolian finch, roodyshelduck (in reservoirs), bearded partridge, chukar partridge (in open habitats), turtle dove, black-bellied sandgrouse flies, orjok-duck lives in Jumgal River watershed;
- Animals: great horseshoe bat, sharp-eared owl-moth, tolai hare, sand eel, steppe polecat, stone marten, gray marmot, muskrat (in reservoirs);
- Fish: Suusamyr scaly osman, Marina, trout, snakehead

(vi) **Flora**

80. Territory of the Bashkugandy - Kyzyl-Zhyldyz sections refers to arable irrigated land on the site of steppes and deserts. According to geobotanical subdivision, the territory refers to inner Tien Shen province. Range of vegetation types. Desert: thorn cushion plant, sod-grass steppes, tall grass meadow, cryophilic cushion plant, swamps, spruce forests, leafy summer green forests, deciduous shrubs. And juniper stands. Great area is occupied by primitive plant aggregation with sparse vegetation. Type of belts - deserted - steppe with fragments of forests and meadows.

Dominant vegetation is: *Sympegmaregeli, Silver willow (Salix acutifolia), Sea buckthorn (Hippophaerhamnoides), Geranium regelii, Geranium himalayense, Kalidiumcuspidatum, Reaumuriasoongorica, Acantholimonalatavicum, Artemisia tianschanica, Stipacaucasica, Festucasulcate,Phlomisoreophila, Carexstenocarpa, Iris halophila Pall (Iris sogdiana Bunge).* Out of medicinal plants, there *grow Begger's rose, loose rose, Ural licorice*.

(vii) **Endogenous and exogenous processes**

81. **Seismic hazard**. According to seismic regionalization of the Kyrgyz Republic territory, the project area relates to 8-point seismic zone (SNiP KR 20-02:2009).

82. **Mudflow hazard**. Mudflow of storm origin may take place in Baizak, Jany-Aryk, Kabak, Min-Kush, Chaek rural districts by threatening homes, bridges, roads and channels. Mudflow may take place once in two or more years on the major part of the area's mountainous territory. Mudflows of storm origin may happen within April-September, most likely within May-July.

Table 34: Forecast of possible activation of mudflows and floods

#	Rural district	River	Settlement	Facilities that might be affected
1	Baizak	Mudflows, Orto-Kuugandy River		Baizak highway - recreation camp KOLMO, bridges, Jany-Aryk channel

2	Bashkugandy	Mudflows, right bank, Bashkugandy River	Bashkugandy village	houses, homestead lands
3	Chaek	Slopeflows, Uzun-Bulak, Zhaek-Ooz sais	Chaek village	Houses
4	-"-	Jumgal River	Besh-Terek-Jumgal highway	highway bridge

83. **Flooding.** Areas with high levels of groundwater are confined to lower terraces of Jumgal, Kokomeren rivers' valleys.

Table 35: Forecast of possible development of flooding processes

#	Rural district	Settlement	Flooding reasons	Recommended safety measures
1	Baizak	Baizak village	High ground water level	Construction ofcollector drainage network
2	Kyzyl-Zhyldyz	Kyzyl-Zhyldyz village	Infiltration upon watering from the Chon-Aryk channel	Regulation of irrigation, follow-up survey
3	Chaek	Chaekvillage,Matyeva, Ailchieva, Akmatalieva, Tursunbaeva, Ryskulova, Akieva streets	-"-	Cleaning, repairandconstructionofCDN(constructionofCDNin area ofTursunbaeva, Ryskulova streets is complete)

84. **Landslide danger**. Landslides may activate on the territory of Min-Kush, Chaek, Jumgal and Kabak rural districts

Table 36: Forecast of possible activation of landslides

Rural district	Location	Facilities that might be affected
Chaek	Chaek village, right bank of the Chukur River	Bridge of Chet-Kuugandy River
-"-	Area of Fattening complex	Bridge of Jumgal River with flooding of 10 houses
-"-	Area of Uzun-Bulak	5 houses

(viii) **Local Socioeconomic Information**

85. Jumgal region was formed in 1935. The region covers the area of 4803 km^2. According to the National Statistical Committee of the Kyrgyz Republic, the population makes 42.4 thousand peopleas of January 1, 2014. Average population density is 8.8 persons per 1 km^2. There are 28 rural settlements on the region territory, which belong to 13 rural districts: Min-Kush(2 settlements), Bashkugandy (1), Jany-Aryk (4), Jumgal (2), Kabak(7), Kok-Oi (2), Baizak (1), Kuiruchuk (1), Chon-Dobon (1), Tugol-Sai (2), Chaek (3), Kyzyl-Zhyldyz (1), Suiumbai (1). Administrative center of the region is Chaek village with a permanent population of 7009 people (according to population census of 2009). There are 8,049 households in the region. Kochkor – Chaek – Min-Kush, Suusamyr – Aral highways cross the region's territory.

86. Jumgal region is located in the northwestern part of the territory of Naryn oblast and is limited by Jumgal-Too and Sandyk ranges on the north, Suusamyr-Too and Sary-Kamysh ranges on the west, Kabak-Too and Son-Kul ranges on the south, and by Kyzart ranges on the east. Highly broken relief and high gravitational energy of slopes define the mountain area. Drop of sea level of the valley bottom varies from 1500 to 2600 m, of mountain zone - from 2600 m to

4185 m. Main rivers in the region are Kokomeren River (mean maximum flow is 436 m3/s, flow of 1% occurrence is 998 m3/sec), Jumgal River (maximum flow is 80 m3/s), Min-Kush (flow of 1% occurrence is161 m3/s). There is Son-Kul Lake on the eastern part of the region.

87. The Section - Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) - of the project road passes through the several villages of Jumgal Rayon. Basic social infrastructures are available in these villages, such as drinking water, and electricity. For heating local people use charcoal and firewood. The irrigation water is supplied by 37 irrigation canals from the nearby river. All of the villages have schools, with kindergartens in large villages.

88. Village Medical Points is found in every village and in large villages there are hospitals. Transport infrastructure is the main road with an asphalt surface (cold asphalt) and dirt roads.The bulk of the population is engaged in agricultural activities and livestock. The main products are wheat, potatoes, barley, meat, milk, wool, eggs.

89. Along the Bypass Road, agricultural fields are located on flat terrain, which are irrigated arable lands grown with vegetables, cereals and fodder grass. On non-irrigated lands (Bogar) natural grass, feather grass, rare trees and shrubs thrive.

Table 37: General Socioeconomic Information

#	Indicators	Bashkugandy	Baizak	Chaek	Kyzyl-Zhyldyz
	Information about population				
1	Number of population	3136	6045	2931	2370
	Number of households	702	1298	11931	582
	SOCIAL FACILITIES				
2	Number of schools	1	1	4	1
	Elementary education		1	3	1
	Secondary education	1	1	4	1
	Vocational lyceums		-	1	-
	Number of pupils	599	1108	2003	343
	Number of teachers	43	85	182	36
3	Pre-school educational institutions	1	1	2	1
	Number of children	30	95	180	40
4	Polyclinics	-	-	1	-
	Group of family doctors	1	1	1	1
	Number of doctors	4	1 doctor, 9 sick nurses	25	4
7	Clubs	1	1	1	
	Stadiums			1	
	Sport grounds			2	1
	Libraries	1	2	2	1
	Parks	1		1	
	Bath houses (public/private)	1/39	2/5	339	2
	Barber's shops	1	2	4	
	Shops (private)	4	4/6	110	3
	Café		1	7	
	Canteens			2	
8	Public prevention center	1	1	1	1
	Councils of Veterans	1	1	1	
	Women's Council	1	1	1	1

	Youth board	1	1	1	1
	Court of aldermen	1	1	1	1
	NGO	1		23	1
	LAND AREAS				
9	Total land area (ha)	24636	3075	31422	20345
	Out of which:				
	Agricultural land	1736	3075	2207	19180
	Out of which:				
	Arable land	1509	2090	1908	1095
	Dry land	235	9	80	
	Pasture	10763.8	28754	28682	
	Perennial grass	901	1555	41	20
	Garden	3			
	Hay land	277	54	277	48.9
	Courtyard		24		
	Forest	3	845		
	Swamp	177	73		48.9
	Various land				
	Land of distribution fund	301	720	326	
	Arable land	102	588	187	81
	Dry land	137	132	27	
	CATTLE HUSBANDRY				
10	Horned cattle	2505	2888	2913	1434
	Small cattle (out of which - goats)	1114/4753	14443/749	5961	9681
	Horses	2134	2341	1367	983
	Poultry	4065	4442	6997	2946
11	AGRICULTURAL ENTITIES				
	Peasant farm	440	659	659	401
	Seed farms	1	1	1	1
	Technical service stations		2		
	Mills	5	1/5	6	3
	Plants				
	Small workshops	2	3		
	Processing enterprises				1
	Refueling stations(private)		1	3	1
	OJSC, CJSC, LLC			14	
	Associations of water consumers	1	1	1	1
	Small markets	1	1	1	
	Private Entrepreneurs	18		167	3
12	Irrigation assembly, km				
	Channels	24	34	35	6
	Irrigation ditches	63	11.3	300	21
	Number of natural and artificial bodies	2	1	1	3
13	Total number of vehicles	110	71	195	55
	Out of which:				
	Light vehicles	96	34	152	20
	Lorries	60	21	16	6

	Tractor	40	9	24	28
	Combine harvester	4		3	1
	Motorcycle	-	-	-	

Source: Passports of Bashkugandy, Bayzak, Chaek and Kyzyl-Zhyldyz village's authorities, Zhumgal region

(ix) Cultural and Archaeological Resources

90. There are very few objects of cultural and historical significance in the area. One notable item though is the presence of cemeteries along the road. It is important that the road design and consequently the construction will ensure that impacts will be avoided or minimized. To obtain more detailed archaeological, cultural and historical information, a local specialist was engaged by PPTA to undertake this scope. This specialist had conducted a separate field work and presented his findings in a report.

91. In March 2016, an archaeological investigation was performed by a local archaeologist historical and cultural heritage sites and objects in the vicinity of the project within the territories of Ton district of Issyk-Kul, and Kochkor and Jumgal district of Naryn oblast, Jaiyl district of Chui oblast in accordance with the Technical instructions and norms of the method of archaeological investigations[9].

92. Within the section the significant archaeological resources consist of the following: Complex Mausoleum (N41.99129 E74.64144) - 100 km from Kochkor to Chaek, between the villages of Bayzak and Bashkugandy), which dates back to XIX c. The boundary of these artifact structures are around 10 m from the road, at the left-hand side (163 km +600). This complex mausoleum will not be subject to the negative impact during the construction and operation of the road, as it is located at a distance more of the 10 meters from the existing road. However, to preserve the complex mausoleum during the construction work necessary to take mitigation measures from impacts on the object. These measures are described in the chapter the Environmental Management Plan.

93. Based on the results of the research, report has been prepared, which was sent to Kyrgyzstan MoCIT for opinion (Appendix F). This object of historical and cultural heritage is the object of study and protection of the Ministry of Culture and Tourism of the Kyrgyz Republic (MoCIT KR). To prevent exposure to this object it is necessary to develop Management plan for object of cultural heritage, according to the law protection zone of object is not less than 50 m. All questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government.

94. On the basis of the findings (Appendix F), during the detailed design, Consultant should send the road design along with the Management plan for object of cultural heritage for coordination with MoCIT KR.

95. In accordance with the Law of the Kyrgyz Republic on historical cultural heritage (art. 32, 33) in the event of cultural monuments found, all construction works must stop and report the findings to the local executive authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National Universtiy named Balasagyn); MoCIT KR.

96. On the Bypass road not detected archaeological and historical objects.

[9] Provisional Regulations on the procedure of the archaeological survey. Approved by Decree of the Government on July 11, 2014 under the number 386;Avdusin DAField Archaeology of the USSR.- M., 1980. - p.58-113.

Figure 9: Complex Mausoleum (N41.99129 E74.64144)

(x) **Sensitive Receptors**

97. Sensitive receptors are those areas where the occupants are more susceptible to the adverse effects of exposure contaminants, pollutants and other adverse substances that the activities may generate. These generally include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. Such facilities along the project road are:

- Bashkugandy village School (km 159+700) – This school is located on the right side of the project. The school yard's southern fence is right next to the project road.
- Shop area Baizak village (km 168+000) – This is a small commercial area where people tend to gather
- PK 1743 - Bridge point (looking north) crosses the Jumgal RiverPK 1793 – PK 1796 - The bypass road traverses 30 m at the back of kindergarten school Kyzyl-Zhyldyz (km 179+300) – On the right hand side, this area is near the kindergarten and next to a store.
- Cultural sites:
  - ✓ Complex mausoleums located LHS, 10 meters from the road, 163 km + 600, Alignment sheet, point 3.
  - ✓ Monument dedicated to Baizak village (RHS) was erected in this area 20 m from the ROW, 168 km +200, Alignment sheet, point 5.
  - ✓ Cemetery at the north side of the bypass road (Segment 2) LHS, 50 m from the road PK 1765+50, Alignment sheet, point 21.
  - ✓ Cemetery at the north side of the bypass road (Segment 2) LHS, 50 m from the road PK 1766+50, Alignment sheet, point 22.
  - ✓ RHS: cemetery beside the road 181 km + 400, 6 m from the road, Alignment sheet, point 30.
  - ✓ RHS: The cemetery beside the road 181 km + 900, 15 m from the road, Alignment sheet, point 30.

98. Aside from the possible impact due to noise, dust, vehicular emissions during construction and operations of the project, public safety can be a concern when trucks, equipment and construction materials are brought to the sites near these sensitive receptors. Disturbances may occur during class hours and treatment period and traffic safety may be concern with hazards to children as they walk or commute to and from schools.

(xi) **Baseline Measurements**

99. Baseline measurements in water quality, air quality and noise/vibration were obtained in selected spots. Water quality measurements were obtained where construction will impact river quality. Air quality and noise/vibration measurements were obtain in likely receptor areas. These results shall be used as reference parameters in monitoring the impacts of construction and operations of the project. International standards were also presented herewith for comparison with KGZ standard; subsequently the more stringent standards shall be used as monitoring requirements.

100. Water quality and air quality measurement were done by the Ecological monitoring Department of the SAEPF. While noise and vibration measurements were done by the Department of the sanitary protection of the Ministry of Health.

11.1. Water Quality Measurements

101. Sampling was done according to GOST P 51592-2000 “Water. General sampling requirements”, WSS 33-5.3.01-85 “Instruction on sampling for waste water analyses”. Legislative requirements were observed.

102. As baseline data in water quality, it was decided that measurements would be done for the most relevant parameters: Turbidity and Total Petroleum Hydrocarbons (TPH). Therefore, the contracted laboratory was instructed to obtain the measurement in bodies of water adjacent to or being crossed by the project road. Water quality measurement of Jumgal River was taken within Chaek village. It was observed that the downstream areas of Jumgal River utilize water from the river mainly for agriculture and domestic uses. Drinking water is obtained from installed wells and from springs. The results of such water quality testing are shown below.

Table 38: Water Quality Measurement Results within the Section

No.	Locations	Km in Road	Turbidity, cm	TPH, mg/l
Maximum Permissible Concentrations (MPC)				
According to national requarements			Not less than 20	0.3
According to EC legislation			Not less than 1,0 metres/depth	not visible in the form of a film
1	Jumgal River in Chaek village ridge	179 + 600	36	<0.05

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

11.2. Air Quality Measurements

103. Measurement results will serve as reference values for monitoring during the construction phase. Air quality was measured at 4 points along the road, which were identified as areas sensitive to air pollution due to the proximity of schools, street markets and other special facilities.

104. In the project area there is no large industrial source of pollution affecting the air quality, but it is influenced by dust from cars. The nearest station air quality monitoring from the project area is located quite far away - in Tokmok (Chui valley) and Cholpon-Ata (Lake Issyk Kul). Naryn region has no air quality monitoring stations.

105. Most of roads are located along foothill and mountain areas with the perimeter surrounded by mountain ranges. The height of the terrain within 700 - 3615 m above sea level.

Within the territory dominated by wetlands are dotted with sparse vegetation.

106. The only source of dust, noise and vibration is road transport. The content of inorganic dust in the air due both to climatic conditions of the region and with the movement of vehicles. For air quality the most relevant parameters to be measured would be Dust, SO2, and NO2. Accordingly, the contracted laboratory was instructed to obtain the measurement in populated areas along the project road. During the time of measurement, the existence of the Bypass Road was not known yet; hence measurement was taken in Jumgal River within Chaek village. The results of such air quality testing are shown below.

Table 39: Air Quality Measurement Results

No.	Measurement Point Locations	Chainage	Air Quality Parameters (mg/m3)		
			Dust	SO2	NO2
Maximum Permissible Levels (KR standards)			0,5	0,5	0,085
Maximum Permissible Levels (IFC)			0,02	0,02	0.04
1	Bashkugandy village, near the school adjacent to the road, RHS	159+700	<0.26	<0.05	0.029±0.005
2	Baizak village, near the shop Adilet, RHS	168+000	0.28±0.07	0.05±0.006	0.025±0.005
3	Chaek village, near the house of veteran named Berdibek, RHS	174+000	0.28±0.07	<0.05	0.015±0.003
4	Kyzyl-Zhyldyz village, near the playground and next to the store, RHS	179+300	<0.26	<0.05	0.011±0.002

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

11.3. Noise and Vibration Measurements

107. The main sources of the noise in the study area are those generated by vehicle engines, especially those carrying heavy loads running over unpaved road and at low speed. This noise is also aggravated by the noise of friction of tires on the road surface. Since there not many settlements in the area, noise is not a major problem. All noise measurements were taken at 3 m from the roadside.

108. The noise level is expected to decrease rapidly with distance from the road: at a distance of 8-9 meters from the road where reconstruction will be done, noise level drops to a level less than 60 dB (a), i.e. up to the recommended maximum level at night for the populated areas. According to the regulations limits outside noise from road transport is 80 dBA for vehicles with an engine capacity of 150 kW or more. When measuring noise in the environment as it is necessary to measure the wind speed, air temperature, barometric pressure, altitude and time data recording of the measurement (e.g., day or night).

109. Vibration is a danger to human health and the environment and mainly generated by transport, construction equipment, industrial facilities and othersources. In the area of the planned works vibration occurs when operating heavy vehicles. The most effective vibration shield can be realized at the stage of designing the project. When designing the vibration parameters will govern: sanitary and technical standards for vehicles and vibration sensitivity for building structures.

110. Normally, as a means of protection against vibration effects on the environment is the usage noise protection wall or fence of varying heights. Low construction near the tracks can significantly reduce vibration exposure. The simplest and most effective is the usual earth mound with upset it shrubs, which also serves as a sound absorber, and at the same time strengthens the roots of the earth mound.

111. The enforcement of the standards of pollution noise and vibration lies with the Department of Sanitary and Epidemiological Surveillance, Ministry of Health of the Kyrgyz

Republic. The measurements were done for points at 3 m from the roadside. The noise and vibration levels are below the prescribed limit as shown below.

Table 40: Noise and Vibration Measurement Results

No.	Measurement Points	Locations	Aspects		
			Noise, dBA		Vibration, dB
			Day	Night	
KGZ Maximum Permissible Levels			70	65	108
IFC Guidelines For Residential; institutional; educational			55	45	
For Commercial & Industrial			70	70	
1	Bashkugandy village, near the school adjacent to the road, RHS	159+000	42.7	-	95
2	Baizak village, near the shop Adilet, RHS	168+000	63.2	-	88
3	Chaek village, near the house of veteran named Berdibek, RHS	174+000	53	-	90
4	Kyzyl-Zhyldyz village,near the playground and next to the store, RHS	179+300	55	-	87

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

E. Environmental Impacts and Mitigation Measures

(i) Impacts in the Project Phases

112. For the Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) the construction entails a number of activities which are expected to introduce impacts and disturbances to the general environment, especially during the construction period. Most of these impacts are confined within the right-of-way, construction sites, and facility sites; while some activities can affect the outlying areas or even a wider area, especially if not properly mitigated.

113. The environmental impacts and mitigation measures presented in this IEE Report were based on the results of the conducted field surveys. The Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) will entail upgrading of road along its existing alignment and construction of new road segments on account of the Bypass Road. In some spots, road runs close to sensitive receptors such as schools, mosques, bazars or others. It is anticipated that main impact categories will be due to the following activities: (i) construction works within or close to settlements result in noise impacts, emission of pollutants to air and vibration which is especially of concern when the Project road comes close to sensitive receptors, (ii) site clearance activities result in loss of top soil and vegetation structures, (iii) aggregate sourcing, crushing of aggregates and asphalt plant operation may have severe impacts in case of unsuitable site selection or management. Additional impacts refer to (iv) impacts from bridge rehabilitation/construction, (v) potential impacts on surface waters and potential impacts on natural habitats and biodiversity.The main impacts from reconstruction of the road are described below, and more detailed impacts analysis from alternatives were considered in Chapter F.

Air pollution

114. During construction concentration of toxic substances in air depends on a type of automobile engines (carburetor, diesel), on engine power, traffic density and possibility of distribution of these substances in air. Concentration of harmful products in the air decreases as the distance from the carriageway grows and it depends on wind speed and direction and on value of incoming solar radiation. Upon reconstruction of the road, air might be polluted by exhaust emissions of construction equipment and dust. Both of these factors will be of short duration and will have minimal impact on people (excluding builders, who must wear protective masks). Construction machines and machinery are sources of emission of pollutants during construction: exhaust gases (CO, NOx, SOx, etc.) coming from trucks, construction machinery;

dust generated due to vehicular traffic, operation of equipment, upon excavation and welding.

115. During the construction, those equipment and machinery emit the following pollutants into air:

- carbon monoxide;
- hydrocarbons;
- nitrogen dioxide;
- soot;
- sulfur dioxide;
- inorganic dust
- benzpyrene

Given the linear stretch of the road to be reconstructed, the entire road machinery will concentrate on construction site.

To determine hazard category of the facility, it is necessary to estimate the hazard category in accordance with the KR Law “General technical regulations to ensure environmental safety in the Kyrgyz Republic”.

$\mathrm{HaCat} = \sum_{i}^{n} \left(\frac{M_i}{MPC_i}\right)^{ai}$, where

Mi – emission weight ofi substance (ton/year);
MPCi – average daily maximum permissible concentration of i substance, mg/m3;
n – amount of pollutants emitted by the enterprise;
αi –dimensionless constant, which allows to correlate the isubstance’s degree of harmfulness with harmfulness of sulfur dioxide.

116. While studying and considering similar construction work during roads reconstruction, hazard category of the facility was determined as II, III. The hazard category II requires calculation of pollutants’ dispersion in ambient airto determine dispersion distance and maximum ground level concentration of harmful substances. As a rule, the most ground level concentrations are within the construction area and do not go beyond the border of 40 m as for gaseous substances and 80 m as for dust on either side of the road, as indicated in table below. For the category III, hazards defined by calculation of emissions mass and are design level and which is used as maximum permissible emissions. Based on calculations of Kyrgyzdortransproekt, it can be concluded that during construction works, population of the settlements and their households will be affected with dust and gaseous substances at a distance of 10 to 80 meters from the road alignment.

Method: Atmosphere – OND-86, Modeling of emissions										
	Distance from the road to the distances where the levels of the hazards substance and noise will be achieved of Maximum permissible concentration (MPC) and level (MPL), m									
For the projected road	Left hand side					Right hand side				
	CO	NOx	CmHn	Dust/Particles	Noisy	CO	NOx	CmHn	Dust/Particles	Noisy
	Without mitigation measures									
	<4	29-42	<4	46-78	<10	<4	26-51	<4	54-76	<10
	With mitigation measures (≈50-70%)									

	<2	14-21	<2	23-35	<10	<2	13-25	<2	27-38	<10

Air quality

Pollutants	Maximum permissible concentration (mg/m3)		Concentration averaging period.	
	According to national legislation	According to IFC (WHO norms)	According to national legislation	According to IFC (WHO norms)
Particulate Matter	0,5	0,02	daily average	1 year
Sulphur Dioxide (SO2)	0,5	0,02	daily average	24 hours
Nitrogen Dioxide (NO2)	0,085	0,04	daily average	1 year
Carbon monoxide (CO)	3,0	0,1	daily average	Maximum daily 8 hour mean

Noise

No.	Measurement Points	Locations	Aspects		
			Noise, dBA		Vibration, dB
			Day	Night	
KGZ Maximum Permissible Levels			70	65	108
IFC Guidelines For Residential; institutional; educational			55	45	
For Commercial & Industrial			70	70	

117. However, it is necessary to consider that the reconstruction road is a linear object, and machinery will move at different distances. The length of each site reconstruction is 300 - 450 m, where the amount of machinery and equipments are working on this length will be not more than three. With such distribution of the machinery on road sections, the high concentration of dust and gases are not created. The period of maximum pollutant emission concentrations on such portions are 2 days.

Thus, given the diversity of operations and their dispersal through the construction territory (line), at each rehabilitated area, it can be concluded that the impact will be significant, but short in-time.

During the construction within the settlements, mitigation measures of organizational and technical nature must be considered, such as the uniform engine operation (no-idling), acceptable technical condition, use of high-quality fuel, the use of machinery and mechanisms with catalytic burner, even distribution of the machinery on the site, strict compliance with schedule of works, conduct of works only during the day time, dust suppression measures, install protective screens, barriers from noise and dust, covered of dusting materials during storage and transportation.With strict implementation of mitigation measures and monitoring, this impact can be considered short-term acceptable.

118. During operation, basic impact is related to traffic intensity.

The main pollutants are:

- carbon monoxide;
- hydrocarbons;
- nitrogen dioxide;
- plumbum.

119. Results of the Manual traffic counting converted into AADT by each vehicle type (Year 2015) in view of seasonal and daily correlation. As per estimate in the traffic study the growth rate are as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After computations the maximum traffic can be around 2,400 vehicles per day. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category II road will be sufficient to service the future traffic.

120. Having studied and considered various similar calculations to determine pollutant

emissions under various traffic intensity during the operation period, we can conclude that maximum ground-level concentrations of pollutants at a distance of 3 m to 5 m from the road will not exceed the maximum permissible concentration.

Noise impact

121. Within the period of construction works, sources of non-continuous noise are running engines of construction and road-building machinery. Sound is expected to generate at the construction site upon operation of construction equipment, delivering of building materials, digging of trenches and pits, removal and delivery of soil etc. According to construction norms 2.2.4/2.1.8.562-96, equivalent value of sound level at the work site (dump trucks) is equal to 70 dBA for broadband non-permanent noise level.

In during operation period, after reconstruction of road, level of noise and vibration impact shall depend on road traffic intensity and road pavement. However, having studied calculations of similar facilities may conclude that levels of noise impact will be low and sound wave shall spread to a distance of less than 5-8 m from the road and at a distance of 8 m from the road noise and vibration levels of die down. According to measurements carried out in November 2015, the existing road coating noise and vibration levels 3 m to both sides do not exceed the required standards (Table 18). In the villages on that distance are located fences or yards of the local residents. The impact will be insignificant.

Surface and ground waters

122. During construction period, surface waters may be polluted due to discharging of production and domestic wastewater, flowing of chemical and mechanical pollutants from the road into water. Groundwater may be polluted due to filtering of runoff from ground surface, as well as due to discharge of untreated wastewater from roads to aquifers. Some pollution of surface water may result from flowing of fuel and lubricants from equipment and containers to streams by washing. It may also be pollutedduring construction and reconstruction of bridges. Out of common pollutants of water bodies, the biggest concern may cause penetration oil productions into water. First signs as individual colored spots appear already when upon spilling of 4 ml/m2. Maximum permissible concentration for oil and oil products is 0.1 mg/l - 0.3 mg/l. To prevent contamination of surface and groundwater, it is necessary to provide for mitigation measures, which will be described in the Environmental Management Plan (EMP).

During operation period surface and ground water will not be polluted, except for extraordinary emergencies.

Contamination and erosion of soil

123. During the construction period, asset of work processes associated with construction of roadbed usually causes the greatest damage to environment. Soil contamination is first observed on lands temporarily used as borrow pit, construction site as well as on the road being reconstructed. Soil might be also contaminated by installation and operation of asphalt concrete mixing plant. Soil is mainly contaminated due to precipitation of solid and fine silt fractions of particles to pavement from air. Such particles are brought by car wheels from roads and driveways with unimproved pavement, partial loss of transported loose goods, tire and pavement abrasion, as well as by toxic components of exhaust gases of cars.

124. Soil might be contaminated by POL coming from construction equipment. It is assumed that this effect will be minimal and take place only within the roadside. Such impact might be reduced, if machinery is maintained in good condition by proper disposing of used oil. Soil shall be slightly eroded in the roadside due to road reconstruction, since major work is executed on the existing road with protective works in the drainage system.

During the operation period, the soil will be contaminated by engines exhaust emissions containing lead compounds. Roadside soil contamination occurs mainly due to accumulation of

lead compounds in soil, which are contained in exhaust gases of car engines. About 80% of lead contained in exhaust gases penetrates into the soil. We need to note stability of lead compounds in soil and its intensive accumulation in vegetation followed by transfer to animals and humans. At roadside area, about 50% of lead emission in the form of small particles is immediately distributed over the surface of adjacent territory. Considering the results of similar projects' calculation, we can conclude that content of lead compounds in the roadside soil will not go beyond the earth roadbed and will not exceed MPC during operation of road.

Flora and Fauna

125. During the construction period, reconstruction of road may cause insignificant impact on flora and fauna due to accident going of construction machinery beyond the construction site. There might be observed the following factors as well:

- Factors that prevent natural migration of species to temporary and permanent habitats, exchange of gene pool, reproduction, etc. They are road construction elements - slopes, embankments, excavation, grade, fence and roadbed.
- Anxiety factors that frighten animals and violate their habitat are noise, vibration, light from the traffic flow. As we know animals reaction to disturbance factor may differ according to species. Collision with oncoming traffic can cause death of fauna representatives on roads. All these factors lead to decrease in number of populations.

126. Given that the road had existed for a long time before reconstruction, established way of wildlife habitation in adjacent territory, we can assume little additional impact on flora and fauna, which will be caused by road reconstruction.

127. Within the road alignment, there are considerable trees that will be affected. In the preliminary design assessment, the estimated number of trees to be cut is 1, 230.

Impact on flora and fauna will be minor during operation period.

Social environment

128. During construction, the most dangerous type of transport pollution is emissionof exhaust gases into air and other types of energy loss: noise, vibration, electromagnetic radiation. When mitigation activities are properly carried out, this negative impact will be reduced.Impact of construction process will last for relatively short time, though there may occur accidents due to the poor state of the road. In general, the effect on the social environment of the road reconstruction project will only be positive. During construction period, there will be created many jobs, particularly for local residents, who can participate in reconstruction of the road. Construction of the road shall radically improve movement conditions, travel time on the road and increase road safety. This, in turn, shall result in improvement of social situation of population in the project area.

During operation period, despite existing negative impacts of the road on the human habitat, flora and fauna, the road has well-defined value in socioeconomic development of society and livelihoods of population. With improvement of transport - operating characteristics of the road due toits rehabilitation, the quality of services to public will be significantly improved.

Traffic safety

129. During construction period, construction and road building machinery shall influence on traffic resulting in impeded movement, possible crowding of cars and machinery, violation of traffic rules and possible emergencies. In order to prevent such situations, we need to provide for mitigation measures to regulate traffic.

During operation period, of the impacton traffic will be minimal due to arrangement of road signs

and markings.

130. Results of the Manual traffic counting converted into AADT by each vehicle type (Year 2015) in view of seasonal and daily correlation reflected in the Table 9. As per estimate in the traffic study the growth rate are as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After computations the maximum traffic can be around 2,400 vehicles per day. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category II road will be sufficient to service the future traffic

LARP, social issues

131. During construction period, persons, who sell and plots will be covered by road extension, will be subjected to impact. Fences of private persons, lands of municipal areas, business facilities and government organizations might be affected. By the time such impact may be temporary or permanent relocation.The impact will be reduced due to developed plan of resettlement and economic displacement.

During operation period, the given impact will not take place.

Construction camps

132. During construction period, construction camps will be established outside the territory of villages. Labor Day will be controlled in these camps. There may be formed of solid domestic waste, bad housekeeping, soil contamination may take place, local flora and fauna might be impacted on the territory and thereby cause concern of local population. The Environmental Management Plan includes measures focused on mitigation of such impact.

During operation period this issue does not considerate.

(ii) **Mitigation measures**

2.1. Design & Pre-Construction Phase

133. The Detailed Design and Pre-construction Phase covers the period when the Design Consultant accepts the design work up to finalization of the Tender Documents and prior to the engagement of the contractor for the actual construction. The engineering designs shall include all the necessary work relevant to detailed site surveys, design computations, technical drawings, environmental and social requirements, technical specifications and tender documents. This will be followed by Tendering process from which the Client/Employer shall decide on the Contractor for the civil works. Since this will be funded by the Islamic Development Bank (IDB) and The Saudi Fund for Development (SFD), guidelines of the financier and the Client/Employer will govern with the environmental guidance obtained from this IEE Report.

134. Avoidance of impacts can be executed by proper planning/preparation during the Pre-engineering and design phase. Contract documents should include clauses be formed based on the IEEs and EMPs of the project and communicated with sufficient emphasis to the Contractor. A number of these impacts are discussed below and reflected appropriately in the EMP.

135. During the detailed engineering and pre-construction phase and detailed engineering phase, the design engineers should be guided on a number of items need to be considered in the production of road and bridge designs, and which will have relevance to the environmental aspects of the project. These items are as follows:

- To minimize impacts of erosion, side slopes of embankments will be designed to reflect soil strength and other considerations as included in the project specifications in order to reduce slips or erosion; for embankments greater than 6m, stepped embankments will be used. Use of “green measures”, such as planting native vegetation will be a favoured mitigation approach

- For geology and seismic conditions, cuts on the mountain and hillsides should be stable or be reinforced; earthquake loading shall be applied to the design of structures, to ensure that seismic events do not have negative impacts during the operational phase of the Project.
- On Flora and fauna –The Design Engineersshould provide guideline in the design for the Contractor to ensure that his ancillary facilities such as asphalt plants, construction camps and others are properly sited to protect indigenous flora and fauna. The Contractor should be instructed to avoid loss of trees, where possible, and should employ techniques such as asymmetrical widening. Where trees must be felled, the Contractor should be instructed that each tree removed should be replaced by at least two new saplings of the same or similar species and be planted at suitable locations, or as designated by the tree owner.
- On cultural, historical and archaeological sites – The Design Engineers should provide guideline in the design for the Contractor to employ techniques during construction works with minimal or no impact to any cultural, cultural or historical structures along the road. Physical cordon around identified sites should be installed to minimize encroachment and alert workers/people from disturbing cultural/historical sites.
- Health and Safety –The Contractor shall be provided guidelines in the design or in the Technical Specifications to ensure that traffic safety issues shall be responded to during the construction phase of the Project, including incorporation of: (i) Safety barriers; (ii) Traffic signs; (iii) Road crossings; (iv) Speed bumps; and (v) Speed limits.

136. **Uncontrolled Establishment of Material Sites** - This situation will be avoided by requiring the Contractor to follow the mandatory steps in establishment of material sites as defined by KR Regulation, specifically to acquire all required permits material sites from local authorities, get approval from regional departments of SAEPF under the Government of KR, prepare a “Quarry or Borrow Pits Development and Restoration Plan”. All of these relevant documents should be submitted to PIU-MOTR of KR for the purpose of securing a license to extract materials from the State Agency for Geology and Mineral Resources.

137. **Unmanaged waste asphalt-concrete concrete temporary storage and processing areas** - Old asphalt pavement will be removed and be replaced in the new pavement. Storage or stockpile areas of old asphalt should be situated where they pose no risk of contamination to the environment. In coordination with local authorities, location of old asphalt stockpile areas will be identified, with a minimal distance of 500m from any settlement. Preferably, storage areas should be in state-owned land. If private lands will be used, a negotiated rent on the property should be established with the land owner. All temporary asphalt pavement storage and processing areas shall be agreed upon with the regional departments of SAEPF of KR under the Government of KR. Old asphalt should be trucked away in blocks and stockpiles should be no higher than 2.5 m.

138. There are two ways of using old asphalt:

- The transfer of old asphalt to Local RMU of MoTR for upfilling of the secondary roads;
- Use the old asphalt to strengthen the top coating of the shoulders with the addition of gravel-sand mixture with 15cm thickness.

139. **Establishment of Asphalt and Concrete batch plants** – Due to the noise and emissions, batch plants for the pavement should be installed with a minimum distance of 500m to residential areas. Should aggregate crushing be adjacent to the batch plants, dust suppression equipment (standard on most modern crushers) will need to be installed on the crushing unit. The entire process of establishing a plant will be controlled by SanPiN 2.2.1/2.1.1

Design, construction, reconstruction and operations of enterprises; planning and construction of residential sites/ and Sanitary-hygienic zones and sanitary classification of enterprises, structures and other facilities" and Sanitary-epidemiological rules and standards. SanPiN 2.2.1/2.1.1.006-03.

140. **Material Transport Route Plan** – Estimates from the preliminary design for section (including that of the bypass road) show that 88,608 cubic meters will be the cut volume and 107,600 cubic meters for fill volume for the road section. Truck traffic will considerably impact local roads as well as the communities they traverse. Haul routes should be planned with CSC with sufficient maintenance to minimize dust, noise generation and disturbance to residents by restricting the hauling time between 07:00 and 18:00. For Quarry site, the most probable sites are Jumgal River and Kokomeren River. For borrow pit, south of the proposed Bypass Road has a good area for embankment material.

Planned volume of earthworks

Description	Unit	Quantity
Excavation to spoil of unsuitable and surplus material, common soil	m3	1,873
Formation of embankment, common material from cut	m3	88,608
Formation of embankment from borrow area	m3	107,600
Provision of Subgrade, selected material	m3	82,000

141. **Environmental Safeguard Training** - CSC will designate his own environmental specialist for the implementation of EIAs, their EMPs and monitoring compliance with environmental clauses contained in the contract specifications. Correspondingly, the Contractor will do the same. Preferably during the early part of the construction, the CSC will provide sufficient briefing seminar on EMP implementation and compliance monitoring for the CSC's inspectors as well as the contractor. Such seminar should be conceptualized during the design phase.

142. Along the rehabilitation segments of the Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), the expected main ecological impacts at the design phase of the project relate to minimizing the loss of trees along the road sections. Impacts on the ecological environment are minimal since the project activities will be mainly located on the existing road corridor.

143. One major issue to consider is the middle segment of the Bypass Road (in Option 2A), where the alignment traverses the Jumgal River bank and swamp areas, where ecological disturbance can be considerable; hence an alternate bypass alignment at that segment to avoid the river bank and construct the road by the foothills. The main reason is to avoid impacting the river ecology during construction and all throughout the operations of the road. This is an important item to be considered in the finalization of the design of the Bypass for this road section.

144. **Water contamination** can occur in two places: (i) Jumgal River bridge (PK 1743) and the pond at PK 1787. The design engineer should consider the imminent contamination issue during construction of bridge and road segment at these points. Special measures and technical specifications are clearly stipulated to eliminate any adverse water quality impacts. Construction methodology from the Contractor should incorporated measures to prevent and to mitigate water contamination during construction. Although, there are no special protected areas or biodiversity hotspot within 500 m on either side of the alignment for its entire length, the river bank and the pond can be considered as ecologically relevant sites which warrant special consideration. The design engineers should take these items into consideration in finalization of the designs.

145. **Tree Management Plan** – Within the alignment, there are considerable trees that will be affected. In the preliminary assessment, the estimated number of trees to be affected is1,

230. A replacement ratio of 1:2 is recommended to ensure that the tree (5-7 years old nursery trees) replacement rate does not fall below the number to be replaced. The CSC shall produce the plan with PIU-MoTR. Areas for replanting shall be decided with PIU-MOTR and the local officials. The cost for replanting can be part of the project to be implemented by the Contractor during the construction period to ensure that plant care will be provided. Since the target will be survivability of the trees, payment can be contingent to the number of trees that will survive within the contract period.

146. **Swamp area** – to improve conditions of construction of the Chaek village by-pass roadthrough marshland, preparatory work focused on draining and replacement of soil should be performed. In addition, it is necessary to arrange drainage system at a depth of 2-2.5 meters and replace marshy ground with drainage ground. The earthwork in this area is estimated at 57,500 cubic meter of fill for a 2.5m embankment. Should unsuitable materials need to be removed with say 1.5 meters depth then an excavation of around 40,000 cubic meters along the alignment may have to be removed.

147. **Maintenance of Access during construction** – Construction of bridges and culverts over water necessitates detour roads to be temporarily arranged. In so doing, normal traffic will be impaired and cause access issues to motorists. In addition, these detour roads need to be maintained for connectivity and safety purposes. Traffic plan incorporating these detour roads should be formulated by the contractor. During the design stage, the designers should also anticipate the need for detour and to include this issue as part of the work requirements. Adequate local assessment and consultation should be done in order to avoid this particular social issue during the actual construction.

148. **Livestock and Pedestrian Crossings** – Since the road section traverses residential areas, farmlands and pasture grounds, the need to provide pedestrian and livestock crossing becomes important. Category II Road allows 120 kph design speed for vehicular traffic, such that crossing people (especially children) and livestock (sheep, cattle, horses, etc.) pose real danger. The design should identify spots for safe location of these crossings in coordination with the local residents. These crossings should also be dimensioned appropriately to adequately serve the purpose, considering its intended function and safety considerations. It is important to have full utility of these road features to serve the needs of the residents and the agricultural community. Also on the road need to install the road sign indicating the places of transition of people and livestock. In this area provides a place for cattle crossing 166 km + 452m, 3 x 2, 5 pipe size. The crossing of people in the residential ares will be installed through every 200-250 m.

Cattle creep	Pedestrian crossings
166 km +456 m	In each village at 200-300m interval
Safety road signs	Safety road signs, markings

149. **Bus Stops** – With the improvement of the road, it is anticipated that bus traffic, especially by the mini-buses (marshrutka) will increase. With the new road, for safety purposes, designated bus/transport stops will have to be decided in the detailed design. This required sufficient discussion with MoTR and the local community. The residential area traversed by the Bypass in Chaek will need a number of transport stops.

150. On the designed section 12 bus stops are provided along the road. The project provides bus stops with passenger seats, enclosed bus stops. On platforms the road pavement is provided from one-layer fine asphalt 4cm thick on gravel-sandy foundation with a thickness of 15 cm.

2.2. Construction Phase

151. A specific environmental section shall be included within the main Bid Documents indicating that the Contractor shall be responsible for conforming to the requirements of the EMP. As such this EMP shall be included as an annex to the Contract Bid Documents. The

implementation of measures prioritizes on avoidance; followed by reduction; then mitigation; and finally, if all else fails, replacement of what was impacted or compensation to the impacted parties. Under the guidance of CSC, the contractor will have to submit site-specific Environmental Management Plans (SSEMP) for the following prior to commencing operations: (i) SSEMP in the sensitive sites such as main residential areas, cultural historic sites including cemeteries, riverbanks or other waterways; (ii) layout of the work camp with sewage management and waste management plan; (iii) sitting and description asphalt and crashing plants, equipment maintenance and storage facilities; (iv) spoil soil management plan; (v) borrow site management including restoration; and (vi) method statement for bridge reconstruction works.

152. The SSEMPs shall be endorsed by the construction supervision consultant before submission to PIU for approval.The SSEMP shall then be updated from time-to-time to incorporate any changes in the field conditions while construction will be in progress.

153. **SSEMP should also contain the following Annexure**:

- Cultural &historical sites Management Plan.
- Dust Suppression Plan
- Camp and Workshop Management Plan
- Solid and Liquid Waste Management Plan
- Borrow Pits Management Plan
- Material Processing Plants/Equipment and Storage Facilities
- Spoil Soil Management Plant
- Material Source Management and Reinstatement Plan
- Method Statement for Bridge Construction

154. The typical construction process will entail, first the closure or restriction of existing traffic at the work sites and establishment of detour road. The provision of the new detour road will entail, stripping and clearing of vegetation, excavation, filling and leveling of the area, provision of embankment fill and necessary surfacing for the existing traffic. Road widening will entail earthwork and breaking of rocks, which need to be hauled to some designated stockpiles. These works by themselves disturb the natural surroundings, and affect vegetation. It is important that measures for proper maintenance of the detour road be established to respond to traffic and community safety, control of dust, noise and emissions. Replanting of affected trees should be done as soon as possible and schemes for detour roads and soil stockpiles should favor tree preservations. Waterways should be respected and contamination should be prevented.

155. **The succeeding stages would entail demolition of existing pavement and bridges**. This will involve scarifying old pavement structure, and earthworks to conform to design requirements. For the bridges, it will be breaking the structures at the existing connections and removal of deck and girder elements by use of heavy equipment. These old bridge components will be placed in designated areas, which will not impact the natural environment, impede traffic and cause safety concerns to the general public. The bridge abutments and underlying foundations will be excavated and removed to give way for replacement structures. This breaking, demolition and removal of old elements will generate considerable noise and dust and chunks of debris will drop into the existing waterway. To minimize the risk of water contamination, the demolition and construction activities will be highly advisable in the summer months.

156. **The succeeding steps will involve construction of the new pavement and bridges**. The pavement construction will entail embankment filling, subbase, base course and asphalt pavement layer construction. In the end the final wearing course will be laid along all throughout from the existing road, onto the approach roads, and onto the deck slab in such a

manner to have smooth layer of road and bridge pavement. Embankment works will entail transport of approved fill materials from borrow pits or from cuts if found to be suitable. The suitable materials for subbase and base course will come from quarries or borrow pits of approved properties. These pavement substructures will be engineered and compacted to desired degrees with the use of graders, and compactors in accordance with designs and specifications. The asphalt pavement layers will be provided by asphalt plants with crushed stones and rocks for the aggregate requirements. It will be the responsibility of the Contractor that asphalt plant would produce the necessary required bituminous mix in conformance to environmental requirements for asphalt plant siting and operations.

157. The bridge construction will start with the substructure such as the foundation systems and piers. This will be followed by the superstructure elements of girders, deck slab and railing. The construction of the superstructure components such as the girder and deck slab will involve installation of formworks, casting of concrete and in some instances, post tensioning of tendons when necessary. The important guideline to be brought forward is the use of precast elements to minimize pouring and casting of superstructure elements over water to minimize contamination. Concrete batch plants will provide the necessary concrete for these structural elements from approved sites with operational guidelines in accordance with environmental protocols and industry standards.

158. For the Section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), the primary relevant issues consist of air and noise emissions, proper management of earthworks, waste materials and contractor good-housekeeping practices associated with fuel and lubricant management, work camp waste disposal, and occupation health and safety practices for the contractors workforce. The following is a discussion of highlights of the details provided in the EMP

159. **Air quality** impacts are expected to be generated by construction activities, such as, construction machinery exhausts, emissions from asphalt plants, dry exposed soils and material stock piles, dust from haul roads and construction activities, as well as aggregate crushers, but will be temporary as the work progresses along the entire section of the road. Sensitive receptor sites within the villages of Baskhugandy, Baizak, Chaek and Kyzyl-Zhyldyz should be considered as areas of mitigation in terms of air quality, noise/vibration. Results of the periodic measurements should be used to monitor the level of impacts and corrective/mitigation measures be performed when these parameters exceed their allowable limits. Emissions can be minimized and controlled by proper and regular maintenance of equipement. Dust is controlled by regular water spraying on exposed areas.

160. **Noise.** Construction activities are expected to generate significant but temporary noises from various construction tools such as jack hammers and other similar machines that could produce noise of about 89-90 dBA at about 10 m from the work site. Also, vibration due to large pavement breaking machines as well as a big percentage of trucks going in and out of the area is expected to be generated within 6-8 m from the carriageway but attenuating at 10 m.

161. To reduce emission levels, the contractor must implement the following mitigating measures (i) keep construction equipment in good condition (ii) prevent idling of engines by shutting off machineries not in use for more than 3 minutes (iii) prohibit use of machinery or equipment that cause excessive smoke emissions (iv) utilize low emission machineries.

162. Noise attenuating devices and temporary baffles as well as earthworks storage areas should be used in sensitive areas in order to reduce noise levels and prevent unnecessary disturbance to the surrounding communities. In order to reduce the negative impacts of noise, construction work must be limited to 7:00 - 18:30 in urban areas and 06:00 – 19:00 within 500 m of settlements as well as limiting hauling traffic through settlements. Also, noise generated must be limited to 70 db (A) and must be strictly enforced within areas of sensitive receptors. Monitoring of noise during construction stage will be conducted according to the EMP.

163. **Surface water** – Several types of waterways are found to be crossed by the project road. These are either man-made such as irrigation canals and flood control ditches, as well as naturally occurring rivers. These waterways will become receptors of potential negative environmental impacts such as pollution form construction area runoff, and change in surface hydrology due to increased sediment load. In order to mitigate negative impacts on the waterways, the following must be implemented: (i) store stockpiles of topsoil and other such materials at a safe distance from surface waters; (ii) long term stockpiles must be covered with grass or other suitable coverings; (iii) create settlement ponds where construction activities are near natural waterways.

164. Unsustainable construction practices such as improper handling and storage of construction materials (e.g., concrete, asphalt, lubricants, fuels, and solvents etc.) can pose risk of contaminating the waterways crossed by the project road. Embankments and construction materials like fill, sand and gravel can be washed out by rainwater into watercourses during downpours. Oil and grease from leaks in engines can also accumulate in surface waters and should be properly controlled. To prevent these, appropriate mitigation measures must be taken such as (i) regular maintenance of all construction equipment, (ii) chemicals and oil must be properly stored into impermeable and bounded areas away from surface waters (not less than 50m).

165. Within the section, the critical spot are the Jumgal River bridge (PK 1743), the 1.32 km stretch of river bank between PK1744+600 to PK 1757+720 and the pond at PK 1787. The Contractor should be extra careful in these spots as construction activities can directly contaminate the surface waters and consequently affect the biological species in these areas. Contamination should be avoided and disturbance to biota be minimized. Water quality measurements should be done during actual periods of construction at these sites.

166. The Jumgal River bank area (or referred to as swamp area) is where ecological disturbance can be considerable; hence an alternate bypass alignment at that segment to avoid the river bank and construct the road by the foothills. It is important that should the alignment traverse the area that measures for protecting water quality by minimizing silt contamination, petroleum discharges and unnecessary rerouting of waterways. Thriving flora and fauna in the area should be left undisturbed and their habitats protected for distruction of disturbance.

167. During the construction of bridges construction site dimensions shall be the minimum necessary. Construction site should be placed at levels that exclude them flooding. The discharge of polluted water, landfills, parking cars and the construction of temporary facilities within the water protection zones on the river banks. Construction sites should provide capacity for the collection of sewage and garbage.

168. The roads within the water protection zones (not less than 50 m) should include the collection of water from the roadway surface with its subsequent treatment or sewage in into place, eliminating the pollution of water sources. The quality of discharges into water bodies must meet the established requirements.

169. In the water protection zones of rivers it prohibits contamination of the earth surface, including the garbage dump, waste generation, as well as parking, cleaning and repair of motor vehicles and road construction machinery, fueling. All works in water protection zones must be carried out based on permission from local authorities.

170. The project documentation should include the restoration work after the construction of the bridge: the removal of the bed of the river islands, backfilled during the construction of supporting structures; cleaning of the river bed and the flood plain from cluttering their objects, extracting and hauling piles of scaffolding and temporary supports; dismantling of temporary facilities on the construction site layout and land reclamation, including borrow area and access roads.

171. To prevent soil erosion as a result of the concentration of water flows, it is necessary consider the strengthening of channels and outlets of drainage facilities. In the design of embankments through swamps, transverse towards the road way, flow of water in water-saturated horizon, draft necessary to provide measures to exclude change swamps mode, by backfilling of mound or the lower part of the draining material unit along the roadbed of the longitudinal trenches, and if necessary, artificial structures, etc.

172. The environmental impacts associated with this work can be minimized if culverts are rebuilt properly, i.e., properly sized and with the correct slope and downstream erosion/scour protection measures applied. If possible culvert work should take place during the dry season, since otherwise temporary bypasses will be necessary. However, a number of culverts convey irrigation water, which flows, based on a prescribed irrigation schedule.Contractors will need to liaise closely with farmers to establish times when work can take place and not harm crop development. Nearly all structures will be concrete box culverts, precast, with each section set in place and sealed with a special commercially available gasket/sealant material.

173. **Disturbance of agricultural lands** can occur when trucks and equipment roll over them during construction activities. During construction, it can occur that equipment and trucks have to maneuver over agricultural lands and in so doing introduce compaction to these areas and render the soil unfit for agriculture. The Contractor should prevent these unnecessary disturbances on agricultural lands.

174. During site clearing and stripping, topsoil storage area should be identified. Mostly the roadside corridor is frequently used as temporary storage areas. These stockpile soil should be protected against erosion. This will be done by, for example, seeding the stockpiles with fast growing shallow root grasses. To ensure proper soil management the contractor will submit a soil management checklist to commencing operation. This checklist will include a simple listing of measures for minimizing water and wind erosion losses. As long as topsoil stockpiles remain unused, the seeded grass cover will remain in place.

175. **Borrow Areas** - When planning to open a new borrow site, the contractor, within the purview of this IEE, should have the extraction permit, approval of a development plan, and later on approval of borrow pit restoration plan. The Contractor shall obtain all required permits for use of borrow pits and disposal areas from local authorities, get approval from regional departments of SAEPF under the Government of KR, prepare a “Borrow Pits Development and Restoration Plan” and submit all necessary documents to MOTR of KR to obtain a license to extract aggregate materials from the State Agency for Geology and Mineral Resources. These requirements do not apply to existing borrow areas or aggregated facilities. When using private borrow pit, all permits (licenses, approvals from local authorities, regional departments of SAEPF under the Government of KR, etc.) are responsibility of the owner of borrow pit which should be indicated in the agreements signed between the contractor and the borrow pit owner. The contractor will need to prepare a site development plan which must provide the following information:

- capacity and operation hours of a borrow pit;
- development and extraction sequence of borrow pit;
- technique and mechanisms for stripping and excavation operations;
- operation and time schedule for borrow pit development;
- extraction method and transport plan, including route(s);
- safety rules and hours of operation;
- expected quality of extracted materials;
- topsoil storage/protection and environment protection steps; and,
- rehabilitation of disturbed lands when site is decommissioned.
- calculation of mobile sources’ emission charge.

176. For the construction of the section “Bashkugandy Kyzyl-Zhyldyz” it is recommended to use construction materials from the following borrow areas.

Borrow Area	Description
“Gryadovoe” deposit of pebble soil is located in 30 m right and left from km158+250.	Useful material is presented by pebble soil with sandy and sandy-loam filler with boulders up to 30%.Optimum moisture content is 7,0%, maximum dry density is 2,140 t/m3. Manual excavation group – 4 (6Г). Relative compaction factor is 1,0. Capping, soil-vegetative layer with a thickness of 0,15м – 2 manual excavation group п.9В.Approximate reserves of useful soil are more than 30 000 m3
“Kara-Tau” deposit of gravel is located in 600 m right from km 171+000.	Useful materialis presented by pebble soil with sandy and sandy-loam filler with boulders up to 30%.Manual excavation group – 4 (6Г). Relative compaction factor is 1,0. Capping, soil-vegetative layer with a thickness of 0,15м – 2 manual excavation group п.9В.Approximate reserves of useful soil are more than 20 000 m3
“Kairma” deposit of gravel, in 500 m left from km 189+000.	Useful material is presented by gravel-pebble soil with sandy filler and boulders up to 30%. Optimum moisture content is 7,5%, maximum dry density is 2,136 t/m3. Manual excavation group – 4 (6Г). Relative compaction factor is 1,0. Capping, soil-vegetative layer with a thickness of 0,15м – 2 manual excavation group п.9В.

177. Approximate reserves of useful soil are more than 20 000 m3. Material of all deposits is recommended for the construction of road pavement: base course– after sieving fractions larger than 70 mm and foundation of road pavement after crushing and bringing it to optimal composition.For concreting sand is recommended to use after washing.For strengthening of Jumgal river banks it is recommended to use material from “Kapchygai” and “Glybovoe” rock deposits.

Borrow Area	Description
Kapchygai” rock deposit is located 10 km right from km 168+000	Useful material is presented by rocky beats of sand stone swiht average strength –6 manual excavation group п.30В. Useful material should be excavated with blast-hole drilling. Group of soils for blast-hole drilling is 6 п.29Б (SNiP 4-02-91, collection 3, table 3-1). Relative compaction factor is – 0,85.
“Glybovoe” rock deposit is located in 30 m right from km 204+000	Useful material is presented by boulder soil, content of boulders is from 40 to 70 %. Maximum size of boulders is 1,0 m. Manual excavation group – 5 6(Д). Relative compaction factor is 0,90.

178. To minimize dust, the contractor shall develop a dust suppression program and have it approved by the CSC. The Program will ensure unpaved haul routes leading to settlements be water-sprayed regularly to suppress dust. Trucks hauling earth/materials be covered when transporting materials, especially through settlements. Air quality measurements at receptor sites (primarily those specified in the baseline measurements) are done as prescribed in the Environmental Monitoring Plan.

179. Disposal site for spoil soils and other construction wastes. Excavation or cuts of soil materials along will require temporary or permanent areas for deposition. This will happen when the road traverses hillside stretches along the Bypass Road from PK 1724 to Pk 1754 (before the Jumgal River bank area). In farmland stretches (PK 1724 to PK1741), topsoil would have to be scrapped or excavated and deposited in the nearby areas. This should be done with proper arrangement with the land owner on which the excess soil will have to be deposited. Permanent spoil soil deposit areas should be coordinated with local officials and proper permit obtained accordingly. Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of topsoil, timeframes, haul routes and disposal site. For construction waste, the Contractor shall establish a solid waste management plan covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, used oils, etc.) consistent with appropriate local and national regulations.

180. **Safety**. Safety for workers and local people, especially around the sensitive receptors - The Contractor shall install necessary safety measures specified in the design or in the Technical Specifications to ensure that community and traffic safety issues shall be responded to during the construction phase of the Project, including incorporation of: (i) Safety barriers; (ii) Traffic signs; (iii) Road crossings; (iv) Speed bumps; and (v) Speed limits.Social impacts along the

vicinity of the road during construction,such as impairment of the usual access, community health and safety concerns, plus socio-economic conflicts. If any traffic re-routing needs to be done, sufficient advisory and notification should be provided to the people and motorists. Dust and noise nuisances should be minimized during construction. Protective barriers and fencing should be provided to prevent people and animals from loitering at the project site for safety purposes.During the construction phase, it may be inevitable that existing traffic will be disrupted and local accessibility will be impaired, which can cause problems with the local community. To mitigate this situation the Contractor should: (1) Submit a traffic management plan to local traffic authorities prior to mobilization; (2) Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions; (3) Allow for adequate traffic flow around construction areas; (4) Provide adequate signalization, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control; and (5) Provide temporary access where accessibility is temporarily restricted due to civil works.

181. **Cultural heritage**. Impacts on cultural sites including chance finds procedures – During construction, no significant encroachment to any cultural (including cemeteries), historical or archeological site and monuments that eventually may discovered, especially near the Complex mausoleums at km 163+600.

Cultural sites:

- Complex mausoleums located LHS, 10 meters from the road, 163 km + 600
- Monument dedicated to Baizak village (RHS) was erected in this area 20 m from the ROW, 168 km +200
- Cemetery at the north side of the bypass road (Segment 2) LHS, 50 m from the road PK 1765+50
- Cemetery at the north side of the bypass road (Segment 2) LHS, 50 m from the road PK 1766+50
- RHS: cemetery beside the road 181 km + 400, 6 m from the road
- RHS: The cemetery beside the road 181 km + 900, 15 m from the road

182. The Contractor should issue strict instructions to his workers against disturbance at this site. In case of any chance finds or suspected artifacts discovered during construction, the Contractor should immediately notify the Engineer (CSC) for further protective actions.

183. **Asphalt, Concrete and Crushing Plant Pollution** - During the selection of a site for bitumen plant, concrete plant, stone crusher equipment, which emit pollutants, noise and transmits vibrations, the contractor will need to comply with SanPiN 2.2.1/2.1.1 and SanPiN 2.2.1/2.1.1.006-03, and establish a specific buffer zone around any such facility. In the KR this is referred to as a sanitary-hygienic zone, and is a mandatory element of any facility that affects habitats and human health. The sanitary-protection zone (SPZ) separates the area of an industrial site from residential areas, landscape and recreation areas, parks, and health resorts with mandatory demarcationof boundaries by using specialized information signs.

The boundaries are as follows:

- Class II – SPZ 500m.
  - ✓ Production of asphalt-concrete at fixed plants.
  - ✓ Production of asphalt-concrete at mobile plants.
- Class III – SPZ 300m.
  - ✓ Production of crushed stone, gravel and sand, milling of quartz sand.
- Class III – SPZ 300m.
  - ✓ Borrow pits of gravel, sand, and clay.
  - ✓ Bitumen plants
- Class IV – SPZ 100m.
  - ✓ Concrete solution plants.

184. **Contractor Good Housekeeping**. Garbage and sewage and solid and liquid waste from equipment maintenance can be serious pollutants and disease vectors. The contractor will therefore need to practice good worksite and construction camp management. Inspections by the CSC environmental specialist will take place monthly and any no compliance issues such as strewn garbage, open waste pits, oil soaked ground and unsanitary washing facilities for workers, the contractor will be subject to an immediate fine and a stop-work order will be issued if clean up is not underway within 12 hours of detection. If the contractor does not act, the CSC will retain an outside firm to clean up the area and this amount will be deducted from the contract total.

185. **Occupational Health and Safety**. For health and safety protection of workers and adjacent communities, the following shall be provided: (i) Adequate health care facilities (including first aid facilities) within construction sites; (ii) Training of all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work; (iii) Personal protection equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection in accordance with KR legislation; (iv) Clean drinking water to all workers; (v) Adequate protection to the general public, including safety barriers and marking of hazardous areas; (vi) Safe access across the construction site to people whose settlements and access are temporarily severed by road construction; (vii) Adequate drainage throughout the camps so that stagnant water bodies and puddles do not form;(viii) Sanitary latrines and garbage bins in construction site, which will be cleared when reaching capacityby the contractors to prevent outbreak of diseases.

186. Where feasible the contractor will arrange the temporary integration of waste collection from work sites into existing waste collection systems and disposal facilities of nearby communities. This shall be taken into consideration when deciding the place for the camp. The contractor will arrange for extra payment if community services are to be used.

187. The contractor shall hire a qualified health and safety expert who will provide safety training to the staff according to the requirements of the individual work place. Prior to the commencement of works, the work site personnel shall be instructed about safety rules for the handling and storage of hazardous substances (fuel, oil, lubricants, bitumen, paint etc.) and also the cleaning of the equipment. In preparation of this the contractor shall establish a short list of materials to be used (by quality and quantity) and provide a rough concept explaining the training / briefing that shall be provided for the construction personnel. The contractor shall provide information to workers, encouraging changes in individual's personal behavior and encouraging the use of preventive measures. The goal of the information is to reduce the risk of HIV/ STD transmission among construction workers, camp support staff and local communities.

2.3. Operation phase

188. After the Handing - Over to the Client, a one-year defects liability period ensues, in which the Contractor will still be responsible in remedying any deficiency or flaws in the overall works.After which the Operation and Maintenance Phase follow, in which the Client takes over with full responsibility for the operations and maintenance of the road. Impacts on the environment shall be on the usage of the road by vehicular traffic and subsequent maintenance activities to retain the service level of the infrastructure.

189. The projected service life of the road is 20 years and over this operations period, the impacts to the environment are rather viewed as cumulative on account of the functions of the road components and can be in conjunction with other activities. Time-wise these impacts can also be long-term as they may manifest after construction and continue to persist for the entire usage and operation of the road. The perceived impacts will be on traffic safety to the communities, biodiversity, water quality, air quality and noise-level during the operation of the road will be on:

- Traffic safety to the communities – traffic safety signages, signals, speed regulators, grade separation crossings, etc. should be installed. Enforcement of safe traffic speed should be heightened to instill discipline on motorists.
- Biodiversity – areas which can be habitats of flora and fauna should be protected by the national and local government from public intrusion. Instructional signs should be installed and enforcement of regulations should be strengthened.
- Water quality – spills from vehicles should not reach the bodies of water to avoid water contamination. Petroleum and chemical discharges from vehicles should be prevented by designating stops at safe distance from any existing waterways.
- Air quality – the good air quality can be maintained by vehicles running in good condition to minimize emission levels. The authorities should discourage usage of outmoded vehicles with high emissions. Trees should be planted to act as carbon sinks to vehicular emissions.
- Noise – noise levels can be minimized by proper maintenance of vehicles. In addition, sensitive receptors can be shielded from noise by installing sound barriers or planting buffer trees along the alignment.

Air Quality and Noise

190. Air Quality - The proposed project will result in better road condition, increased speed of vehicles, and the increase of traffic volumes along the project road. As per estimate in the traffic study the growth rate are as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After computations the maximum traffic can be around 2,400 vehicles per day, with this growth, will come the elimination of older more polluting vehicles from the fleet, fewer stops and starts due to better road conditions and traffic management, better engine technology and vastly more fuel efficient vehicles. Further, KR will receive better refined fuels with lower emission factors per liter used. The air quality in the project corridor was presented in Table 17. Conditions can be improved by enforcement of annual inspections, especially for the small and large buses and trucks, which contribute most of the emissions. Secondly the required use of catalytic converters and other pollution abatement devices needs to enacted into law and enforced. Having studied and considered various similar calculations to determine pollutant emissions by various traffic densities during the operation, we can conclude that the maximum ground-level concentrations of pollutants at a distance of 3 m to 5 m from the road shall not exceed the maximum permissible concentration.

191. A high grade road, properly signed, with good lane markings and careful intersection management, will allow the traffic to move more smoothly thus reducing the high emission due to frequent acceleration and deceleration. Road safety features such as, streetlights, traffic lights pedestrian crossings, livestock crossings and other visual means to reduce accidents will be installed along the road.

192. Noise - The noise survey completed in Nov 2015 (Table18) showed that noise levels along the project corridor and for about 3 m on either side of the carriageway, not exceed the KR standards. Noise levels that interfere with sleep and impact schools and hospitals now exist along the road.

193. In during operation period, after reconstruction of road, level of noise and vibration impact shall depend on road traffic intensity and road pavement. However, having studied calculations of similar facilities may conclude that levels of noise impact will be low and sound wave shall spread to a distance of less than 5-8 m from the road and at a distance of 8 m from the road noise and vibration levels of die down. According to measurements carried out in November 2015, the existing road coating noise and vibration levels 3 m to both sides do not exceed the required standards (table 18). In the villages on that distance are located fences or yards of the local residents

194. The only real mitigate measure is to install noise barriers, along the noisiest stretches, based on further noise testing during the operating period. An option could be the construction of earthen berms helping to deflect the noise. It may be possible to use the crushed asphalt as a base for building the berms, then landscaping them with topsoil and vegetation including local drought resistant plants such Loch broadleaf.
Therefore, noise testing will take place at the same sites used during the 2015 survey. The schedule will be conducted 2 times for a six-month period during year 1 of the operating period. The resulting date will be used to determine the best noise mitigation measure.

Soils and erosion control

195. If the contractor properly implements the measures defined in the EMP for the construction periodand CSC's environmental specialist completes a post-construction safeguards audit of to confirm all mitigative measures were implemented and remain operational, soils and erosion issues associated with the road should be negligible. Confirming that topsoil and planting were put in place as the work was being completed (not after the construction is completed) the tree planting was done and trees are healthy and being maintained will be essential. On the engineering site inspection of the culverts will be critical since their placement at too steep an invert slope will result in serious and chronic downstream (exit) scouring. To avoid this invert slope should be at the same grade as the natural waterbody and a concrete pads or preferably energy dissipation installation such as large rocks and rock gabions, installed.

196. Further, culverts need to be inspected to ensure that all debris and construction materials have been removed and any stream diversion structures have been completely removed. To that end the CSC and PIU will prepare a culvert inventory that will provide a photo of each culvert and its condition during each inspection, which should be annually and submitted to MOTR of KR. Two photos will be required, one at the upstream and a second at downstream end of each culvert.

197. MOTR will assign this work will be assigned to the contractor during the one-year warranty period, after road becomes fully operational; and after that period, taken over by MOTR's maintenance unit.

Ecological Environment

198. The only ecological issue that could arise during the operating period is a failure to properly maintain the large tree plantations, and also the noise attenuation berms (if these are to be built) landscaping. The local ecosystem will be significantly altered by the cutting of the trees and therefore the replanting and tree maintenance program, until the trees are at least 9-10 years old will be critical to reestablishing the pre-cutting conditions of roadside shade during the summer and windbreaks during the winter. The roadside forest, admittedly planted many decades ago, is the only mature tree assemblage within many km of the alignment. It is home to many thousands of creatures, mostly insects and birds and is an open forest-track ecosystem. It has a microclimate and huge benefits for people living under them or benefiting from their shade and shelter. Therefore, as stated many time in this IEE, cutting should be minimized to the greatest extent possible by using innovative designs that build the trees into the road structure.

Socioeconomic Environment

199. Livestock and Pedestrian Crossings – Since the road section traverses residential areas, farmlands and pasture grounds, the need to provide pedestrian and livestock crossing becomes important. Category II Road allows 120 kph design speed for vehicular traffic, such that crossing people (especially children) and livestock (sheep, cattle, horses, etc.) pose real danger. Also on the road need to install the road sign indicating the places of transition of people and livestock. The crossing of cattle provides at 166 km + 452 m, the crossing is a pipe with size 3 x 2.5. The crossing of people in the residential ares will be installed through every 200-250 m.

2.4. Climate Change issues

200. In this PPTA a Climate Change Study of the Project Road was included as a separate sector. This study focused on the following impacts to the project road:

- River floods and water logging in spring, due to more intense rainfall. This will mainly affect lower altitudes and areas susceptible to flooding;
- Heat stress in the summer, especially at lower altitudes;
- Mudslides related to more intense rainfall in the spring at medium altitudes (and in a lesser degree also high altitudes);
- Flush floods in the summer especially at higher altitudes, related to higher temperatures together with the increase in winter, spring and autumn rainfall (snow at higher altitudes).

201. The study made reference to the climate simulations done by the International Fund for Agricultural Development (IFAD) for Kyrgyzstan in which it indicated that the CAREC Corridors project area is located at an area with low or very low vulnerability risk as compared with the north of Chuy Oblast and other high altitude areas. Moreover, as per IFAD the vulnerabilities identified are mainly related to increased heat stress at the project areas with low altitudes and mudslides at medium altitudes. Very limited information on the occurrence of extreme rainfall was found, but with relation to emergency situations, there is a tendency of reduction of rainstorms.

202. The hazards related to flooding have been studied using UNEP's Global Risk Data Platform which entails hazards modeling was developed by the World Meteorological Organization (WMO) and the United Nations Education and Scientific Cultural Organization (UNESCO). As per data in the Platform, the flood hazard will increase along major rivers in the Central Asia region, but Kyrgyzstan and the project area is less influenced by this than the neighboring countries. The project area is located in areas of low risk, whereas the risk increases at higher altitudes.

203. The values of seasonal temperature changes by year 2100 anticipate a greater increase of summer temperature in comparison to other seasons, and the minimum increase is predicted for the winter period. On the positive side, warmer winters due to climate change can alleviate the clearing snow; which would mean less maintenance cost during the winter months.

F. Analysis of Alternatives

204. Two alternatives were considered in this section:

(i) Zero option – the «Inaction»/do nothing alternative
(ii) The road reconstruction project

The road reconstruction alternative of project includes consideration 3 parts of the section Bashkugandy - Kyzyl-Zhyldyz. Part 2 has additional options for the road reconstruction.

205. **Part 1 from km 159 + 200 to km 172+400** – The road is to rehabilitate along its current alignment and will pass through the residential areas of Bashkugandy and Baizak. As it enters Bashkugandy, the road descends on the valley floor with the Jumgal River on the right hand side. Most of the rural areas are agricultural areas devoted to local crops, vegetables, orchards and animal rising. Tributary streams cross the road and joins Jumgal River. After Baizak, the road turns southward to avoid steppe hills and continue along the Jumgal valley floor.

206. **Part 2 (from km 172+400 to Km 179+600)** alternatives for the reconstruction or construction have two (2) options as follows:

Option 1: Rehabilitation of existing road through the center of Chaek Village via the existing road. The road will be rehabilitated along its existing alignment following design standard for Category II.

Option 2: Bypass Road described as follows:

Segment 1:

- *Option 2A*: PK1724 to PK 1758 (3.4 km) – Bypass road goes through a new alignment (along farm road track as local access), crosses hayfields, the Jumgal River and river floodplain (PK 1744+600 to PK 1757+720 (1.32km);
- *Option 2B*: Bypass Roadfrom PK1724 to PK 1743 goes as Option 2A, and from PK 1743 it goes toward the foothills until in connects back to Segment 2 at PK 1758. This sub-alignment is viewed as an environmentally friendly option since it avoids the Jumgal River floodplain which harbors local flora and fauna species.

Segment 2: PK 1758 to PK 1773 (1.5 km) – Bypass road is goes through local interior road in Chaek; and

Segment 3: PK 1773 to PK 1796 (2.3 km) – Bypass road goes through farm access road in Chaek and new alignment in Kyzyl-Zhyldyz and merge back onto the main road

207. **Part 3 from km 179 + 600 to km 183+99** - The reconstruction of the road from end of the bypass to 183 km (Kyzyl-Zhyldyz)

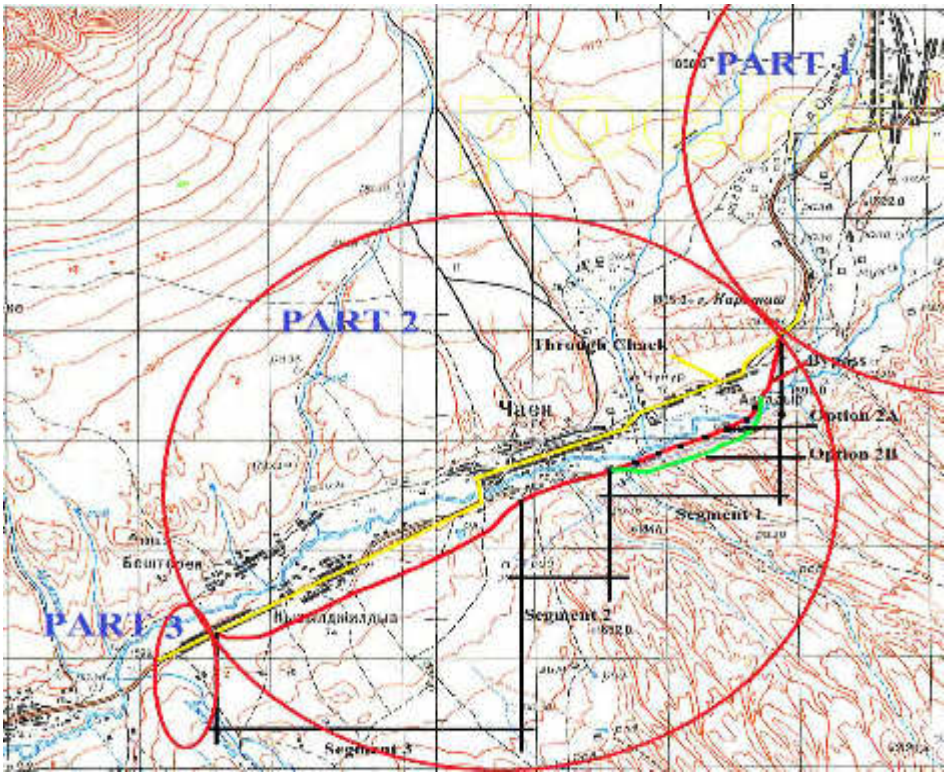


Figure 10: Parts of section Bashkuugandy-Kyzyl-Zhyldyz

1. Zero option – the «Inaction»/ do nothing alternative

208. Within the framework of ADB's SPS 2009, an important consideration the alternative "Zero option" is being devoted on. The alternative "Zero option" presents case scenario in which the project is not to be done at all. By comparative evaluation, it can be inferred whether the project is necessary at all or provide some insights on how to properly proceed should the project be fully implemented.

Atmospheric air

209. The existing road surface does not meet the requirements of III road category. In some

places, there is no “cold asphalt” road pavement. Due to unevenness of the road, vehicle engines run unevenly by releasing large amount of exhaust gases. Dust formation is most likely to happen on places where there is gravel surface, which also affects atmosphere.

Noise and vibration

210. Noise and vibration are a major factor of concern people day and night. Lack of coverage of the road, spreading the sound waves at great distances from the road creating a high noise and vibration impact on the population at night and in the daytime. The most sensitive recipients are residents of nearby houses to the road, kindergarten, hospital and other private facilities.

Surface water

211. In places, where the road crosses channels and bridges, we can observe destruction of given structures and erosion of banks. In case of accidental destruction of some culverts and erosion of banks, we may observe pollution of water body. Runoff from the road surface flows to channel and river by causing water bodies’ pollution with oil products and oils. This impact will be expressed in possible soil contamination with oil products, oils and waste.

No.	Location	Description/ Remarks
1.	Jumgal River bridge point at PK 176+600	Old bridge over Jumgal River through v.Chaek.

Soil

212. Impact on soil is expressed in soil disturbance due to destruction of roadbed and going of vehicles beyond the right of way on nearby areas. Erosion due to concentration of water flows by artificial structures, ditches and channels. Soil and water might be contaminated by oils, gasoline of vehicles.

Flora and fauna

213. Impact on flora and fauna will be negligible, as the road is existing road and has already caused anthropogenic impact.

LARP and social issues

214. Economic relocation and resettlement is not applicable. Social aspect is expressed in violation of communication routes of local residents, increase in time spent on the road to places of work and leisure. Poor traffic conditions for agricultural machinery, animal-drawn transport, cyclists and cattle driving. High accident risk might be created on the road and intersections with other roads. Moving vehicle causes vibration of buildings and structures. Dust pollution and gas contamination.

Safety

215. The road is not equipped with traffic indicators, signs, markings, which create prerequisites for accidents among population and vehicles crash. Violation of speed limits results in collisions and runs over people, animals and vehicles. There is no established road crossing places for people and cattle.

216. If zero option is implemented, the benefit will be less traffic density and few road accidents.

The negative side is increased noise and vibration, lack of proper road pavement, negative social aspect, and impossibility to develop the region’s economy

2. Alternative - the road reconstruction project

2.1. Analysis of impacts of the reconstruction existing road

1. Part 1 - from km 159 + 200 to km 172+400;

2. Part 3 - from km 179 + 600 to km 183+99, and
3. Part 2. Option 1: Reconstruction of existing road through the center of Chaek village.

217. It is considered the combined assessment of the parts, so all areas are existing road through populated areas. The following will be considered components of the environment and a brief description of the impacts

Atmospheric air

218. During the construction period, atmospheric air will be affected by vehicles, operation of road machines and machinery, excavation and undermining of mountain areas' soil, sandy gravel, crushed stone and operation of asphalt mixing plant. Construction machines and machineryare sources of emission of pollutants during construction: exhaust gases (CO, NOx, SOx, etc.) coming from trucks, construction machinery; dust generated due to vehicular traffic, operation of equipment, upon excavation and welding. During the operation period, main impact will be expressed by traffic intensity

Surface water

219. During the construction period, water bodies will be affected upon reconstruction and replacement of 41 culverts and 1 bridge in Chaekvillage (pk 1742+16.63 (new). This impact will be expressed in possible contamination by soil, remaining parts of pipes, concrete headwalls, oil products, oils and by debris. During the operation period, impact may take place only during repair works and emergencies.

Soil

220. During the construction period, impact will be expressed in the form of loss of topsoil in areas adjacent to the road, garbage, spills of oil products and oils. Volume of earthwork discrabed in the table.

Description	Unit	Quantity
Excavation to spoil of unsuitable and surplus material, common soil	m3	1,873
Formation of embankment, common material from cut	m3	88,608
Formation of embankment from borrow area	m3	107,600
Provision of Subgrade, selected material	m3	82,000

During the operation period, impact may take place only during repair works and emergencies.

Flora and fauna

221. During the construction period, impact on flora and fauna will be negligible, as the road is existing road and has already caused anthropogenic impact. Flora and fauna have already formed habitats in the given section.

During the operation period, impact will be minimal.

LARP and social issues

222. The impact during the construction period will be average, as territories of two residential houses will be subjected to resettlement and relocation, and another affected people will work with compensatory mecanism, according to LARP plan.

Table 41: Summary of project impact based on the results of intermediary census and inventory

No	Village	Project affected land parcels attached with						No of Land Plots/village
		Arable	Fence/walls	Residential House	Concrete foundation	Supplementary structures	Commercial structure	
1	Bashkugandy		3					3
2	Kairima	2	6		1			7

3	Kyzyl-Zhyldyz	6	61			15	4	55
	Sub-total	8	70	0	1	15	4	65
4	Chaek by - pass	6	13	2	2			51
	Sub-total	6	13	2	2	0	0	51
	Total	**14**	**83**	**2**	**3**	**15**	**4**	**116**

There will be no impact during the operation period.

Construction camps

223. During the construction period, the impact will be caused on soil, ground water through formation of debris and possible interaction with the local population. During the construction the design provides arrangement of the construction site on PC 1712+00, and allocation for construction site - 1.0 hectares. There will be no impact during the operation period.

Noise and vibration

224. During the construction period, road machines and machinery will create noise and vibration. On territories of villages, sensitive recipients are hospitals, schools, gardens.

At sensitive receptors within settlements:

- Bashkugandy village, near the school adjacent to the road, RHS (km159+7000);
- Baizak village, near the shop Adilet, RHS (km 68+000);
- Chaek - Kyzyl-Zhyldyz boundary, by Kindergarten school (175+50);
- Kyzyl-Zhyldyz village, near the playground and next to the store, RHS (179+300)
- Cultural and historical sites

During the operation period, impact will depend on the traffic intensity

Safety

225. During the construction period, health hazard might be caused by operating machines and machinery, various types of construction works, etc. During the operation period, impact will be caused only during repair works

2.2. Analysis of impacts of new Bypass road. Part 2. Option 2

226. ***Option 1***: Rehabilitation of existing road through the center of Chaek Village via the existing road. The road will be rehabilitated along its existing alignment following design standard for Category II.

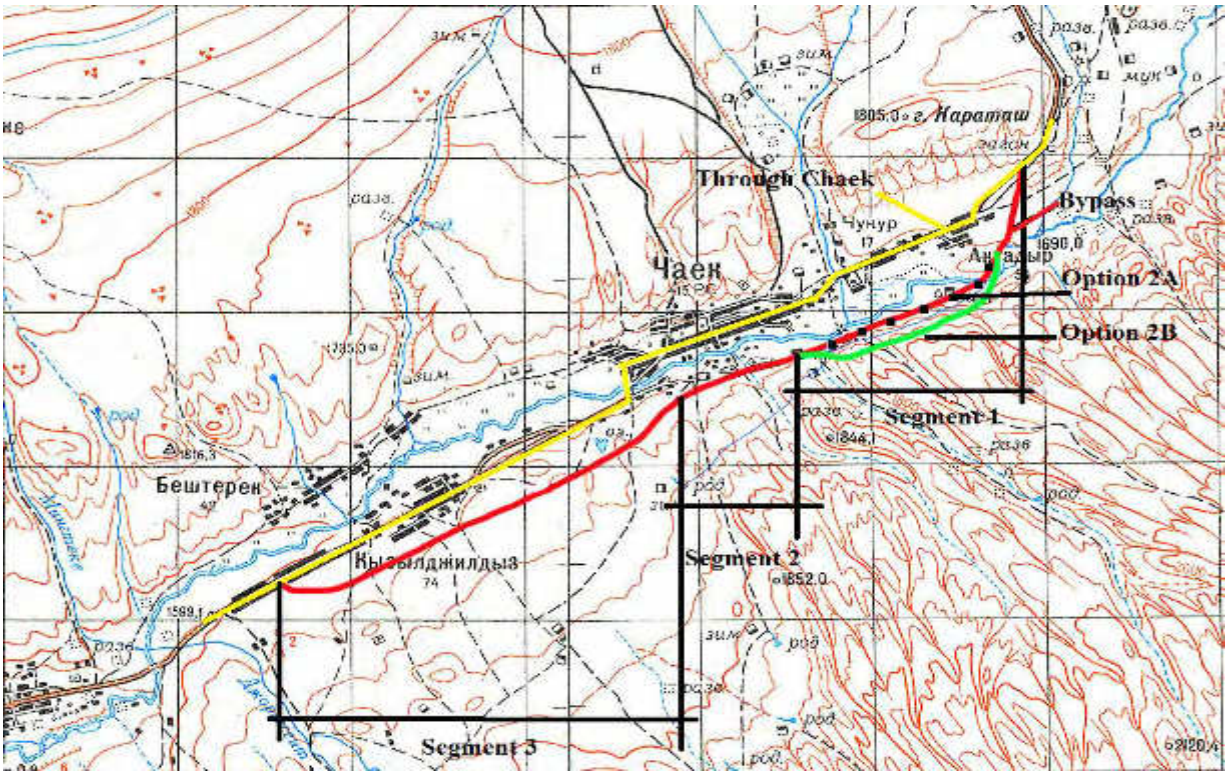
Option 2: Bypass Road described as follows:

Segment 1:

- *Option 2A*: PK 1724 to PK 1758 (3.4 km) – Bypass road goes through a new alignment (along farm road track as local access), crosses hayfields, the Jumgal River and river floodplain (PK 1744+600 to PK 1757+720 (1.32km));
- *Option 2B*: Bypass road from PK1724 to PK 1743 goes as Option 2A, and from PK 1743 it goes toward the foothills until in connects back to Segment 2 at PK 1758. This sub-alignment is viewed as an environmentally friendly option since it avoids the Jumgal River floodplain which harbors local flora and fauna species.

Segment 2: PK 1758 to PK 1773 (1.5 km) – Bypass road is goes through local interior road in Chaek; and

Segment 3: PK 1773 to PK 1796 (2.3 km) – Bypass road goes through farm access road in Chaek



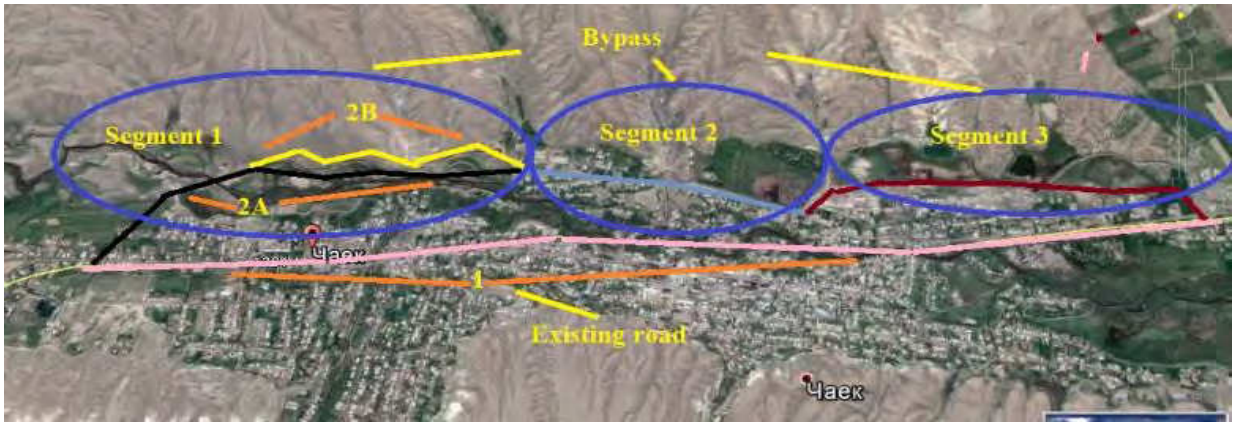


Figure 11: Bypass with Segments

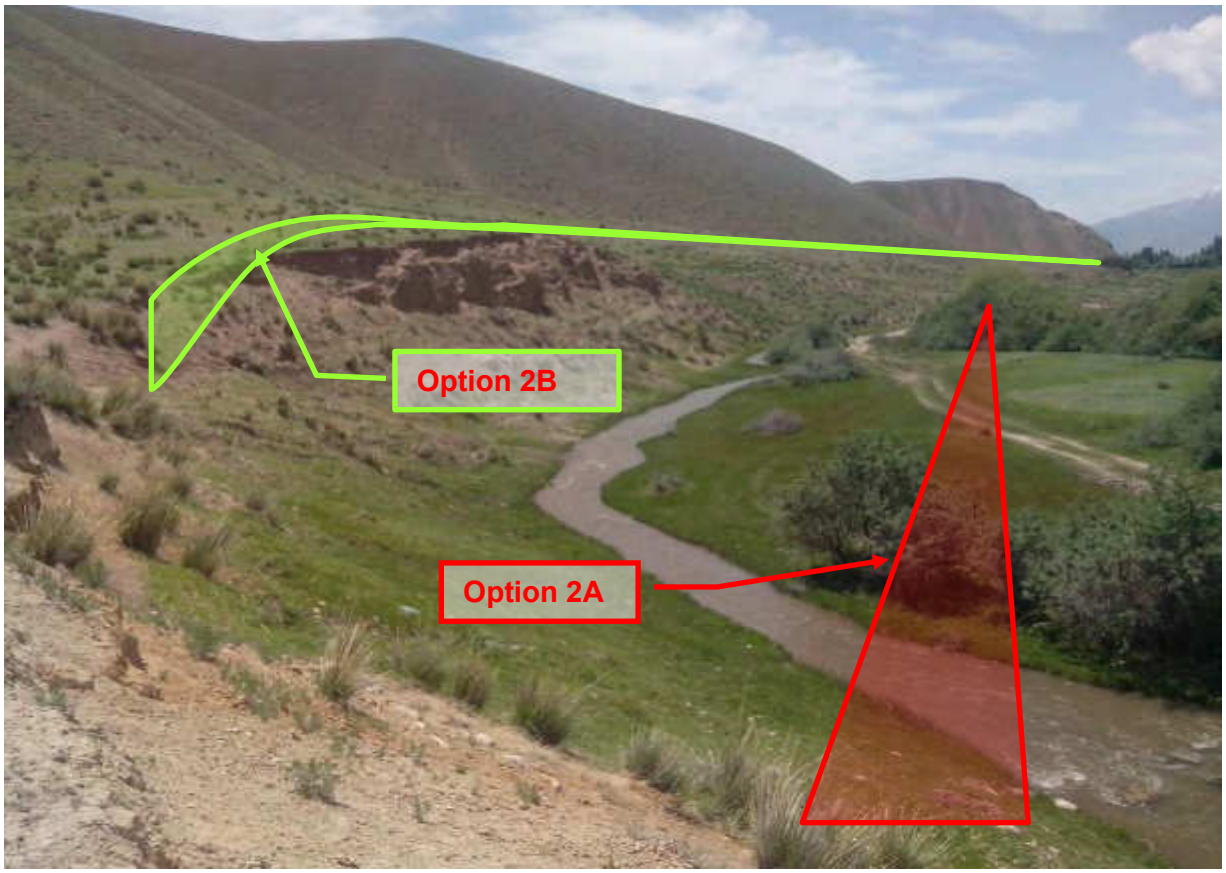


Figure 12: Comparative Approximate Alignment of Options 2A & 2B

227. Environmental impact assessment of the Chaek village - Bypass

Option 2A and 2B reconstruction/construction of the Chaek village bypass considers three (3) segments.

The first segment is a section of the new road, which passes through populated areas, farmlands, small meadows, by falling on the country road to the Jumgal River. A bridge is planned to be built over the Jumgal River. Furtherthe road will pass through the floodplain (option 2A), on the hand, and small mountain hills, on the other hand. Local irrigation channel runs along the edge of hills.

The option 2B provides that the road shall go along the edge of mountain hills without affecting the irrigation channel and reduce the impact on the Jumgal River.

The road joins **the second segment**, beginning of which is the existing local gravel road. The present section passes on skirts of the village.

The third segment is a new road that runs along the marshland. The area has small ponds, in some places there are water logged areas. There is formed wetland ecosystem in the section. In addition, there is Kyrgyzhydromet weather station.

228. Over the entire section of the Part 2, environmental impact will be expressed by the following factors, which are described below:

A) Impact atmospheric air

229. During the designing period, level of impact on atmospheric air shall be determined by correct planning and placement of asphalt concrete mixing plants, crushing plants, quarries. The impact will be reduced by compiling a management plan to reduce dust formation, quarry

management, inspection of machines and machinery, review of procedures required by the national legislation in the field of opinion and permits obtaining. Requirements of standards on MPC of pollutants in ambient air should be determined. Provide for mitigation measures and determine points of monitoring of given parameters, especially near sensitive receptors. No any impact is expexted.

During the construction period, air will be polluted by exhaust gas products (CO, NOx, SOx, etc.) of construction machines and machinery, dust formation during excavation, loading and unloading of soil materials, thermal pollution during laying of asphalt pavement.

During the operation period, atmospheric air pollution depends on traffic density.

230. According to conducted calculations, planned traffic density will be 2,400 vehicles per day. Having studied and considered various similar calculations to determine pollutant emissions by various traffic densities during the operation, we can conclude that the maximum ground-level concentrations of pollutants at a distance of 3 m to 5 m from the road shall not exceed the maximum permissible concentration.

B) Impact of noise and vibration

231. During designing period, noise impact shall be determined by correct planning and placement of asphalt concrete mixing plants, crushing plants, quarries. Set up requirements for technical inspection of machines and machinery. Determine requirements of standards on maximum permissible level of noise and vibration within the sensitive receptors. Provide for mitigation measures and determine points of monitoring of given parameters, especially near sensitive receptors. No any impact is expexted.

During the construction period, noise and vibration on the bypass will affect sensitive receptors such as houses, a kindergarten, habitats of river and pond fauna due to operation of road machines and machinery.

During the operation period, noise and vibration levels at higher traffic intensity may also have a negative effect on sensitive receptors, especially at night.

C) Impact on water resources

232. During the designing period, impact on water body will be determined by correct planning and designing of location of bridges, culverts and crossings, in view of consolidation of banks against erosion. Determine requirements of water protection zones, standards on MPC of pollutants in water, mitigation measures and points of monitoring water bodies.

In order to prevent natural hazards, such as seasonal floods and flooding of the territory, the given section should be subjected to more thorough hydrological and geological study. No any impact is expexted.

During the construction period, impact is caused by pollution of surface waters of the Jumgal River by oil products, oil, soil, construction and household waste. The planned road will pass the water protection zone of the river, which violates national legislation requirements. Drifting and siltation of watercourses will be intensified by erosion products of construction sites, loose subgrade, as well as during construction of bridge piers. Impact on hydrological regime of the river will be caused upon the bridge construction. Impact on wetland ponds will be caused through drainage of marshland (approximately 2 km) during construction of the road in the segment 3 by removal of soil and replacing it withdraining soil, arranging of a drainage system. Impact of change is expressed by surface runoff.

In a horizontal sense (about 20 ha), it is minimum encroachment. However, water quality and local environment will be disturbed during construction.

233. Flooding of the territory during the period of heavy rains, increase in groundwater level

and flooding of territories is natural factor. According to MOE, Chaek village's territory is subjected to flooding processes associated with low terraces of the Jumgal River valleys. Mudflow hazard is not high in the territory.

Impact on surface and groundwater is slight.

During the operation period, roadbed may be subjected to flooding, which in turn can cause its destruction. The Jumgal River's floodplain might be polluted by runoff from roads and bridges, accidental spills of oil products and oil as well as lead, which are often concentrated on the roadside.

D) Impact on soil and ground

234. During the designing period, level of impact on soil and ground will be determined by correct planning and placement of asphalt concrete mixing plants, crushing plants, road alignment in mountainous area. Determine requirements for transportation of materials and waste. No any impact is expected/

During the construction period, impact on soil and ground will be expressed in excavation, cutting of topsoil. Soil and ground will be contaminated by construction and household waste, oil, fuel of vehicles and road construction machinery on construction sites and camps.

235. Ground. Excavation of mountain hills ofsegment 1, option 2B provides for construction of the road on the mountain hill at a distance of 40 mfrom the river.Therefore, ground should be removed from that territory. This option is the most appropriate as the impact on the Jumgal River will be reduced and better stability of the road pavement will be ensured.However, due to cutting of mountain ranges during construction works, there might be formed landslides, rockslides, slipouts and other movements of earth masses.

Scope of work in segment 3 consists in removal of ground in the volume of 108,000 m3 and replacement there of with draining soil by arranging a drainage system at a depth of 1.5-2 m.

236. Quantity of earthwork for a new alignment – the earth to be transported to the area for embankment to replace any unsuitable material may be considerable as the area is soaked with water. For a stretch of around 1km, corridor width of 20 m, embankment height of 2.5m, around 50,000 cubic meters of suitable soil materials will be hauled in. At the same time, around half of this may have to be removed and deposited somewhere else. Sufficient planning should be done with this considerable volume of earth to eliminate adverse impact to the ecosystem and farmlands of the local folks.

Land will be subjected to erosion due to the concentration of water flows by artificial structures, gutters and ditches.

237. During the operation period, main impact will be expressed in pollution of the roadside soil by lead compounds.

238. Impact of borrow pits will be expressed by air pollution, noise, vibration, impact on soil and ground. According to project documentation, temporal distribution of land on 4 borrow pits will make 9.6 hectares and 5 storage places for vegetation layer- 1.5 hectares

239. Land acquisition according to the project documentation will be: permanent allocation of the roadbed was 19.28 ha, temporal distribution of land on 4borrow pits - 9.6 ha, 5 storage places for vegetation layer- 1.5 ha. During the construction, location of the construction site on PK 1712 + 00 and temporary allotment for construction - 1.0 ha.

E) Impact on flora and fauna.

240. During the designing period, it is necessary to consider impact on the flora and fauna of the given section. Habitat is a formed ecosystem, disturbance of which will cause the territory fauna to disappear. It is necessary to consider migration, animal and bird breeding season, and

prepare the project with the least possible impact on this ecosystem. Determine the requirements for management of trees. No any impact is expected.

During the construction period, flora and fauna will be subjected to impact. Growing conditions of plants, wildlife habitat, and fish habitat will be disturbed during construction of bridges.

Dominant vegetation is: *Sympegmaregeli*, Silver willow *(Salix acutifolia),* Sea buckthorn *(Hippophaerhamnoides), Geranium regelii, Geranium himalayense, Kalidiumcuspidatum, Reaumuriasoongorica, Acantholimonalatavicum, Artemisia tianschanica, Stipacaucasica, Festucasulcate, Phlomisoreophila, Carexstenocarpa, Iris halophila Pall (Iris sogdiana Bunge)*. Out of medicinal plants, there grow Begger's rose, loose rose, Ural licorice.

241. Fauna is represented by reptiles: arrow-snake, birds: bearded partridge, chukar partridge (in open habitats), orjok-duck lives in Jumgal River; animals: steppe polecat, stone marten, gray marmot, muskrat (in reservoirs); fish species in Jumgal river: Suusamyr scaly osman, Marina, trout, snakehead.

242. Cutting.There is mostly meadows and fields on the bypass section. Vegetation represented by small trees and mostly by shrubs. Around 70 trees falls will be cut. Buckthorn bushes, reeds, willow, elm grow in the floodplain of the river and pond.

243. During the operation period, impact will be expressed by noise and vibration on local fauna, animal migration path, striking of animals crossing the street by vehicles, illumination of the road vehicles' headlights and blinding animals.

F) Impact on social aspect. LARP

244. During the designing period, impact is associated with planning and designing of the road alignment through settlements, which may cause land acquisition from municipalities or private individuals (demolition of structures, resettlement of people, economic displacement). The impact will be expressed in land withdrawal for permanent use from private individuals and municipalities. Number of affected people is specified in the report on resettlement and 2 houses will be relocated according to the report. Resettlement and compensation will be addressed as a part of the resettlement plan.

At this section, PK 1787+50, one public facility, a weather station, will be relocated.

During the construction period, impact on this aspect will be addressed in accordance with the Resettlement plan discussed in the report on resettlement.

No any impact is expected during the operation period.

G) Safety

245. During the designing period, impact is associated with designing of safe crossings for people and animals. Determine necessary safety aids, stops. Determine requirements for informing of public about access to the road and interaction with Road Patrol Service. No any impact is expected/

During the construction period, operating road machinery, earthwork operations may cause danger. High accident risk will be created on the road and intersections with other roads, when there is no traffic flow control in settlements.

During the operation period, there may be cases of accidents: striking of people, animals when they cross the road.

H) Construction camps

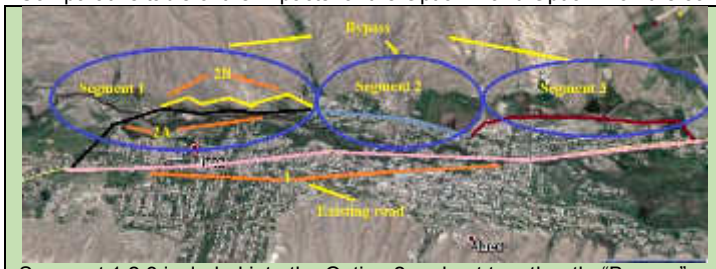
246. During the designing period, impact is associated with determination of places for arrangement of camps. Determine requirements for management of construction camp.

During the construction period, construction camps cause impact on soil, ground water, form debris and possiblymay interactwith the local population.

This impact is inapplicable during the operation period.

Table 42: Comparative table of the impacts for the Option 1 and Option 2– construction stage

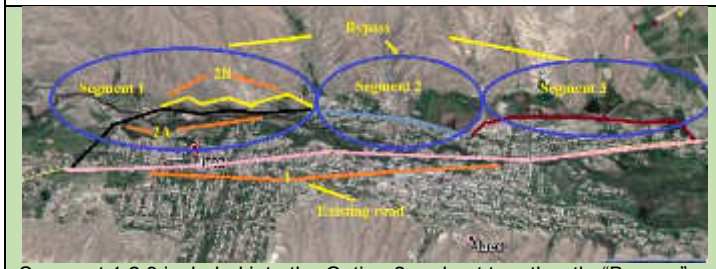
Comparative table of the impacts for the Option 1 and Option 2 on the construction and operation stage are described below For strengthening of Jumgal river banks

 Segment 1,2,3 included into the Option 2 and get together the“Bypass” road. Only Segment 1 includes two options (2A and 2B), one of which passes along the river (2A), another one are located at the slope of the hill (2B). Segments 2 and 3 have no any options in their composition. Segment 2 therewith is existing road section. Segment 3 is a new alignment.	Option 2							Option 1
	Segment 1			Segment 2		Segment 3		Through Chaek
Components	2A	2B						1
Air	m	m		m		m		s
Water	s	L		L		m		m
Soil	m	m		L		S		L
Ground	S	S		L		S		L
flora, fauna	S	L		L		S		L
tree cut, clearing	S	L		L		S		s
noise, vibration	L	L		m		m		s
LARP, social issues	m	m		m		L		s
Safety	m	m		L		m		s
Camp	N	N		L		N		L
	Segment 1			Segment 2		Segment 3		Chaek
	new road			exist		new road		exist
Results	High significant	Medium		Low		High significant		High significant

High significant
Medium
Low

strong - S
medium - M
Low -L
zero -N

Table 43: Comparative table of the impacts for the Option 1 and Option 2 – operation stage

Operation stage								
 Segment 1,2,3 included into the Option 2 and get together the"Bypass" road. Only Segment 1 includes two options (2A and 2B), one of which passes along the river (2A), another one are located at the slope of the hill (2B). Segments 2 and 3 have no any options in their composition. Segment 2 therewith is existing road section. Segment 3 is a new alignment.	Option 2							Option 1
	Segment 1			Segment 2		Segment 3		Through Chaek
Components	2A	2B						1
Air	L	L		L		L		m
Water	s	L		L		m		L
Soil	L	L		L		L		L
Ground	m	L		L		m		L
flora, fauna	S	L		L		m		L
tree cut, clearing	N	N		N		N		N
noise, vibration	L	L		m		m		m
LARP, social issues	N	N		N		N		N
Safety	L	L		L		L		m
Camp	N	N		N		N		N
	Segment 1			Segment 2		Segment 3		Chaek
	new road			exist		new road		exist
Results	Medium	Low		Low		Medium		Medium

In the case of choose Option 2A, Project category B can be changed for the higher one, because of the high significant impacts on water resources, water fauna and flora of that area.

247. The conclusion from the analysis of alternatives:

The report examines two alternatives of the proposed activity:

- The zero option – no action
- An alternative – the road reconstruction project

  Alternative road reconstruction involves a reconstruction of the road from 159 km to 184 km. which consists of three parts.

- Part 1: from km 159 + 200 to km 172+400 – The road is to rehabilitate along its current alignment and will pass through the residential areas of Bashkugandy and Baizak.
- Part 2: from km 172+400 to Km 179+600 – Option portion for (i) existing road rehabilitation or (ii) Bypass Road.
- Part 3: from km 179 + 600 to km 183+99 – The road is to rehabilitate along its current alignment and will pass through the residential areas of Kyzyl-Zhyldyz. It will join up with an almost competed the section of the road being funded by the Chinese Exim Bank.

248. Part 2 - includes two options for reconstruction of the road, beginning from the PK 172+ 400 to 179 + 600:

- Reconstruction through the village Chaek - This option has a significant social impact;
- Construction of a **new bypass road** - this option **is the basis** (with the design documentation prepared by Kyrgyzdortransproekt) which has been reviewed in this section.

249. Bypass option consists of three segments:

- Segment 1 - Construction of a new road - option 2A and 2B (PK 1724 to PK 1758 (3.4 km)). 2A is the base option.
- Segment 2 - Reconstruction of the existing road (PK 1758 to PK 1773 (1.5 km)).
- Segment 3 - Construction of a new road (PK 1773 to PK 1796 (2.3 km)).

The first segment has the option 2A, which, starting from the PK 1744 - 1758 passes through the Jumgal River floodplain.

Option 2B PK 1744 - 1758 runs on the slope of the mountains, 2B is the most environmentally friendly option.

250. Concluding the above said, Option 2A the base option of the bypass road reconstruction, will have a significant environmental impact comparing with the Option 2B.

On the results of alternatives analysis, recommended Option 2B in Segment 1 has a least significant environmental impact.

G. Information Disclosure, Consultation, and Participation

251. Formal and informal public consultations were done for the project during the study period. During the site visits some informal discussions were done with the villagers and some village heads as field information were being gathered. The IPIG organized a formal public consultation was arranged with the district heads to invite people of affected villages to present and discuss with them environmental and social issues relevant to the rehabilitation of the road.

(i) **Public Consultations and Participation**

252. For Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183), in accordance with ADB's Public Communications Policy (2011) and SPS (2009), Public Consultation meeting on the environmental aspects was undertaken on 18 March 2016 in Chaek Village Administration Office (see Photo below). This was organized by the IPIG-MoTR through official communication to the local leaders inviting stakeholders in the surrounding villages.

253. During the said public consultation the Consultant (Kocks Consult, GmbH), prepared PowerPoint presentation regarding the technical features of the project and explained the potential environmental and social impacts with corresponding mitigation measures. This event was organized by IPIG-MoTR representatives[10]. The representatives of the MoTR-IPIG answered questions and clarify any issues that were raised. In addition, the participants also were provided a sheet of paper on which the can write their questions and comments. Printed hand-outs of the presentation were prepared and distributed to the people for their information and as a way of disseminating the environmental concerns of the project to the general public. Below is a photo of the public consultation.

Figure 13: Public Consultation in Chaek (18 March 2016)

254. The questions raised verbally during the forum were responded right away. As mentioned above, the people who attended were provided with a sheet of paper on which to write their questions and comments on the project. The recorded questions and corresponding responses by the IPIG-MoTR were captured in a video with the transcript shown in Annex C. The verbal and written comments and questions that were raised were compiled and presented as follows:

- Comments/Recommendations:
- Please arrange zebra crossing for people, and cattle crossing for animals
- It would be good if the road section would pass a little bit far from arable lands.
- I wish the Contractor hired local people; we are in a village where poor people live.
- Please inform owners of houses/structures to be destroyed due to road as soon as possible.

[10] Mr. AsylbekAbdygulov, environmental specialist of IPIG-MoTR; Mr. RuslanSatybaldiev, project coordinator of IPIG-MOTR.

- Install road signs
- Arrange cattle crossing under the road for animals.

Table 44: Summary table on public consultation for the Bashkugandy – Kyzyl - Zhyldyz Section

Data	Place	Participants	Questions	Answers	Note
18/03/2016	Chaek v. authorities	IPIG /MoTR Asylbek Abdygulov safeguard specialist Ruslan Satybaldiev Project coordinator KocksConsult Sam Sapuay International safeguard consultant Lola Shatirishvili, resettlement specialist	Will houses located on both sides of the road not be damaged during the construction of the road?	More detail will be in the LARP report, it is in progress	In the LARP report
			Will the owners of houses, sheds to be destroyed because of the road, be compensated before winter?	Developing the detailed design, the resettlement committee will determine the amount of compensation.	In the LARP report
			Is it possible to arrange the road through swampy areas?	Developed desing of project. Estimated increase of the road capacity is 4% annually for the following 20 years.	Consideration in the IEE report (Part.2, Op.2A)
			How the compensation will be solved; together with land plot owner or not?	Estimated cost of the new road construction is about twice as high as the old surface rehabilitation. Moreover,there is a ban on agricultural land requisition	In the LARP report
			Will the owners of houses, sheds to be destroyed because of the road be compensated before winter?	Re-equipment of the pedestrian subways stipulates the extension, reinforcement and design. Village authorities will accomplish further exploitation of the objects after the rehabilitation. Project also stipulates sidewalk, irrigation ditch and drainage watercourse constructions. The project does not stipulate additional unloading highways.	In the LARP report
			Will the Contractor arrange for cattle crossing for animals to cross safely?	Road reconstruction plan includes development of a detailed design. All the necessary utilities will be considered. Arrangements for cattle crossing demand submission of written proposals.	Include in the EMP, IEE
			Will the Contractor arrange for bridges to enable people and animals to cross safely?	Road reconstruction plan includes development of a detailed design. All the necessary utilities will be considered. Arrangements for bridges demand submission of written proposals.	Include in the EMP, IEE
			Will the structures to be built be determined in advance?	The list of structures to be built or laid under the road or above it is to be developed in advance. It will reflect the written proposals of village authorities such as head of villages, clean water management department representatives, etc.	
			People of Aktatyr village graze their animals around the section. Pastureland is being destroyed, is there any compensation for that?	More detail will be in the LARP report, it is in progress	
			Pastureland is being destroyed; will the village be paid for the pasture?	More detail will be in the LARP report, it is in progress	

Data	Place	Participants	Questions	Answers	Note
			If owners of houses/structures to be destroyed because of the road are determined, will they be provided with land before winter?	More detail will be in the LARP report, it is in progress	In the LARP report
			Pastureland is being destroyed; will the village be paid anything for pasture?	More detail will be in the LARP report, it is in progress	In the LARP report
			Will the Contractor provide for cattle crossing under the road (underpass) for animals?	The structures to be built under the road will be provided according to the written proposals of village authorities such as head of villages, clean water management department representatives, etc.	Include in the EMP, IEE
			How wide will the road be?	The road will be II category, its width will be 15 m.	
			Will the Contractor install road signs?	Road reconstruction plan includes development of a detailed design. All the necessary utilities will be considered. Installation of road signs demand submission of written proposals.	Include in the EMP, IEE
			Why is it not possible to arrange bypass road around the Kyzyl-Zhyldyz?	The whole list of arrangements, including bypass roads, was determined it the initialization stage of the project. At the moment the project is maintaining feasibility study.	Consideration in the IEE
			How will people of Kyzyl-Zhyldyz cross the road?	Road reconstruction plan includes development of a detailed design. All the necessary utilities to provide safe road crossing will be considered. Installation of road signs demand submission of written proposals.	Include in the EMP, IEE
			There are lands belonging to Kyzyl-Zhyldyz. Adjacent to them, the Land Distribution Fund has 45 ha. of land over there. Why cannot you use those lands to arrange a bypass road?	The whole list of arrangements, including bypass roads, was determined it the initialization stage of the project. There are no officially tracked houses or any other buildings to be destroyed.	
			Will the Contractor arrange for cattle crossings in Kyzyl-Zhyldyz area?	Road reconstruction plan includes development of a detailed design. All the necessary utilities will be considered. Arrangements for cattle crossing demand submission of written proposals.	
			Will the Contractor build bypass in 2-3 places for pedestrian to cross the road?	Road reconstruction plan includes development of a detailed design. All the necessary utilities will be considered. Installation of pedestrian demand submission of written proposals.	
			Who will decide on compensation matters (allocation of another land plot instead of damaged land plot)?	More detail will be in the LARP report, it is in progress	In the LARP report

255. Generally, the comments were minor with the following recommendations - the need for underpasses, zebra crossing, that the road to be away from arable lands, hiring of local people, notification should structures be demolished, need for road signs. The questions on the other hand were on possible damage to houses, compensation on affected structures, construction in swampy areas, construction for cattle crossings for safety, compensation of pasture lands affected by the road, width of the road, on road signs, alternate bypass road locations, pedestrian crossings and compensation matters.

256. Several of the comments were already incorporated in this IEE/EMP such as concerns on damage to infrastructure and reconstruction of utilities. On the impact to infrastructure, provisions in the EMP were included to undertake good planning to enable infrastructure service not to be disrupted.

257. In order to inform a larger number of population of the villages along the road on the environmental and social issues of the project, IPIG/MoTR KR sent information letters with the results of the conclusions of IEEs to Rayon authorities, heads of village municipalities, and village elders for greater public awareness on possible types of environmental and social impacts during implementation of the road reconstruction project. This information letter is attached in Annex G.

(ii) **Information Disclosure**

258. ADB endorses the IEE it is made available as information to the public, both in English and in Russian languages

The procedure for public hearings in Kyrgyz Rebublic includes the following steps:

1) public notification on public discussions;
2) providing public access to the EIA documentation from the project initiator and / or in other accessible locations (local authorities, the territorial bodies of environmental protection), as well as disclosure of the EIA report on the website of the proponent (if website exists);
3) the general public familiarizes with the EIA documentation;
4) in the case of public interest:

- Public notice on the date and place of the meeting to discuss the EIA documentation;
- Collection and analysis of comments and suggestions, summarizing the results of public discussion of the EIA documentation.

259. The Russian Version of the IEE will be available in the IPIG-MoTR office and copies shall be made available to the people through the Ayil Okmotu offices along the project road. The IEE shall also be disclosed to a wider audience via the ADB website. During the project implementation, periodic environmental monitoring reports shall be submitted by Implementing/Executing Agencies and correspondingly also be uploaded in the IDB and SFD websites.

260. Should additional information be required at any time about the project, the public may visit the IPIG-MoTR or interact with the future construction supervision consultant who will be selected for the project. On-site consultations will be held for clarifications and provision of necessary information to the public and the stakeholders on as need basis.

H. Grievance Redress Mechanism

1. Objectives

261. The Grievance Redress Mechanism (GRM) is a process through which the affected people need a trusted way to voice and resolve concerns about the project and the project also finds an effective way to address affected people's concerns. In this project, the grievance mechanism will be in place by which the affected people will be fully informed of their rights and procedures for addressing complaints whether verbally or in writing during consultation, survey, time of compensation and implementation of the project. Care will always be taken to prevent grievances rather than going through long redress process.

262. The GRM will cover issues related to social, environmental and other safeguard issues under

Kyrgyz Law.

2. Grievance Redress Group (GRG)

263. The GRG will be established for the duration of project implementation. The GRG is taskedwith all activities needed to discuss a grievance, assess its validity, assess the scope of eventual impacts, decide eventual compensation needed and instruct/facilitate the functioning of the Grievance redress mechanism.

2.1. Functioning of the GRG within the Grievance Redress Mechanism

The Grievance redress mechanism (GRM) involves the following 2 stages appeals:

Stage 1, Local (Village) Level

The grievances will first be lodged at the level of the complainant's village community. The complainant will report his case to the Local Point of Contact (LPC) The LPC will trigger the action of the Grievance Redress Group (GRG) which will assess the situation and seek a solution through consultation with complainants, local Roads Maintenance Unit (RMU) the oblast Ombudsman, and the selected AP representative.

Stage 2, Central Level

In case within additional 15 days the grievance is still not resolved at local level the complainant will further raise the issue to MOTR's headquarters in Bishkek again with the support of the LPC, AP representatives, and the oblast Ombudsman. The GRG will decide on the eligibility and on the complaint case and prepare the resolution, subject to PIU/MOTR consent.

GRM proceedings will entail one or more meetings for each complain and may require field investigations by specific technical or valuation experts. Grievance cases shared by more than for deliberations at the local level, the meetings will be held in the village of the complainant. For appeals at central level, the meetings will be carried out at in MOTR office in Bishkek with field trips of GRG members to the village of the complainant.

2.2. Composition of GRG

264. GRG will be established by the order of MOTR. The GRG is composed at different levels of appeal by the following individuals/officers.

Local level GRG

265. Local level GRG will be established at each Ayil-Okmotu along the project roads with the provision of members of following composition.

GRG Member	Position held
Head of Ayil-Okmotu	Chairman
Representative ofRMU	Member
Female and Male APs	Members (2)
Local Point of Contact	Member
Ombudsman of the Oblast	Observer
Consultant	Invited Expert

Central level GRG

266. The central level GRG will be represented by 5-7 members of the following composition.

GRG Member	Position held
Head of IPIG of MoTR	Chairman
Project Coordinator at IPIG	Member
IPIG safeguards unit representative	Member
Representative of the RMU	Member
Local Point of Contact	Liaison betweenLocal & Central GRG
Ombudsman of the Oblast	Observer
Representatives of APs (Male & Female)	Additional Observers

At each level of appeal, the GRG will be assisted as needed by the professional capacity needed to solve each specific case. This will include among others:

- Representatives of State Rayon Administration
- Representatives of the Rayon Branch of the State Agency for Architecture and Construction
- State Registration Services of the Rayon
- Ministry of Agricultural
- State Agency for Environment and Forestry
- Ministry of State Property
- Ministry of Emergency
- Technical expertise from professional engineers, and Consultants with relevant experience in environmental safeguards.

2.3. Duties of GRG Members

Local Point of Contact

267. Once AP files a complaint, the LPC is to undertake and complete the following tasks:

- screen the complaint for eligibility and, if found eligible register it the Complaints Log;
- draft a complaint memo to be signed by the complainant, indicating the name of complainant, date and place the case of complaint occurred, apply the date and place of complaint submission, and attach supporting documents, as necessary;
- send the complaint memo to all members of GRG , agree the date of GRG meeting;
- request the rural administration authorities to organize the meeting;
- facilitate the GRG meeting by providing a storyline for the complaint and provide factual details and relevant documents obtained;
- communicate request and queries of the complaints to the members of GRG (on central level to GRG/IPIG/ADB);
- maintain the records of the meetings and communications between GRG and complainants
- ensure administrative and organizational support to GRG members;
- raise awareness of project stakeholders, including CBOs, NGOs AHs and local authorities on the GRM, it functions and objectives.

268. Liaise between local and central GRGs to convey the information of the case of complaint that was not resolved on local level and became the case to be reviewed on a Central Level.

Chairman of GRG / Head of Ayil-Okmotu

269. Once the GRG Chairman is informed about the meeting date and schedule he/she is responsible to:

- review the complaint(s) and supporting materials if any ahead of the GRG meeting;
- manage to obtain any additional information prior to GRG meeting date;
- involve relevant task expert if such need is obvious after review of the complaint(s);
- ensure members attendance and chair GRG meeting;
- ensure simple complaints (like notification of when construction starts or a copy of the entitlement brochure etc.) are handled /resolved at the local level during the meeting;
- ensure that records (of each meeting, communication between GRG and complainant(s)) is accurately recorder by assigned member (Meeting Secretary) and saved in the GRG files;
- convey requests and enquiries of the complainants to GRG members on Central Level if not resolved on Local Level.

RMU Representative

270. Once notified of a complaint and summoned by the LPC to a grievance meeting the RMU representative will:

- Review all relevant recording of complaints and submitted documents of proof;
- participate to all grievance meetings, provide opinions and analysis, take minutes of the discussions (Secretary of the Meeting);
- accompany eventual assessment/valuation specialists in the field;
- ensure that claims from damages due to construction works are reviewed by the RMU and technical experts and assess the damages /losses incurred;
- based on the position reports of GRG members and on his/her understanding of the case prepare the final grievance report and recommendations to be sent to complainant, other members of the GRG and if needed to PIU as well. The summary report should determine, whether the case is:

i. solved without further action; or
ii. solvable but requires compensation or other action; or
iii. not resolved and requires pending actions, such as forwarding the complaint for review on the higher-Central Level, to the Court, or to investigation to prosecutor's office.

- if the complaint is considered valid and the needed compensation/action is to be approved by PIU the case is forwarded to GRG on Central Level with the request to proceed the review and ensure execution of the redress action; and
- when the complaint remains unresolved by Local Level GRG, and a complainant offered to lodge claim on the Central Level agree to act so, RMU representative coordinates with LPC and GRG Chairman to assists the complainant in lodging the complaint at a higher appeal level;
- in parallel inform PIU/MoTR and proceed with the organization of the central level appeal meeting.

Representatives of the APs

271. Two representatives of the APs, male and female persons from the affected community will participate in all GRG meetings to:

- act as the full right member of GRG;
- provide relevant information related to the submitted complaints; and
- provide other GRG members as relevant with a position note to be reflected in the final meeting report.

Invited Consultant /Field expert

272. Once notified of Meeting time and location the Consultant will:

- Review all relevant recording of complaints and submitted documents of proof;
- If feasible visit the place of complaint to visually observe the spot and be fully aware of important details to share with GRG members during the meeting;
- assist the GRG members to get into the insight of the complaint and assist them in finding feasible, reasonable, mutually agreeable and doable solutions.

PIU Project Coordinator

273. Once notified that a complainant has lodged an appeal case at the Central level **PIU** project coordinator will:

- contact the complainant(s) and draft a note with his/her understanding of the complaint;
- participate to the appeal meeting, provide opinions and analysis, take minutes of the discussions;
- if needed summon again assessment/valuation specialists and accompany them in the field;

- request the chairperson to organize meetings, as necessary;
- maintain communication between GRG and the complainants; and
- Complaint Register is kept with **PIU** and a copy shared with the Consultant.

Representatives of PIU Safeguards Unit

274. Once notified that a complainant has lodged at central:

- participate to all grievance meetings, provide opinions and analysis;
- accompany eventual assessment/valuation specialists in the field, and
- provide other GRG members as relevant with a position note to be reflected in the final meeting report.

Ombudsman

275. Once notified of a complaint and a summoned by the LPC to a grievance meeting is submitted the Ombudsman will:

- monitor complaint handling process and ensure that decisions made by the GRP are equitable and objective;
- provide independent opinions and recommendations related to the decision made on the case by the GRP team;
- advise the complainant(s) on their rights and entitlements, as necessary;
- participate to all GRG meetings and site visits;
- participate in eventual assessment/valuation in the field; and
- prepare a position memo at the end of the meeting(s) and forward it to LPC/chairperson of the GRG.

GRG Chairperson/Head of PIU of MoTR

276. Once notified that a complainant has lodged an appeal case at central level, the GRG chairperson will:

- contact the complainant(s) and draft a note with his/her understanding of the complaint;
- trigger the GRG members through a letter of invitation;
- chair the GRG meetings and ensure that minutes of the meeting are shared with all relevant parties;
- review the content of each response prepared after deliberations to ensure accuracy as well as consistency of answers provided to the complainants;
- ensure the administrative and organizational support for GRG members to work; and
- support the decision made by the GRG and ensure that the follow-up actions are taken.

PIU Project Coordinator

277. Once notified that a complainant has lodged an appeal case at central level project coordinator will:

- contact the complainant(s) and draft a note with his/her understanding of the complaint;
- participate to the appeal meeting, provide opinions and analysis, take minutes of the discussions;
- if needed summon again assessment/valuation specialists and accompany them in the field;
- request the chairperson to organize meetings, as necessary;
- maintain communication between GRG and the complainants; and
- Complaint Register is kept with **PIU** and a copy shared with the Consultant.

Representatives of IPIG Safeguards Unit

278. Once notified that a complainant has lodged at central level, the representatives of **PIU**

safeguard and technical unit will:

- prepare the chronology of events to understand sequence of developments prompting the complaint;
- provide environmental and resettlement opinion on impacts claimed by the claimant;
- examine large claims over USD$10,000 with financial expert at Ministry and involve a qualified valuer;
- request the chairperson to organize meetings, as necessary; and
- maintain communication between GRG and the complainants.

Technical Experts

279. Once summoned to provide expert advice for the assessment or valuation of an impact claimed by a complainant the relevant technical expert will carry out the needed investigations and prepare a report to be handed to the complainant and the other members of the GRG. The tasks will include:

- provision of relevant technical opinion for the case reviewed;
- carry out the needed investigations relevant to their expertise; and
- provide recommendation when the legal opinion from the relevant state agencies is necessary.

2.4. Grievance Resolution Process

280. The LPC of GRGs will be regularly available and accessible for APs to address concerns and grievances. He will assist the aggrieved APs in formally lodging their claims to the GRG. The complaints and grievances from the APs will be addressed through the process described below.

Table 45: Grievance Resolution Process

Steps	Action level	Process	Timeline
Step 1	Resolution	At initial stage, the LPC will give hearing to the aggrieved person and try to give acceptable solutions. If any aggrieved AP is not satisfied with the solutions, then the aggrieved AP will lodge grievances in written to the concerned local GRG within 3 days.	3 days
Step 2	GRG Resolution	After receiving written complaints of AP, the LFP will review and prepare a Case File for GRG hearing and resolution. A formal hearing will be held with the GRG at a date fixed by the LPC in consultation and the aggrieved APs. On the date of hearing, the aggrieved AP will appear before the GRG at the office of concerned Ayil-Okmotu and produce proof in support of his/her claim. The LPC will note down the statements of the complainant and document all proof. The decisions from majority of the members will be considered final from the GRG and will be issued by the LPC and signed by other members of the GRG. The case record will be updated and the decision will be communicated to the complainant AP by the LPC within 14 days of submission. If any aggrieved AP is not satisfied with the solutions, then the LPC will lodge grievances in written to the central GRG at MoTR with conclusion and supporting documents prepared at local level.	14 days
Step 3	Resolution of GRG Central	After receiving written complaints of AP, the GRG Chairperson of the central GRG will review and prepare a Case File for GRG hearing and resolution. A formal hearing will be held with the GRG at a date fixed by the GRG Chairperson and the aggrieved APs. GRG members will contact the complainant and visit his village. The IPIG Project Coordinator will note down the statements of the complainant and document all proof. The decisions from majority of the members will be considered final from the GRG and will be issued by the GRG Chairperson and signed by other members of the GRG. The case record will be updated and the decision will be communicated to the complainant AP by the PIU Project Coordinator within 15 days of submission.	15 days
Step 4	Court of law	The court of law will be the last resort before the AP. Project Affected Persons can appeal to court should s/he disagrees with the decision of the Control Authority.	N/A

3. Additional Mechanisms Available for Grievance Redress

281. Any physical and legal person, any appellant can communicate his/her concern to the Court at any stage of grievance redress. The GRC will not restrict or influence the AP from applying to court for legal remedies.If the complaint is found invalid, the GRG formulates a response and sends a written letter to the complainant, explaining the reasons of rejection. The complainant can appeal the decision of the local Court. The project level GRG does not in any way impede APs access to the judicial or administrative remedies the Kyrgyz Republic.

I. Environmental Management Plan

1. EMP

282. The EMP describes the various measures proposed under this Project, whichwere designed to avoid, mitigate, or compensate the adverse environmental impacts that may result from the Project. As such the EMP considers all phases of the Project cycle, namely the detailed design, construction and operational phases of the Project.

283. To ensure that the proposed mitigation measures will be carried out by thecontractors during the construction stage, the design consultant will clearly set out in thetender and contract documents the contractor’s obligation to undertake the respectiveenvironmental mitigation measures.

284. The EMP consists of two tables. Table 24 summarizes the environmental mitigation measures, and Table 25 provides an overview of the environmental monitoring. At the end is a statement which includes the timeframes and responsibilities for carrying out the environmental monitoring.

Table 46: Environmental management plan

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
DETAILED DESIGN PHASE				
Road alignment in areas of tree plantations. There is a considerable number of tree losses involved. Approximately 1,230 trees need to be felled on the Bashkugandy – Kyzyl-Zhyldyz	Tree losses that cannot be prevented. Mainspecies are Populus alba, Elm	Any tree losses are compensated by new plantations.Plantations shall be conducted after technical works have been completed. Planting time shall be restricted to spring (March till April) and/orautumn (September till October). Locations for tree plantings are within the existingRight of Way (RoW) at the locations where tree losses occur. Trees to be planted shall have the following parameters: 1,5 – 2 m height, age 5 – 6 years. Distance in between individual trees shall be 6 – 8 m. Species: Populusalba (30%), Elm (70%), and deciduous shrubs Lohan in the villages	Design Consultant	PIU of MoTR
Rehabilitation and/or replacement of existing culverts, implementation of new culverts. In this section it is planned to replace / repair the 41 culverts	Potential damage to localirrigation system if new culverts should not be sufficiently dimensioned or in case that not all existing culverts should be rehabilitated in the courseof the road rehabilitation.	In the course of the road rehabilitation all existing culverts will be cleaned, repaired or replaced, depending on their respective conditions. All culverts are sufficiently dimensioned in order to prevent any damages or blockages to the existing local irrigation systems.	Design Consultant	PIU of MoTR
Rehabilitation / reconstruction of 1 bridges (PK 176+600 or PK 1742) Jumgal r.	Potential water erosion processes at bridge and river embankments.	Design of erosion protection measures at lower parts of bridge embankments. Prefabricated concrete protection plates prevent erosion processes at the lower and lateral parts of bridge and river embankments. Detailed design of the respective protection measure is drafted in the technical design documentation for the respective bridges.	Design Consultant	Construction supervision Consultant (CSC) PIU of MoTR
Road traversing cattle crossings (PK.176 км+300)	Accidents because of collision with cattle	Further impacts from the road may include cattlecrossing the road. This will be clarified during public hearings. Depending on the situation, mitigation measures will be specified as appropriate. Possible mitigation measures would be the provision of warning signs in accordance with relevant road safety standards. In addition, reflectors may be provided on trees in the critical sections and the road fenced near pastures.	Design Consultant	CSC, PIU of MoTR
Cultural and historical sites protection.	Potential Construction works impacts on cultural and historical sites and monuments finding chance.	The objects of historical and cultural heritage are the objects of study and protection of the Ministry of Culture and Tourism of the Kyrgyz Republic (MoCIT KR). To prevent exposure to these objects it is necessary to develop Management plan for cultural and historical sites, according to the law protection zone of objects is not less than 50 m. All questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government. On the basis of the findings of Archaelogical Study (Appendix F), during the detailed design stage, Consultant should send the road design along with the Management plan for objects of cultural heritage for MoCIT KR approval.	Design Consultant	CSC, PIU of MoTR, MoCIT KR
CONSTRUCTION PHASE				

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
Top soil preservation	Loss of top soil.	Removing of top soil occurring within site clearing corridor. Topsoil shall be removed and stored for reuse. Long-term stockpiles of topsoil will immediately be protected to prevent erosion or loss of fertility. For erosion protection it will be sawn with a fast growing vegetation, e. g. grass	Contractor	CSC, SETI, PIU of MoTR
Road alignment in areas of tree plantations. Embankmentfilling of the tree stem area.	Tree losses due to embankment fill.	A maximum fill up of the tree stem area of 30 cm can be accepted. Fill up material in the tree stem area has to be organic soil. A filling up of more than 30 cm will damage the tree. In this case cutting can't be prevented and a new tree is to be planted as a compensation measure at the respective location within the existing RoW. Species to be planted are walnuts, maple ash tree, elm tree,white poplars, white willow, white acacia. Plantings shall be conducted after technical works have been completed. Planting time shall be restricted to spring (March till April) and/or autumn (September till October). Quality of newlyto be planted trees shall be 16 to 18 cm of stem circumference at least in 1,5 m height.	Contractor	CSC, SETI, PIU of MoTR
Bottom of embankment of designed road lying very close to tree rows	Potential damaging of treesduring construction activities	Implementation of a temporary vegetation protection fence during construction activities.	Contractor	CSC, SETI, PIU of MOTR
The road crosses or comes close to the Jumgal river (PK 176+600 or PK 1742)	Alteration of surface water hydrology resultingin increased sediment by increased soil erosion at construction site	Implementation of settlement ponds at locations where construction site comes close to natural watercourses to retain sediments and mitigate possible impacts on water hydrology. Oil and solid waste management need to be described in the SSEMP and consider these sensitive receptors (rivers and their floodplains). No campsite are allowed near river floodplains.	Contractor	CSC, SETI, PIU of MOTR
Prevention of water pollution water object	Pollution surface water	During the construction of bridges construction site dimensions shall be the minimum necessary. Construction site should be placed at levels that exclude them flooding. The discharge of polluted water, landfills, parking cars and the construction of temporary facilities within the water protection zones on the banks of rivers. On construction sites should provide capacity for the collection of sewage and garbage. In the water protection zones (not less than 50m) of rivers it prohibits contamination of the earth surface, including the garbage dump, waste production, as well as parking, cleaning and repair of motor vehicles and road construction machinery, fueling. All works in water protection zone must be carried out based permission from local authorities. The water protection zone is prohibited production of local building materials without permits and approvals of environmental authorities. The roads within the water protection zones should include the collection of water from the roadway surface with its subsequent treatment or sewage in into place, eliminating the pollution of water sources. The quality of discharges into water bodies must meet the established requirements. To prevent soil erosion as a result of the concentration of water flows, it is necessary consider the strengthening of channels and outlets of drainage facilities. In the design of embankments through swamps, transverse towards the road way, flow of water in water-saturated horizon, draft necessary to provide measures to exclude change swamps mode, by backfilling of mound or the lower part of the draining material unit along the roadbed of the longitudinal trenches, and if necessary, artificial structures, etc.	Contractor	CSC, SETI, PIU of MOTR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
		The project documentation should include the rerstoration work after the construction of the bridge: the removal of the bed of the river islands, backfilled during the construction of towers; cleaning of the river bed and the flood plain from cluttering their objects, extracting and hauling piles of scaffolding and temporary supports; dismantling of temporary facilities on the construction site layout and land reclamation, including career and access roads.		
Operation of borrow areas and quarries	Potential disfigurement of landscape, vegetation losses and damage to access roadsIncreased dust emission Siltation and obstruction of surface waters	Some proposed borrow areas are already in operation. Therefore environmental impacts concerning potential disfigurement of landscape, vegetation losses and damage to access roads are kept to a minimum. New sites for quarries need to be developed in accordance with the requirements and procedures for obtaining permission Wet aggregates and/or provide cover on haul trucks to minimize dust emission and material spillage. Locate stockpiles away from surface waters. Prior to start material extraction the contractor shall submit his SSEMP through the Construction Supervisor (CS) to the Safeguard Department of the PIU of the MoTR indicating the location of the proposed extraction site as well as rehabilitation measures and implementation schedule for the borrow areas and access roads. Rehabilitation measures may not be necessary for borrow areas still in operation after road works have finished. The SSEMP needs to address the sensitive issues of avoidance of transportation thru residential areas as far as technically feasible and closure rehabilitation.	Contractor	CSC, PIU of MOTR
Operation of aggregate crusher	Increased dust emission and noise emission	Careful site selection of aggregate crusher in order not to interfere with any sensitive receptor. Distance to next settlement and residential houses at least 300 m downwind. Site selection for aggregate crusher has to be approved by the Safeguard Department in the PIU of the MoTR.	Contractor	CSC, PIU of MOTR
Operation of asphalt plant	Odor emission and safety risks	Asphalt plants shall be 500 m downwind from any settlements and residential houses. Provide spill and fire protection equipment and submit an emergency response plan (in case of spills, accidents, fires and the like) to the authority in responsibility prior to operation of the plant. Secure official approval for installation and operation of asphalt plants from MoTR.	Contractor	CSC, PIU of MOTR
	Water pollution due to spilled bitumen	Bitumen will not be allowed to enter either running or dry streambeds nor shall it be disposed of in ditches or small waste disposal sites prepared by the contractor.Bitumen storage and mixing areas must be protected against spills and all contaminated soil must be properly handled according to legal environmental requirements. Such storage areas must be contained so that any spills can be immediately contained and cleaned up.	Contractor	CSC, PIU of MOTR
Site selection, site preparation and operation of contractor's yard	Potential soil and water pollution	The contractor shall submit documents for approval (short statement and site plan in appropriate scale) which indicate: Site location, surface area required and layout of the work camp. The layout plan shall also contain details of the proposed measures to address adverse environmental impacts resulting from its installation. Sewage management plan for provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses; Waste management plan covering provision of garbage tons, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations;	Contractor	CSC

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	Potential Impact	Mitigation measures	Institutional Responsibility	
			Implement	Monitor
		Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses.Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination. Prior to the commencement of works the site installations shall be inspected for approval.The selected site will not be on top of ground water area or near surface waters.		
	Competition for water resources	Prior to establishment of the work camps, conduct consultations with local authorities to identify sources of water that will not compete with the local population.	Contractor	CSC
Site selection, site preparation and operation of contractor's yard (continuation)	Health and safety risks to workers and adjacent communities	For health and safety protection of workers and adjacent communities the following shall be provided: adequate health care facilities (including firstaid facilities) within construction sites; training of all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work; personal protection equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection in accordance with legal legislation; clean drinking water to all workers; adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site to people whose settlements and access are temporarily severed by road construction; adequate drainage throughout the camps so that stagnant water bodies and puddles do not form; sanitary latrines and garbage bins in construction site, which will be periodically cleared by the contractors to prevent outbreak of diseases. Where feasible the contractor will arrange the temporary integration of waste collection from work sites into existing waste collection systems and disposal facilities of nearby communities;	Contractor	CSC, PIU of MOTR
Work site operation / Operation of equipment maintenance and fuel storage areas	Worker's health and soil / water pollution	The contractor shall hire a qualified health and safety expert who will provide safety training to the staff according to the requirements of the individual work place. Prior to the commencemenof works, the work site personnel shall be instructed about safety rules for the handling and storage of hazardous substances (fuel, oil, lubricants, bitumen, paint etc.) and also the cleaning of the equipment. In preparation of this the contractor shall establish a short list of materials to be used (by quality and quantity) and provide a rough concept explaining the training / briefing that shall be provided for the construction personnel. Locate storage facilities for fuels and chemicals away from watercourses.Such facilities will be bounded and provided with impermeable lining tocontain spillage and prevent soil and water contamination. Store and dispose waste/used oil consistent with environmental legal requirements. Work site restoration: After completion of construction works the contractor shall execute allworks necessary to restore the sites to their original state (removal	Contractor	CSC;

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
		and proper disposal of all materials, wastes, installations, surface modeling if necessary, spreading and leveling of stored topsoil).		
Operation of construction camp	Road construction projects bear a high potential risk to affect local communities and the health and well-being of those that live in or near to the temporary work camps by supporting the spread of STD and HIV/AIDS. In addition, the transport sector itself actually helps the epidemic, as infrastructure and associated transport services give people and infections mobility.	Providing information to workers, encouraging changes in individual's personal behavior and encouraging the use of preventive measures. The goal of the information is to reduce the risk of HIV/ STD transmission among construction workers, camp support staff and local communities.	Contractor	CSC, PIU of MOTR, local health units of the Ministry of Health
Earth works and various construction activities	Loss of topsoil	Topsoil on the sections to be used as a stockpile for surplus construction material shall be removed and stockpiled to reuse them to cover these areas upon completion of works. In addition a soil management plan shall be provided detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites.	Contractor	CSC
Earth works and various construction activities (continuation)	Siltation of surface waters and/or impact on soils due to improper disposal of excess materials	Mostly all excavated material will be reused. In addition the reclaimed asphalt pavement will be recycled for the 1. The transfer of old asphalt to Local RMU of MoTR for up-filling of the secondary roads; 2. Use the old asphalt to strengthen the top coating of the road shoulders by adding the gravel-sand mixture with 15cm thickness.Thus potential impacts due to the need for disposal of excess material will be kept to a minimum.	Contractor	CSC
	Competition for water resources	Conduct consultation with local authorities to identify sources of water (for spraying and other construction requirements) that will not compete with the local population.	Contractor	CSC
	Air pollution due to exhaust emission from the operation of construction machinery	The contractor will maintain construction equipment to good standard and avoid, as much as possible, idling of engines. Banning of the use of machinery or equipment that cause excessive pollution (e.g., visible smoke).	Contractor	CSC
	Disturbance of adjacent settlements due to elevated noise and vibration levels	Restrict speed limit to 30 km/hrwithin 500m of any settlements.Restrict work along the road close to any settlement between 7.00 as to 6.00 pm. Restrict work of large and noisy machinery in the vicinity of settlements to daytime and to agree the work schedule between the contractor and local communities. Compaction shall be made by certified machinery only which complies with all KR laws concerning noise and vibration at construction sites SN 2.2.4/2.1.8.562-96 "Noise at work sites, living premises, public buildings and within residence construction site"; SN 2.2.4/2.1.8.566-96 "Production vibration. Vibration in premises, residence and public buildings".	Contractor	CSC, Traffic police service of the Ministry of home affairs
	Soil compaction due to operation of heavy equipment	Confine operation of heavy equipment within the corridor that is absolutely necessary for the road construction to avoid soil compaction and agricultural used land close to the road.	Contractor	CSC
Earth works and various construction activities	Traffic impairment	Submit a traffic management plan to local traffic authorities prior to mobilization. Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions	Contractor	CSC

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
(continuation)		Allow for adequate traffic flow around construction areas. Provide adequate signalization, appropriate lighting, well - designed traffic safety signs, barriers and flag persons for traffic control.		
Within settlements, encroachment into private and residential land	Dislocation or involuntary resettlement of people. Loss of businesses and income of people operating their business within the existing RoW	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure.	PIU of MoTR, CSC	PIU of MoTR
Within settlements, encroachment onbusiness assets and / or Disturbance business, people, activities and socio-cultural resources due to construction work	Loss of businesses and income of people operating their business within the existing RoW	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure. In addition the following mitigation measures shall be implemented: Inform all residents and businesses about the nature and duration of work well in advance so that they can make necessary preparations Limit dust by removing waste soil quickly; by covering and watering stockpiles, and covering soil with tarpaulins when carried on trucks Increasing workforce and use appropriate equipment to complete the work in minimum timein the important areas Avoid construction work in sensitive times like festivals near religious places	PIU of MoTR, CSC	PIU of MoTR
Within settlements disproportionate encroachment on poor people's assets.	Loss of wealth and property of poor people. Poor and vulnerable households might be affected.	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure.	PIU of MoTR, CSC	PIU of MoTR
Construction activities in close vicinity to existing infrastructure such as water supply pipes and other facilities, waste water discharge facilities, electricity lines etc.	Damage to infrastructure, supply cuts of infrastructure services.	Measures will be ensured in engineering designing to avoid any disturbance to the existing infrastructure. Prior to construction start the respective service agencies shall be informed about the construction work. Coordinate with respective agencies and provide prior information to the public in case of any required disruption in services during construction	Contractor	CSC; PIU of MoTR
Rehabilitation works within villages and along sensitive receptors such as schools and hospitals.	Noise exceeding applicable noise standards. Vibrations may result in damage to local infrastructure, including private property and local (haulage) roads	For sensitive receptors such as schools and hospitals applicable noise standards shall be complied with as far as technically feasible by means of noise measurements and in case of exceedence of standards, ascribe of time restrictions for construction activities between 6 am and 6 pm. For potential damages to local infrastructure, including private property and local (haulage) roads, compensation procedures will have to be established prior to the beginning of construction and approved by the engineer. In addition grievance redress procedures shall be put in place to facilitate communication betweenthe contractor and potentially affected people. In addition haul routes and construction site access roads should be discussed and jointly approved between the contractor and local officials to minimize the risk of conflicts.	Contractor	CSC; PIU of MoTR
Rehabilitation works along sensitive receptors such as cultural sites.	Vibrations may result in damage to cultural structures.	For sensitive receptors such as cultural sites, prior construction works, the Contractor should apply in writing to the local authorities in defining the protection zones around these sites. Applicable vibration standards shall be complied with as far as technically	Contractor	CSC, PIU of MoTR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
		feasible by means of vibration measurements and in case of exceedence of standards, contractor should strictly utilize equipment with less vibration impact. In addition grievance redress procedures shall be put in place to facilitate communication between the contractor and potentially affected people. In addition haul routes and construction site access roads should be discussed and jointly approved between the contractor and local officials to minimize the risk of conflicts. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing archaeological sites.		
Provide work conditions for the CSC environment specialist	Monitoring of compliance by the contractor with the EMP requirements during construction works	In order to implement monitoring of compliance with the EMP requirements, the CSC environment specialist shall be provided with transport when required and a work place in the office at the construction site	Contractor	CSC, PIU of MoTR
Cultural and historical sites protection.	Potential Construction works impacts on cultural and historical sites and monuments finding chance.	In accordance with the Law of the Kyrgyz Republic on historical cultural heritage in the event of cultural monuments found, Contractor must stop all construction works and report the findings to the local executive authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National Universtiy afte Balasagyn), MoCIT KR. Also Contractor should employ techniques during construction works (vibration) with minimal or no impact to any cultural, historical or archeological structures along the road. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing archaeological sites	Contractor	CSC, PIU of MoTR, MoCIT KR.
OPERATION PHASE				
Increased traffic flow	Elevated levels of gaseous and noise emissions due to increased traffic. In addition increased pedestrian vs. vehicleaccidents due to traffic volume and higher speed as a result of improved road design	Integrate in the engineering design safety features such as speed control signs, proper road markings, streetlights, pedestrian crossing, livestock crossing and other visual means.	Design Consultant, Road police service	CSC
Increased traffic volumes and higher vehicle speeds	Increased risk of accidents with possible spills of harmful substances	Spill-contingency plan A contingency plan or emergency response plan is a set of procedures to be followed to minimize the effects of an abnormal event on the Project roads, such as a spill of oil, fuel or other substances that may harm drinking water resources or have adverse effects on the natural balance of sensitive areas. Additional measures to mitigate risk of accidents and spill of harmful substancesare speed control and weight stations.	DEP-24 of MoTR	MoTR
Damaged drainage or uncontrolled erosion.	Harmful environmental impacts resulting from damaged drainage or uncontrolled erosion.	Routine monitoring of drainage and erosion control at least twice a year.	DEP-24 of MoTR	PIU of MoTR

285. Prior to construction works, the contractor shall provide a comprehensive SSEMP covering the following aspects:

- Dust management which shall include schedule for spraying on hauling and access roads to construction site and details of the equipment to be used. The contractor shall pay a special attention to water spraying in settlements and at repair and construction sites.
- Layout of the work campand details of the proposed measures to address adverse environmental impacts resulting from its installation
- Sewage management includingprovision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses
- Waste management covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations
- Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination
- Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles of topsoil and excess materials, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites for excess materials.
- Emergency response plan (in case of spills, accidents, fires and the like) prior to operation of the asphalt plant
- Method statement or plan for the execution of bridge construction works including measures that will be undertaken to address adverse environmental impacts such as erosion of river embankment and siltation of watercourses that may result from such activities
- Cultural and historical mamnagement plan

286. The SSEMP shall be submitted by the contractor for approval to the Construction Supervision Consultant.

2. Monitoring

2.1. Monitoring plan

287. Environmental monitoring is an important aspect of environmental management during construction and operation stages of the project to safeguard the protection of environment. During construction, environmental monitoring will ensure the protection of embankment from potential soil erosion; borrow pits restoration, quarry activities, location of work sites, material storages, asphalt plants, community relations, and safety provisions. During operation, air, noise, and surface water quality monitoring will be important parameter of the monitoring program.

Table 47: The Environmental Monitoring Plan

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to bemonitored?	When is the parameter to bemonitored? Frequency	Institutional responsibility
Construction stage					
Water quality in surface waters (rivers)	pH, dissolved oxygen, oil products, turbidity, total suspended solids, conductivity, temeperature, lead	Upstream and downstream where the Project road crosses therivers Jumgal (PK 176+600 or PK 1742)	Measurement either directlyin river water with a suitablemeasurement device or sample taking and measurement in a certified laboratory	Second round of baseline monitoring measurements to be conducted before constructionstart. Than on a monthly basis during construction stage	Construction supervision Consultant (CSC)
Noise/ vibration Rehabilitation works within settlements at locations where the Project road runs close to sensitive receptors such as schools, hospitals, mosques, bazars or other sensitive socioeconomic infrastructure.	Prior to construction and during construction activities within identified sensitive hotspots and sensitive receptots close vicinity of sensitive receptors regular control of noise level by portable measure instrument. In case noise standards areexceeded implementation of time restrictions for construction activities	At sensitive receptors within settlements Bashkugandy village, near the school adjacent to the road, RHS (km159+7000); Baizak village, near the shop Adilet, RHS (km 68+000); Chaek - Kyzyl-Zhyldyz boundary, by Kindergarten school (175+50); Kyzyl-Zhyldyz village, near the playground and next to the store, RHS (179+300)	By means of portable noise / vibration measurement device	Second round of baseline monitoring measurements to be conducted before construction start. Than a monthly basisduring construction stage.	CSC
Phisical damage of the Cuitural sites (cemeteries)	Cuitural sites (cemeteries)	Cuitural sites (cemeteries): Complex mausoleums located LHS, 10 meters from the road. 163 km + 600 Monument dedicated to Baizak village (RHS) was erected in this area 20 m from the ROW, 168 km +200Cemetery at the north side of the bypass road (Segment 2) LHS, 50 m from the road PK 1765+50 Cemetery at the north side of the bypass road (Segment 2) LHS, 50 m from the road PK 1766+50 RHS: cemetery beside the road 181 km + 400 RHS: The cemetery beside the road 181 km + 900	Visual observation	Second round of baseline monitoring measurements to be conducted before construction start. Visual observation in construction period where the cemeteries are indicated (in the km). Document the condition of the cemeteries and mausoleums before constructions works.	CSC

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to bemonitored?	When is the parameter to bemonitored? Frequency	Institutional responsibility
Air quality deterioration	Dust, noise, SO2, NOx, CO	Whithin settlements where the Project road comes close to sensitive receptors such asschools, hospitals, mosques, bazars or other sensitive socioeconomic infrastructure. At asphalt plant and at aggregate crusher. Bashkugandy village, near the school adjacent to the road, RHS (km159+7000); Baizak village, near the shop Adilet, RHS (km 68+000); Chaek - Kyzyl-Zhyldyz boundary, by Kindergarten school (175+50); Kyzyl-Zhyldyz village, near the playground and next to the store, RHS (179+300)	By means of suitable portable measurement device.	Second round of baseline monitoring measurements to beconducted before constructionstart. Than on a monthly basis during construction stage.	CSC
Potential tree losses because tree item area is subject to embankment filling.	Trees located within the newly designed embankment.	At respective tree locations.	Inspections; observation. An embankment fill of up to 30 cm at the bottom of the tree stem area can be accepted. A filling up of more than 30 cm will damage the tree and cutting will be necessary. Decision is to be made by the construction supervision engineer.	During construction phase.	CSC control by PIU of MoTR
Top soil preservation	Stockpiling and means of protection	Job site	Inspections; observation	Upon preparation of the construction site, after stockpiling and after completion of works on shoulders	CSC control by PIU of MoTR
Equipment servicing and fuelling	Prevention of spilling of oil and fuel	Contractor's yard	Inspections; observations	Unannounced inspections during construction	CSCcontrol by PIU ofMoTR
Worker's safety and health	Official approval for worker's camp; Availability of appropriate personal protective equipment; Organization of traffic on the construction site Provision of safety training to the staff according to the requirements of the individual work place	Job site and worker's camp	Inspection; interviews; comparisons with the Contractor's method statement	Weekly site visits by the hired Health and safety expert. Unannounced inspections during construction and upon complaint.	CSC
Worker's education on AIDS and STD	Has relevant education been provided?	To be determined by assigned Construction Supervision	To be determined by assigned Construction Supervision	After beginning of works and at appropriate intervals throughoutconstruction	CSC, local health units ofthe Ministry ofhealth
Material supply Asphalt plant	Possession of official approval or valid operation license	Asphalt plant	Inspection	Before work begins	CSC
Borrow areas	Possession of official approval or valid operation license	Sand and gravel borrow pit and / or quarry	Inspection	Before work begins	CSC control by PIU ofMoTR
Material transport Asphalt	Are the truck loads covered or wetted?; Compliance with the	Job site / haul routes	Supervision	Unannounced inspections during work	CSC

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to bemonitored?	When is the parameter to bemonitored? Frequency	Institutional responsibility
Stone	Contractor's method statement (restricted working hours; haul routes) dust suppression methods where required	Job site / haul routes	Supervision spot checks	Unannounced inspections during work	CSC
Sand and gravel		Job site / haul routes	Supervision	Unannounced inspections during work	CSC
Surface water protection	Contractor's compliance with his approved method statement	Bridges and Culverts	Inspection	Unannounced inspections during bridge and culvert works	CSC, SAEPF
Air pollution from improper maintenance equipment Asphalt plant andMachinery	Exhaust fumes, dust	At site	Measurement at asphalt and crushing plants. Regular check certificate of vehicles and equipment.	Unannounced inspections during construction works	CSC
Planting of new road side trees	Regular monitoring andcontrol of successful growth of new planted trees	At locations of new planted trees	Replanting of trees that have died	Monitoring to be conducted inautumn so as to allow for replacement of failures	CSC, control by PIU of MoTR
Operational stage					
Increased road kills of domestic animals due tohigher traffic loads and vehicle speeds	Road kills of animals	Along the new road	Keep records of accidents. In the case that accident hot spots with large mammals are identified, appropriate protective measures shall be elaborated (e.g. reflectors / local fencing, warning signs, speed reductions etc.)	Throughout theYear	Regional Departments of State RoadAdministration (UAD, LUAD, andGDAD BO)
Increased traffic volumesmay increase possible spills of harmful substances	Accidents that cause spills ofharmful substances	Along the new road	Counting of accidents	Throughout the Year	MoTR jointly with Road police serviceof the KR Ministry of home affairs and KR Ministry of emergency situations
Damaged drainage or uncontrolled erosion	Leakages in drainage system and damages due to erosion	Culverts and drainage acilities	Documentation	Throughout theYear	Local MoTR departments
Tree maintenance along the road	Maintenance of newly planted trees	In locations of newlyplanted trees		Throughout theYear	Local MoTR departments jointwith localauthorities

2.2. Budget on Mitigation Measures

288. Most of the mitigation measures require the contractors to adopt good site practice, which should be part of their normal construction contract, so there will be no additional costs to be included in the EMP. Costs of design-related mitigation measures are included in the budgets for the civil works. The primary impact that needs to be mitigated in the overall implementation of the project will be on the affected trees which were due to widening of the carriage way. These trees are mainly common trees such as elm, poplar and black locus. The RAP has identified individual trees to be cut. However in the vegetated areas, an estimate is presented based on accepted convention.

289. In order to have a higher degree of success for replacement of affected trees in the section, 2 saplings of the same or similar species is proposed to be planted. Accordingly, the estimated number of trees and cost for the affected trees to be to be substituted is shown below.

Table 48: Number and Cost for Mitigation of Affected Trees

#	Item	Unit	QTY	Remarks
1	Affected trees due to widening	Each	1230	Project documentation/ Indicated in field inspection for Cutting
2	For 1:2 Ratio ofReplacement	Each	2,460	Estimated Trees to be Planted
3	Average cost of Replacement	Som	1300	Cost of Sapling & Planting
	Total Cost	**Som**	**3,198,000**	**Budgetary Estimate**
	69Som/ 1 USD	**USD**	**$46,891.50**	**Budgetary Estimate**

Note: This cost estimate is as of May 2016

3.1. Budget on Monitoring Activities

290. The estimated cost for the environmental management and monitoring on the consultancy for the entire project construction period of three (3) years is shown in the Table 27 below. This will include fees and other associated cost for management and monitoring of the construction sites and affected areas in the project road. In addition, the main Contractor shall undertake periodic parametric measurements as basis for action to improve their performance on the implementation of measures. Hence, a budget for periodic parametric measurements is hereby included in the Table 28 below.

Table 49: Budgetary Cost for Environmental Monitoring Specialists

Item	Quantity	Unit Cost	Total Cost
Implementation of EMP		US $	US $
International Environmental Specialist (IES)	4 months / 2 years, 12 days third year	14,000	63,000
National Environmental Specialist (NES)	14 months/2 years, 12 days third year	2,500	36,250
Others (travel, per diem, surveys/interviews, reporting, etc.)	LS	20,000	20,000
Total			**109,250**

Note: This cost estimate is as of May 2016

Table 50: Budgetary Cost for Environmental Monitoring Requirements

Item	Quantity	Unit Cost	Total Cost
Implementation of EMP		US $	US $
Periodic Parametric Measurements	78		10,400

6 month a year x 4* point (air) x 2 (years) 1** month	52	150***	7,800
6 month a year x 2* point (water) x 2 (years) 1** month	26	100***	2,600
6 month a year x 4* point (noise - vibration) x 2 (years) 1** month	52	150***	7,800
Total			**28,600**

* - the number of points and measurements may vary
** - 2 years a physical work and 1 year a technical survey (measurements 1 month a year)
** *- the cost of laboratory services may vary

4. Mechanisms for implementation

3.1. Institutional Framework

291. The relevant institutional entities for the project include the KR's Ministry of Finance (MOF), Ministry of Transport and Communication (the EA), Project Implementation Unit (PIU) under MOTR, the State Agency of Environment Protection and Forestry (SAEPF), the State Inspection on Ecological and Technical Safety under the Government of the Kyrgyz Republic (SIETS), the Department for Disease Prevention and State Sanitation and Epidemic Control of the Ministry of Health Protection of the Kyrgyz Republic.

292. MOTR is responsible for transport sector development and is the EA for the project. PIU is working under MOTR and will carry out the responsibilities assigned to MOTR. MOF is the responsible government body for coordination with donors for foreign assistance.

293. SAEPF is a leading state environmental agency responsible for the environmental policy of the country and coordination of environmental activities of other state bodies. Its functions include:

- Development of environmental policy and its implementation;
- Carrying out a state environmental expertise;
- Issuance of environmental licenses;
- Environmental monitoring;
- Delivery of environment information services.

294. SIETS carries out its activity in accordance with the Law "On Procedure for inspection of business entities". SIETS exercises control over compliance in established order of:

- environmental legislation, set rules, limits and standards of environmental management, standards for emissions and discharges of pollutants and waste disposal in the environment;
- requirements of industrial safety in the construction, expansion, reconstruction, modernization, operation, conservation and liquidation of hazardous production facilities;
- requirements of land legislation;
- requirements for safe operation of equipment and facilities for storage and distribution of petrochemicals and gas, cranes;
- requirements of safe use rules in the construction, assembling and commissioning of electrical networks and electrical equipment.

295. The Department for Disease Prevention and State Sanitation and Epidemic Center (DDPSSEC) of the Ministry of Health supervises sanitary and epidemiological welfare of the population, safety of goods and products, environmental compartments and conditions, prevention of harmful impacts of environmental factors on human health. DDPSSEC establishes MPC of chemicals in the environment with regard to the human health safety.

296. The following measures will be taken by the Consultant and by PIU to perform environmental compliance with the EMP and Monitoring Plan during Project implementation:

- The tender and contract documents will clearly set out the contractor's obligations to undertake environmental mitigation measures set out in the Environmental Management Plan.
- The recommended environmental mitigation costs are included as separate items in the Bills of Quantities. This will ensure that there is specific environmental mitigation budget which will be implemented as required. During the procurement, contractors will be encouraged to include these costs in their rates and present the mitigation cost as a line item in the Bill of Quantities. There will be an identified extra payment in the contract to ensure measures are costed and carried out.
- Thecontractor will recruit an environmental, health and safety manager, who will be responsible for implementing the contractors' environmental responsibilities. The manager will also be responsible for health and safety aspects of work sites. Before commencing physical construction, Contractor will prepare site-specific EMPs (SEMPs), submit to Construction supervision Consultant (CSC) for endorsement and IPIG for approval.
- CSC will conduct environmental monitoring and assist PIU in implementing EMP and supervising the implementation of mitigation measures by the contractors.

3.2. Reporting Requirements

297. MoTR will monitor and measure the progress of implementation of the EMP. In this regard semiannual monitoring reports during construction stage will be prepared by the Construction Supervision Consultant and submitted to MoTR within 1 month after the reporting period and then disclosed at IDB and SDF and MoTR websites. Contractor submits to CSC monthly reports and reports on compliance with mitigation measures and other corrective actions. CSC submits to PIU quarterly reports containing a section on safeguard performance.

J. Conclusion and Recommendation

1. Conclusions

298. The better road design and condition of the pavement will decrease operating costs for all vehicle owners, helping to make vehicles last longer. Road safety measures will also be improved by providing new traffic signs, safety railings, and pedestrian and livestock crossings for the road.

Overall the project has significant advantages to the local people and companies operating in the country by providing better access to national and regional markets.

299. At the same time, this project has many work components that can potentially lead to long term, even chronic environmental impacts. These are associated with erosion, tree removal, damage to intersections and roadside access, unaddressed chronic and rising air pollution and noise conditions which are already excessive, inadequate management of large volumes of old asphalt pavement to be removed and inadequate repair and replacement of the more than 41 culverts and 1 bridge along the route. The IEE and its EMP have provided the steps necessary to avoid many of the construction period impacts, by developing good protocols and work programs for managing potential impacts, and will be implemented.

The following tasks, all discussed in detail in the IEE and the EMP material are considered the most important impacts which, if the EMP is followed, could be adequately mitigated.

During the preconstruction period the eight key tasks to be implementedby MOTR, PIU

and CSC will be:

- Insertion of EMP mitigation and monitoring measures into contract specifications;
- Preparation of a list of sections where topsoil conservation works will be required when rehabilitating the road;
- Earthworks Haul Route framework, defining at least was vehicles cannot go;
- Construction period access management and restoration steps, as a basis for use by the contractor, working with the traffic police;
- Tree Inventory, identification of special groves, protection where possible, and cutting a replanting plan;
- Inclusion in road design of public safety and public services features, namely:
  - ✓ Pedestrian crossings and traffic lights
  - ✓ Lighting signage and sidewalks
  - ✓ Bus stops
  - ✓ Livestock passes.
- Provision of technical capacity building.

During the construction period CSC and the contractor(s) will need to:

- Undertake Air Quality and noise measurement field-testing for the full three years and one operating year.
- Contractor to manage all petroleum products and prevent spills, proper disposal.
- Contractor to manage sewage and garbage at work sites at all time
- Provision of basic occupational health and safety items at work sites, including first aid, water, shade and proper gear including hats, shoes and face masks.
- Maximize the reuse or redistribution of the old asphalt.
- Undertake the tree planting and maintenance task as each construction area is vacated; i.e. do not wait until the end of the construction period.
- Implement dust suppression program on all haul roads and at construction sites
- Understand and implement all regulations standards and obtain licenses for all borrow site operations and rehabilitation.
- Enforce occupational health and safety as prescribed by law;
- Inspect all culverts to be sure the re-installation does not lead to chronic downstream scour, and that any diversion and debris have been cleared.

During year 1 of the operating period the CSC and Contractor with input from the RMU will:

- Make certain that all replanted trees are healthy and properly maintained and protected for the winter—this may require strengthen the RMU as there will be up to 10,000 trees to manage.
- Prepare a photo record of all culverts, confirming proper placement and debris removal
- Continue the air quality and noise monitoring for the year
- Examine noise data collected and plan noise attenuation measures such as berms and barriers at sensitive sites.
- Inspect decommissioned borrow areas to confirm rehabilitation and proper closure.
- Monitor value of pedestrian and livestock crossing features, with a view to adjustments/improvement as needed.
- At the end of each period the EMP specifies the completion of progress reports, which will be used to monitor compliance and shape the next stage.

2. Recommendations

- The EMP will be followed carefully and required reporting completed in a timely fashion. MOTR recommends that, based on the noise testing during construction and the first operating year, noise suppression measures be implemented.
- The tree management and maintenance function should be passed to local communities or RMD, until trees have reached 8+ years and do not need careful maintenance.
- CSC and PIU will deliver the training to all active project participants and concentrate giving sound advice to the contractor, especially on the preparation and implementation of the CEWP.
- Shortly after the operating period starts, the CSC and contractor will conduct safeguards compliance check to be sure that all measures required of the contractor have been met.
- This IEE is “living” document and if required, it will be updated taking into account all environmental requirements, and any significant changes will be discussed and agreed to with IDB and SFD.

Annexes

Annex A: Alignment Sheet

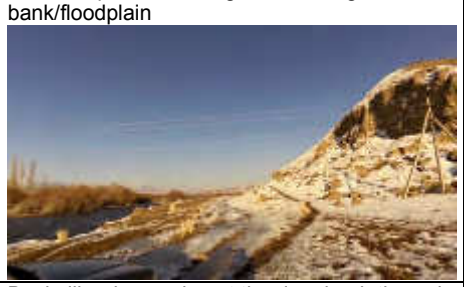
The result of the site visits by the international and local environmental specialists are summarized in an Alignment Sheet. This shows relevant environmental features which can be of concern during the implementation of the road. For the section Bashkugandy (km 159) to Kyzyl-Zhyldyz (km 183) which includes the Bypass Road – Option 2A, the Alignment Sheet is shown below.

Alignment Sheet Information

№	Section	Description	Parameter	Comments
Section: Bashkugandy– Kyzyl-Zhyldyz				
1	161 km	Bashkugandy village has 2 mosques, 2 school buildings: one for primary school, the other for middle and high school. The school has around 550 students and there is kindergarten for 30 children from 3 to 5 years old. (40 m from the road)  	Air sampling (Dust, SO2, NOx, CO), measurement of noise and vibration	Physical analysis and instrumental measurements Possible extra measures for social impacts/concerns
	161 km +600	Shop (LHS) Sensitive receptor (15 meters from the road).		
	161 km + 700	Monument of Victory Day (LHS), Mosque (RHS)Sensitive receptor (12m from the road).		
2	Along the Project road	Nearly alongside the wholeProject road tree plantations are stretching on bothsides. Trees need to be newly planted forcompensation. 		Estimated number of Trees to be cut 1250. To minimize tree cutting, the road width expansion can be done on one side.
3	163 km +600	LHS: Complex mausoleums located 10 meters from the road.		Measures to preserve structures and potential Archaeological Finds. Utilization of special construction techniques with low impact to the

№	Section	Description	Parameter	Comments
				structures.
4	166 km + 600	Monument dedicated to Baizak village (RHS) was erected in this area		Need to be verified by historical experts
5	168 km +200	Start of the village Bayzak 	Air sampling (dust, SO2, NOx), measurement of noise and vibration	Possible extra measures for social impacts/concerns
Bypass Road: Chaek to Kyzyl-Zhyldyz				
6	PK 1724	Start of the Bypass curve alignment on existing alignment 		No ecological and physical environmental impact. Social concerns will be on safety during construction and operation
7	PK 1727	The bypass road gets onto elevated areas between houses; with the residents raising animals as well. The road layout plan identified that there was a vegetable garden; however this was not found since the inspection was done at the end of winter. Tire tracks were obvious in this spot and cuts through line of scrubs and bushes. Sensitive hotspot. 		Vegetable planting would have been introduced and the limited traffic already is a cause of disturbance prior to the construction of the road. Hence, ecological disturbances were already introduced by the residents and the limited traffic. Scrubs are local vegetation and no ecological significance. These can be relocated during construction. These scrubs are quite abundant in the area. This spot is basically a residential area.
8	PK 1728 – PK 1730	This is the summit of this elevated area and the bypass road descends onto the valley of agricultural lands. Residential houses are found on the right (west of the alignment) while shrub plantations are found on the left. A dry ditch was also found.		These shrub trees can be replaced since they are quite abundant. The alignment seems avoiding or minimizing impact on them as much as possible. The presence of people, animals and agricultural activities

№	Section	Description	Parameter	Comments
				clearly establishes the prevalent anthropogenic influences.
9	PK 1730 – PK 1734	The bypass road crosses hayfields and animals are grazing in the area. Then the road proceeds at the end of the line of trees toward the low hill. 		To minimize socio-economic impacts animal and agricultural crossing may be necessary for the safety of people and livestock. The presence of people, animals and agricultural activities clearly establishes the prevalent anthropogenic influences.
10	PK 1734 –PK 1740	The bypass road passes in between low hills on the left and agricultural lands on the right. Tire tracks were obvious in this along this alignment 		The presence of people, animals and agricultural activities clearly establishes the prevalent anthropogenic influences. The usage of this lineage by vehicles elevates already the disturbance to this area.
11	PK 1741	Sort of depressed basin (around 2-3 m) which could have been caused by the meanders of the Jumgal River. This is frequented by grazing animals and herdsmen. The far end is the north river bank. A dirt road runs along the periphery of this depression. 		This pasture land is at the edge of the residential areas and does not have any ecological significance. The local traffic grazing activities and residences have clearly established the prevalent anthropogenic influences.
12	PK 1742	Bridge point (looking south) crosses the Jumgal River. The bridge will be around 30m at this spot. At the opposite side of the river, 3 residential structures could be seen. 		Temporary impacts will be expected during construction of bridge approach and bridge structure at this point. The spot is part of pasture land and does not have any ecological significance.
13	PK 1743	Bridge point (looking north) crosses the Jumgal River. The bypass road will be in between residential structures at this point		Temporary impacts will be expected during construction of bridge approach and bridge structure at this point. The spot in between residences

№	Section	Description	Parameter	Comments
				and does not have any ecological significance.
14	PK 1744 & PK 1746 – PK 1747	As shown on alignment layout plan a vegetable garden was found in this spot		Agricultural activities has introduced disturbance in the area.
15	PK 1744 +60	Earthen channel with water diverted from Jumgal River. The bypass road seemed to coincide with the existing local access road. 		A pipe culvert is provided for this water channel. The local access seemed well established already. Thus, anthropogenic influences are already introduced in the area.
16	PK 1747 – PK 1754	The bypass road runs along the river bank/floodplain and seemed to coincide with the local access road. 		It was mentioned by the AyilOkmaty that local residents come to fish also in the river. The local access seemed well established already. Thus, anthropogenic influences are already introduced in the area by grazing animals, people presence and local traffic.
17	PK 1754	Narrow spot in the alignment along the river bank/floodplain 		For safety and to allow for the designed carriageway, the rock mass may have to be cleared. Impacts on water quality may be expected during the construction phase but can be mitigated.
18	PK 1755 – PK 1758	Basin like depression at the river bank through which the Bypass will traverse to connect to existing village road. 		Physical disturbance has already been introduced perhaps by material extraction. Biological/ecological impacts are not expected.

№	Section	Description	Parameter	Comments
19	PK 1758	The bypass road ascends from the river bank area at this point 		Impacts on properties will be covered in the LARP. The trees can be replanted or replaced as they are not ecologically significant. Earthwork impacts will be temporary.
20	PK 1758 – PK 1773	Around 1.5 km through the outskirt of Chaek village, sensitive hotspot with residential area. Most of the residences are along the northern part gravitating toward the main road of Chaek. Sensitive hotspot. 	Dust, Noise, Vibration, SO2, NOx	Impacts on private properties will be addressed in the LARP. No ecological impact. Mainly social impact during construction phase.
21	PK 1765+50	Cemetery at the north side of the bypass road (first half; segmented by a local road to Chaek commercial district) 		Measures to preserve structures
22	PK 1766+50	Cemetery at the north side of the bypass road (second half; segmented by a local road to Chaek commercial district) 		Measures to preserve structures
23	PK 1773	Junction area as the bypass road swerves to the left from the village road to an existing rural back road 		Impacts on properties will be covered in the LARP. Physical disturbance has already been introduced by agricultural activities. The area is within the residential zone of Chaek. No ecological impact is anticipated.
24	PK 1778 + 28	Artesian Pipe along the bypass road alignment		The pipe will have to be relocated and/or improved for public

№	Section	Description	Parameter	Comments
				use
25	PK 1787	The bypass road passes near pond area at the south side. During the inspection in May 2016, iris halophila pall was found – however not include in the Red Data Book list. 		The pond is an impoundment and the distance is sufficient for it to be protected during construction. In addition, mitigation measures can be designed in SSEMP to minimize impacts.
26	PK 1787+50	Bypass road traverses the yard of meteorological station 		This facility can be relocated to better undisturbed area. No perceived ecological impacts
27	PK 1793 – PK 1796	The bypass road traverses 30m at the back of kindergarten school and cultivated agricultural lands. Fence will be affected. Sensitive receptor. 	Future spot for measurements of air quality and noise/vibration	School is a receptor
28	PK 1797	The bypass road joins with the main road. End of the Bypass 		No ecological and physical environmental impact. Social concerns will be on safety during construction and operation
(Back to Road) Section: Bashkugandy– Kyzyl-Zhyldyz				
29	180 km + 500	Line of trees along the road.		Special measures to protect the trees
30	181 km + 400	RHS: cemetery beside the road		Special measures should be in place to protect structures
	181 km + 800	Shop (LHS)		Possible extra measures for social impacts/concerns

№	Section	Description	Parameter	Comments
	181 km + 900	RHS: The cemetery beside the road		Special measures should be in place to protect structures
31	182 km + 800	Sports complex. Sensitive receptor. (RHS, 20m from the Road) 	Air sampling (dust, SO2, NOx), measurement of noise and vibration	Possible extra measures for social impacts/concerns
32	183 km	2 shops(RHS, 10m from the road)		Possible extra measures for social impacts/concerns
	183 km +100	Bakery (RHS, 10m from the road)		
	183 km + 200	Dental clinic (RHS, 10m from the road)		
33	184 km +700	End of the village Kyzyl- Zhyldyz		Possible extra measures for social impacts/concerns

Annex B - List of Attendees in the Public Consultation in Chaek

18 Mar. 2016

Attendance sheet:

No.	Full name	Position	Place of residence / Telephone	Signature
1	Smodiyarov T.	Chief Architect of Jumgal region	Chaek village	/signed/
2	Eshenkulov A.	Land specialist of Baizak v/a	Baizak village / 0701 474777	/signed/
3	Ryskulov M.	Pasture Committee of Baizak v/a	Baizak village	/signed/
4	Jakypbekov T.	Baizak head of MOS	Baizak village / 0701 771461	/signed/
5	Jumushaliev O.	Head of Chaek v/a	Chaek village / 0709 743811	/signed/
6	Kojomberdieva B.	Volunteer of Chaek v/a	Aktatyr village / 0703 897845	/signed/
7	Aitbugueva R.	Nursery garden of Chaek v/a		/signed/
8	Kirkieva Ch.	Nursery garden of Chaek v/a	Aktatyr village / 0773 670313	/signed/
9	Moldaliev A.	Land specialist	Kyzyl-Zhyldyz village/ 0708 545433	/signed/
10	Baibashova A.	Kyzyl-Zhyldyz v/a	71 Modubaev Street, 0705 202980	/signed/
11	Abdykadyrov S.	Chaek, Aktatyr	7b Sartbaev Street	/signed/
12	Nasyranbekov K.	Kyzyl-Zhyldyz v/a	Kuchuk Street, 0705 870682	/signed/
13	Ismailov B.	Kyzyl-Zhyldyz v/a	Kuchuk Street, 0770 372434	/signed/
14	Jumataev R.T.	Kyzyl-Zhyldyz v/a	9 Akiev Street, 0705 482919	/signed/
15	Uzagashev T.A.	Chaek v/a	83 Ryskulov Street	/signed/
16	Nuralyuulu M.	Kyzyl-Zhyldyz v/a	7 Beishenkulov Street	/signed/
17	NusupovTynybek	Kyzyl-Zhyldyz v/a	Beishenkulov Street	/signed/
18	DebishevTologon	Nursery garden of Chaek v/a	Land plot #13	/signed/
19	KunbashevTemirkan	Nursery garden of Chaek v/a	#212	/signed/

Список присутствующих

ФИО	Должность	Место проживания	Телефон	Подпись
Сманадиярова Т	Гл Арх. Шуланов р-на	с. Чаек		
Ашекбуханов А	Нерадис Байзак а/о	с Байзак	0701474777	
Рысулов М	Шайлы комитет Байзак а/о	с Байзак		
Жаныбаев Т.	Байзак маз ВУС	с Байзак	0701771461	
Шушпанов О	Чаек а/о бастығы	с Чаек	0709 713811	
Кожомбердиева Б	Чаек Ветеринарет	Актобина	0703-89-78-45	
Кайтбугуева Р	Чаек питомник			
Жиркисева Ч.	Чаек Питомник	Актобе	073-67-03-13	
Молдалиев А	Казыл-Ж. шер здис	Аксуй №9	0708-54-54-33	
Тлеубаев А	Ж.Ш.	ул. Медуубаева №1		
Мадыкенов О.	Чаек Ак-Тобе	ул. Ф. Сартыкова 8		
Жаспрайбеков К	Кызыл-Жулдыз Кучук	ул Кучук	0705 87-06-82	
Ермаметов Б	Кызыл-Жулдыз Кучук	ул Кучук	0730 372434	
Жеумолаев Б.Т	Кызыл-Жулдыз	ул К. Лиева 9	0705 482519	
Узакбаев Т.А	Чаек а/о	с. Чаек ул. М. Рыскулова 83		
Нурали уулу А	Кызыл-Жулдыз ул	К-Жулдыз ул Абейшенкулова		
Нусупов Жанибек	Кызыл-Жулдыз	К-Жулдыз ул А. Бешенку		
Ербашев Талгат	Чаек айыл Питомник	уч. № 13		
Курбанов Самирхан	Чаек айыл Питомник	Д212		

Annex C – Written Comments, Recommendations and Questions

Name: A. Baiboshova
Residential address: No.71 I. Modubaev
Proposals concerning the road rehabilitation project:
Please arrange zebra crossing for people, and cattle crossing for animals
Questions related the road rehabilitation project:
Will houses located on both sides of the road not be damaged during the construction of the road?

Name: TemirkanKunbashev
Residential address: 2/2 Pitomnik Street, Aktatyr village
Proposals concerning the road rehabilitation project:
It would be good if the road section would pass a little bit far from arable lands.
I wish the Contractor hired local people; we are ina village where poor people live.
Questions related the road rehabilitation project:
Will the owners of houses, sheds to be destroyed because of the road, be compensated before winter?

Name: ChynaraOmurovnaKirkeeva
Residential address: 4/2 Pitomnik Street, Aktatyr village, Chaek
Proposals concerning the road rehabilitation project:
Questions related the road rehabilitation project:
Is it possible to arrange the road through swampy areas?
How the compensation will be solved; together with land plot owner or not?
Will the owners of houses, sheds to be destroyed because of the road be compensated before winter?

Name: R. Aitbugueva
Residential address: 13 Pitomnik Street, Aktatyr village, Chaek
Proposals concerning the road rehabilitation project:
Please inform owners of houses/structures to be destroyed due to road as soon as possible.
Questions related the road rehabilitation project:
Will the Contractor arrange for cattle crossing for animals to cross safely?

Name: DerbishovTologon
Residential address: 3 Pitomnik Street, Aktatyr village, Chaek
Proposals concerning the road rehabilitation project:
Questions related the road rehabilitation project:
Will the Contractor arrange for bridges to enable people and animals to cross safely?
Will the structures to be built be determined in advance?
People of Aktatyr village graze their animals around the section. Pastureland is being destroyed, is there any compensation for that?

Name: BubumalimKozhomberdieva
Residential address: 6 Pitomnik Street, Aktatyr village, Chaek
Proposals concerning the road rehabilitation project:
It would be good if the section passed a little bit far from arable lands
I wish the Contractor hires local people
Questions related the road rehabilitation project:
Pastureland is being destroyed; will the village be paid for the pasture?

If owners of houses/structures to be destroyed because of the road are determined, will they be provided with land before winter?

Name: Orozbek
Residential address: Chaek
Proposals concerning the road rehabilitation project:
Install road signs
Arrange cattle crossing under the road for animals
Questions related the road rehabilitation project:
Pastureland is being destroyed; will the village be paid anything for pasture?
Will the Contractor provide for cattle crossing under the road (underpass) for animals?
How wide will the road be?
Will the Contractor install road signs?

Name: S. Abdykadyrov
Residential address: Aktatyr village, Chaek
Proposals concerning the road rehabilitation project:
Please arrange meeting with each owner of buildings/structures to be destroyed due to reconstruction of the road.
Questions related the road rehabilitation project:

Name: B. Ismailov
Residential address: Kuchuk village, Kyzyl-Zhyldyz
Proposals concerning the road rehabilitation project:
Questions related the road rehabilitation project:
Why is it not possible to arrange bypass road around the Kyzyl-Zhyldyz?
How will people of Kyzyl-Zhyldyz cross the road?
There are lands belonging to Kyzyl-Zhyldyz. Adjacent to them, the Land Distribution Fund has 45 ha. of land over there. Why cannot you use those lands to arrange a bypass road?

Name: AmanturMoldaliev
Residential address: 9 Akiev Street, Kyzyl-Zhyldyz village
Proposals concerning the road rehabilitation project:
Questions related the road rehabilitation project:
Will the Contractor arrange for cattle crossings in Kyzyl-Zhyldyz area?
Will the Contractor build bypass in 2-3 places for pedestrian to cross the road?
Who will decide on compensation matters (allocation of another land plot instead of damaged land plot)?

Annex D – Transcript of the video recording: in Chaek, Jumgal District

Woman in a scarf:

We have arable land, which is located at 20 m away from the road to be reconstructed. I am afraid that the road will have negative effect on our harvest. What can say about it?

My second question is whether the Contractor will hire local people or not. I am not sure, but insurance payment will be paid for villagers. Is there any possibility to allocate funds to the village? I have asked three questions.

Mr.Ruslan, IPIG/MoTR:

Concerning the 1st question: We will not build a new road. We will reconstruct the old existing road that people are currently using. Besides it, there are many places, where arable lands are located close to highways with huge traffic. Nobody has noticed any negative impact yet.

As for the second question, the contract has not been concluded yet. Specialists are currently conducting feasibility study to identify whose structure (fence, house, shed etc.) will be destroyed/shifted. After completion of this process, there will be prepared a document, which shall state what percentage of local will be hired for work. Workers will be hired according to the Labour Code of the Kyrgyz Republic.

As for the third question: the road is not a commercial road. Its purpose is to improve the life of people living in this region, to reduce the cost of passenger and cargo transportation between southern and northern regions by providing direct access. The better the road, the less money you will spend for car repair.

Man, whose house will possibly be removed:

I am from Kyzyl-Zhyldyz village. Why have not you invited people living in my village? You have invited people from Chaek village, which will be bypassed. None of structures will be removed / shifted in Chaek village thanks to bypass road. However, my house is going to be removed. I have been building it for many years and when I have almost finished it, you are going to destroy it. Why should vehicles cross by land plot? There are many share lands around Kyzyl-Zhyldyz village, they belong to government and the government may take them despite they are arable lands. They can take my house and you think they cannot take those lands. Why donors allocating 400 000 000 USD cannot add some 10 0000 000 USD to arrange bypass road around Kyzyl-Zhyldyz?

Mr.Ruslan, IPIG/MoTR:

The Project was not started yesterday. We have passed a long way and now we are conducting a feasibility study. Before it, people/village authorities were asked to submit their proposals, even if they were about arranging bypass roads. You are asking about making a bypass road now, when almost everything has been completed. Besides it, Mr. Sam considers only environmental matters. Specialists will meet with you and identify what part of your structure will be removed, consequently you will be compensated.

Man, whose house will possibly be removed:

I have built that house with my own hands. I do not need your compensation. If I were rich, I would have already built that house. You can build your road about 30 m away from my house.

Lola Shatirishvili, resettlement specialist:

Our specialists met you yesterday. Is surname Ismaylov or Ismailov?

Man, whose house will possibly be removed:

Ismailov

Mr.Ruslan, IPIG/MoTR:

I was told that one house was on the junction of the bypass road and main road. Now I understand that house is yours. I was informed today that you had been building your house for about 10 years and were about to finish it this year.

Man, whose house will possibly be removed:

I do not have another land plot. You are going to destroy my house when I almost finished it. I have no place to go. I shall burn myself, I don't care. If you destroy my house, there will be no need for me to live further.
Mr.Ruslan, IPIG/MoTR:
No one is saying that your house will be destroyed. Please, do not go to extremes.
Man, whose house will possibly be removed:
If the Government decides to take my house, it will do it without hesitation. I have no other place to go, I shall kill myself and I do not care.
Mr.Ruslan, IPIG/MoTR:
Mr.Ismailov, let's check everything in place. Besides it, I would like to underline that today we are considering environmental matters. Resettlement matters will be considered next time during which houses/structures to be removed/shifted will be identified in detail.
Head of villages, clean water management department representatives, I asked you to provide written proposal/request concerning how many pipes should be laid and at what place of the road they should be laid. Today I repeat once again, please submit the list of structures to be built/laid under the road or above it.
Architect:
We agreed that every village should provide a list of needed utilities to us. We shall coordinate them with our map/design, develop a detailed design and submit the same to them. What I am telling includes zebra crossing as well.
Mr.Ruslan, IPIG/MoTR:
Dear people, I told you last time to provide your written proposals concerning traffic lights, crossing zebras etc. last time. Today I repeat again, submit your proposals in written. You are doing it verbally. Please do it in written/officially.
Lola Shatirishvili, resettlement specialist:
I have a statement; please listen to me. My team members met Ismailov, took pictures of his house, passport and provided required information to him. It is not good to tell a lie and make such statements. Unfortunately, Mr, Ismailov have no documents proving that the land plot and house belong to him. However, if any structure is destroyed/removed, it will be compensated according to the construction price, regardless on the type of structure.

Annex E – Results of laboratory analysis

1. Air quality

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик-Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПРОТОКОЛ
АНАЛИЗА ПРОБ АТМОСФЕРНОГО ВОЗДУХА

№ 220-235

1. Наименование предприятия, организации (заявитель):
Иссык-Кульская, Нарынская, Чуйская области
Автодорога «Балыкчы – Кочкор – Жумгал - Суусамыр»

2. Место отбора проб:

220-Кольцевая г.Балыкчы(нач.уч.)	*228-с.Дыйкан(школа)*
221-с.Таш-Сарай (жил.дом)	*229-с.Байзак(маг.Адилет)*
222-с.Кок-Жар(маг.Рахат)	*230-с.Чаек (дом ветеранов)*
223-с.Чекилдек (маг.Ак-Жол)	*231-с.Кызыл-Жылдыз(спорт.компл.)*
224-с.Ак-Учук (мечеть)	*232-с.Кызыл-Ой (школа)*
225-с.Жумгал (школа)	*233-с.Кожомкул (школа)*
226- с.Куйручук(маг.Азамат)	*234-с.Суусамыр(мил.пункт)*
227-с.Туголсай (маг.Кутман)	*235-с.Тунук (школа)*

3. Цель отбора проб: *Определение концентрации загрязняющих веществ в атмосферном воздухе*

4. Кем отобраны пробы: *гл.спец. Райкеевой Р.Н., спец. Жаманаковой А.Н.*

5. Дата и время отбора проб: *30.11.- 02.12.2015г., с 10ч.00мин.-17ч.00мин.*

6. Характер отобранных проб: *разовый*

7. Метод анализа: *1. Руководство по контролю загрязнения атмосферы РД 52.04. 186-89*

8. Даты проведения испытаний: *04.12.- 10.12.2015г.*

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПАСПОРТ НА ПРОБУ

1. **Наименование, адрес объекта:** Иссык-Кульская, Нарынская, Чуйская области, автодорога „Балыкчы - Кочкор - Шопоков - Суусамыр"
2. **Место отбора проб:** 1. Кольцевая г. Балыкчы, 2. с. Таш-Солгон (напр. жог. домов), 3. с. Кок-Жар (маг. „Рахат"), 4. с. Чолпон (маг. „Ак-Кол"), 5. с. Ак-Чий (мечеть), 6. с. Шопоков (школа), 7. с. Кутузук (маг. „Арлан"), 8. с. Тюлегай (маг. „Кутман"), 9. с. Дюйшен (школа), 10. с. Байгак (маг. „Ромео"), 11. с. Чаек (дом встр.), 12. с. Кызыл-Шыбыр (спорт. площ.), 13. с. Сосновка (школа), 14. с. Кокомерен (школа), 15. с. Суусамыр (маг. „Нурс"), 16. с. Зукук (школа)
3. **Цель отбора:** Определение концентрации загрязняющих веществ в атмосферном воздухе
4. **Характер отобранных проб:** разовые
5. **Условия окружающей среды:** ясно, солнечно
6. **Условие отбора проб:**
7. **Дата отбора проб:** 30.11 - 02.12.2015г., с 10⁰⁰ - 17⁰⁰
8. **Метод отбора проб:** *1.РД 52.04.186-89 "Руководство по контролю загрязнения атмосферы". 2.ГОСТ Р 50820-95 Оборудование газоочистное и пылеулавливающее. Методы определения запыленности газопылевых потоков.*

Представитель УЭМ (должность, фамилия) Гл. спец. Райсова Р.Н.

Госинспектор (должность, фамилия) спец. Толеманкова А.Н.

Представитель предприятия (должность, фамилия) инженер компании КОСКЗ Асанкулова К.

Наимен-е загряз-в	Ед. изм.	Данные анализа по точкам												
		220	Прев. ПДК макс. раз.	221	Прев. ПДК макс. раз.	222	Прев. ПДК макс. раз.	223	Прев. ПДК макс. раз.	224	Прев. ПДК макс. раз.	225	Прев. ПДК макс. раз.	ПДК макс. раз.
Диоксид серы	мг/м³	0,05± 0,006	-	<0,05		<0,05	-	<0,05	-	<0,05	-	<0,05	-	0,5
Диоксид азота	мг/м³	0,022± 0,004	-	0,027± 0,005	-	<0,02	-	0,023± 0,004	-	0,017± 0,003	-	0,018± 0,003	-	0,085
Взв.вещ-ва (пыль)	мг/м³	0,29± 0,07	-	<0,26	-	<0,26	-	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,5
Наимен-е загряз-в	**Ед. изм.**	**226**	**Прев. ПДК макс. раз.**	**227**	**Прев. ПДК макс. раз.**	**228**	**Прев. ПДК макс. раз.**	**229**	**Прев. ПДК макс. раз.**	**230**	**Прев. ПДК макс. раз.**	**231**	**Прев. ПДК макс. раз.**	**ПДК макс. раз.**
Диоксид серы	мг/м³	<0,05		<0,05	-	<0,05	-	0,05± 0,006	-	<0,05	-	<0,05	-	0,5
Диоксид азота	мг/м³	<0,02	-	0,017± 0,003	-	0,029± 0,005	-	0,025± 0,005	-	0,015± 0,003	-	0,011± 0,002	-	0,085
Взв.вещ-ва (пыль)	мг/м³	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,5

Наимен-е загрязн-в	Ед. изм.	Данные анализа по точкам										
		232	Прев. ПДК макс. раз.	233	Прев. ПДК макс. раз.	234	Прев. ПДК макс. раз.	235	Прев. ПДК макс. раз.			ПДК макс. раз.
Диоксид серы	мг/м³	0,03± 0,004	-	0,043± 0,005	-	0,04± 0,005	-	0,037± 0,007	-			0,5
Диоксид азота	мг/м³	0,021± 0,004	-	0,027± 0,005	-	0,031± 0,006	-	0,035± 0,006	-			0,085
Взв.вещ-ва (пыль)	мг/м³	<0,26	-	0,28± 0,07	-	<0,26	-	<0,26	-			0,5

Главный специалист **Т. Садыкбеков**

Исполнитель не несет ответственности, если проба отобрано самим заказчиком
Перепечатка протокола без разрешения испытательной лаборатории запрещена
Протокол испытаний касается только образцов, подвергнутых испытаниям

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ
КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА
ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик- Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

05/178 от 03.12.2015г

Директору
KOCKS CONSULT GMBH
Карстен Гризе

Управление экологического мониторинга ГАООС и ЛХ при ПКР не может выдать результаты по окиси углерода (СО) в атмосферном воздухе по причине непригодности газоанализатора ПГА-200.

Справка о непригодности прибора ПГА-200 прилагается на 1 л.

Начальник **Б.Маматаиров**

2. Water quality

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ
КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА
МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА
ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И
ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик- Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

Аттестат аккредитации
№ KG 417/КЦА.ИЛ.049
от 05. 04. 2013 г.
***-метод не аккредитован**

ПРОТОКОЛ
АНАЛИЗА ПРОБ ВОДЫ

№ 513-519

1. Наименование предприятия, организации (заявитель);
Иссык-кульская, Нарынская, Чуйская обл., автодорога Балыкчи-Кочкор-Жумгал- Суусамыр.

2. Место отбора проб;
513- р.Чу, с. Таш-Сарай (мост)
514-р.Чу, гидропост
515-р. Джоон-Арык, с.Кок-Жар(мост)
516-р.Жумгал, с. Чаек (мост)
517- р. Кокомерен, с. Арал (мост)
518- р. Кокомерен, с.Кызыл-Ой (мост)
519-р.Каракол, с. Кожомкул (мост)

3. Цель отбора проб; *Определение прозрачности, нефтепродуктов*

4. Кем отобраны пробы; *Спец.УЭМ Жаманаковой, Райкеевой*

5. Дата и время отбора проб; *30.11-02.12.2015 г., 10.00-17.00*

6. **Дата(ы) проведения испытаний;** *02.12.2015 г.*

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПАСПОРТ НА ПРОБУ
(ВОДА)

1. **Наименование, адрес объекта:** Иссык-Кульская, Нарынская, Чуйская области автодорога „Балыкчы – Бишкек – Кызыл-Суу – Сусамыр"
2. **Место отбора проб:** 1 р. Чу, с Таш-Сарай (мост), 2. р. Чу, гидропост, 3. р. Джон-Арык, с Кок-Жар (мост), 4 р. Кызыл, с Чаек (мост), 5. р. Косомдун, с Арал (мост), 6. р. Косомдун, за с. Кызыл Ой (мост), 7. р. Каракол, за с Кенсолуу (мост)
3. **Цель отбора:**
4. **Характер отобранных проб:** розовый
5. **Условия окружающей среды** ясно, солнечно
6. **Дата отбора проб:** 30.11 – 02.12.2015г, с 10⁰⁰ – 14⁰⁰
7. **Метод отбора проб:** *ГОСТ Р 51592-2000 «Вода. Общие требования к отбору проб»; НВН 33-5.3.01-85 Инструкция по отбору проб для анализа сточных вод*

Представитель УЭМ (должность, фамилия) Специалист Жаманакова А.Н.

Госинспектор (должность, фамилия) Асмолова Н.

Представитель предприятия (должность, фамилия) инженер КОСКС

Наименование ингредиентов	Ед. изм.	Данные анализа по точкам							ПДК		НД
		513	*514*	*515*	*516*	*517*	*518*	*519*	+	++	
Прозрачность*	См.	*41*	*37*	*43*	*36*	*40*	*37*	*32*			СЭВ ч.1 М. 1977
Нефтепродукты	мг/л	*<0,05*	*<0,05*	*<0,05*	*<0,05*	*<0,05*	*<0,05*	*<0,05*	**0,05**	**0,3**	ПНД Ф 14.1:2:4.128-98

Главный специалист **С.В.Янова**

+Перечень рыбохозяйственных нормативов ПДК и ОБУВ вредных веществ для воды водных объектов, имеющих рыбохозяйственное значение. Контроль качества поверхностных вод, Госкомитет России по рыболовству, Москва 1999 г

++ГН 2.1.5.1315-03, ПДК химических веществ в воде водных объектов хозяйственного и культбытового водопользования, Минздрав России, Москва, 2003 г.

Исполнитель **не несет ответственности**, если проба отобрана самим заказчиком.
Перепечатка протокола без разрешения испытательной лаборатории **запрещена.**
Протокол испытаний касается **только** образцов, подвергнутых испытаниям.

3. Noise

Аттестат аккредитации Кыргызского центра аккредитации
№KG 41/КЦА .И.Л.097 от 06.10.2010г.

Группа по контролю физических факторов Департамента госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики

ПРОТОКОЛ ИЗМЕРЕНИЕ ШУМА
№ 81 от «03» декабря 2015 г.

Юридическое лицо, индивидуальный предприниматель или физическое лицо, где производится измерения **KOCKS проект АБР TA 48401-002**

(наименование и юридический адрес)

Объект, где производятся измерения. **Альтернативная автодорога Север-Юг**
(наименование, фактический адрес)
Балыкчы-Кочкор-Чаек-Суусамыр ч-т суусамыр

Наименование средств измерений и сведения о государственной поверке:

Наименование средства измерения	Номер	Свидетельство о поверке		Поверено до
		номер	дата	
Октава 101А	№ 04А445	№592	16.03.2015г.	16.03.2016г.

1. Нормативная документация, в соответствии с которой проводились измерения

СН 2.2.4/2.1.8.562-96 «Шум на рабочих местах, в помещениях жилых, общественных зданий и на территории жилой застройки»

Источники физических факторов и их характеристики:
автомашины

общее количество страниц 3 страница 1

Результаты измерений:

№	Место измерений	Характер шума						Уровни звукового давления в дБ в октавных полосах со среднегеометрическими частотами в Гц										
		По спектру		По времени														
		Широкополосный	Тональный	постоянный	Колебл	прерывистый	импульсный	31,5	63	125	250	500	1000	2000	4000	8000	Уровень шума (дБ А)	
1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	20	
1	Г. Балыкчы	–				+											43,1	факт
																	70	ПДУ
																		прев
2	С. Таш-Сарай	+				–											40,2	факт
																	70	ПДУ
																		прев
3	С.Кок-Жар	–				+											57	факт
																	70	ПДУ
																		прев
4	С.Чекилдек	+				–											68,1	Факт
																	70	ПДУ
																		прев
5	С.Ак-Учук	+				+											67,3	Факт
																	70	ПДУ
																		прев
6	С.Жумгал	+				–											69	факт
																	70	ПДУ
																		прев
7	С.Куйручук	+				+											58	факт
																	70	ПДУ
																		прев
8	С.Туголсай	+				+											53	факт
																	70	ПДУ
																		прев
9	С.Дыйкан	+				+											42,7	Факт
																	70	ПДУ
																		прев
10	С.Байзак	+				+											63,2	факт
																	70	ПДУ
																		прев
11	С.Чаек.	+				+											53	факт
																	70	ПДУ
																		прев
12	Конец с. Кызыл Жылдыз	–				+											55	факт
																	70	ПДУ
																		прев
13	с.Кызыл-Ой	+				–											52	факт
																	70	ПДУ
																		прев

общее количество страниц _3_ : страница _2_

Результаты измерений:

№	Место измерений	Характер шума: По спектру: Широкопол.	Тональный	По временным: постоянный	Колеб.	прерывистый	импульсный	Уровни звукового давления в дБ в октавных полосах со среднегеометрическими частотами в Гц: 31,5	63	125	250	500	1000	2000	4000	8000	Уровень шума (дБ А)	
1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	20	
14		+				+											20	
	С.Кожомкул																42	Факт
																	70	ПДУ
15		+				+												прев
	С.Суусамыр																55	факт
																	70	ПДУ
16		+				+												прев
	С.Тунук																54	Факт.
																	70	ПДУ
		+				–												прев
		+				–												
		+				+												
		+				+												

Уполномоченный представитель объекта, присутствующий при проведении измерений: фамилия, имя, отчество, должность Асаналиева Н. Эколог проекта

подпись _____

	Должность	ФИО	Подпись
Измерения проводил(и)	Санитарный врач	Арзыкулов Ж.Т.	
Руководитель лаборатории:			

Протокол составляется в двух экземплярах. 1-й экземпляр выдается по месту требования, 2-й экземпляр остается в лаборатории.

Заключение По результатам измерений уровень шума вдоль дороги не превышает предельно-допустимого необнаружены.

Основание: СН 2.2.4/2.1.8.562-96 «Шум на рабочих местах, в помещениях жилых, общественных зданий и на территории жилой застройки»

Санитарный врач _____ **Арзыкулов Ж.Т.**

общее количество страниц _3_ : страница _3

4. Vibration

Аттестат аккредитации Кыргызского центра аккредитации
№KG 41/КЦА .И.I.097 от 06.10.2010г.

Группа по контролю физических факторов Департамента госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики

ПРОТОКОЛ ИЗМЕРЕНИЕ ВИБРАЦИИ
№ 82 от «03 » декабря 2015 г.

Юридическое лицо, индивидуальный предприниматель или физическое лицо, где производятся измерения **KOCKS проект АБР ТА 48401-002**
(наименование и юридический адрес)

Объект, где производятся измерения **Альтернативная автодорога Север-Юг**
(наименование, фактический адрес)
Балыкчы-Кочкор-Чаек-Суусамыр ч-з суусамыр

Наименование средств измерений и сведения о государственной поверке:

Наименование средства измерения	Номер	Свидетельство о поверке		Поверено до
		номер	дата	
Октава 101в	№ 04А445	№ВА-06-05 7551	02.12.2014г.	02.12.2015г.

1. Нормативная документация, в соответствии с которой проводились измерения
СН 2.2.4/2.1.8.566-96 "Производственная вибрация, вибрация в помещениях жилых и общественных зданий

Источники физических факторов и их характеристики:
Грузовые автотранспортные средства и производственные оборудования завода

общее количество страниц 3 : страница 1

Результаты измерений:

№	Место измерений	Характер шума: По спектру: Широкопол.	Тональный	По временным: Постоянный	Колебл.	прерывистый	импульсный	Уровни звукового давления в дБ в октавных полосах со среднеметрическими частотами в Гц:		1,0	2,0	4,0	8,0	16,0	31,5	63	Уровень звука (ДБА)	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20	
1	Г. Балыкчы																92,4	Факт
																	108	ПДУ
																	-	прев
2	С. Таш-Сарай																91,7	Факт
																	108	ПДУ
																	-	прев
3	С.Кок-Жар																90	Факт
																	108	ПДУ
																	-	прев
4	С.Чекилдек																91,1	Факт
																	108	ПДУ
																	-	прев
5	С.Ак-Учук																91,2	Факт
																	108	ПДУ
																	-	прев
6	С.Жумгал																92	Факт
																	108	ПДУ
																	-	прев
7	С.Куйручук																91	Факт
																	108	ПДУ
																	-	прев
8	С.Туголсай																92,3	Факт
																	108	ПДУ
																	-	прев
9	С.Дыйкан																95	Факт
																	108	ПДУ
																	-	прев
10	С.Байзак																88	Факт
																	108	ПДУ
																	-	прев
11	С.Чаек.																90	Факт
																	108	ПДУ
																		прев
12	Конец с. Кызыл Жылдыз																87	Факт
																	108	ПДУ
																		прев
13	с.Кызыл-Ой																88	Факт
																	108	ПДУ
																		прев
14	С.Кожомкул																86	Факт
																	108	ПДУ
																		прев

бщее количество страниц _3_: страница _2_

Результаты измерений:

№		Характер шума							Уровни звукового давления в дБ в октавных полосах со среднегеометрическими частотами в Гц									Уровень звука (ДБА)	
		По спектру		По временам															
		Широкопол.	Тональный	Постоянный	Колебл.	прерывист.	импульсный			1,0	2,0	4,0	8,0	16,0	31,5	63			
1		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20		
15	С.Суусамыр																92	Факт	
																	108	ПДУ	
																	-	прев	
16	С.Тунук																91	Факт	
																	108	ПДУ	
																	-	прев	

уполномоченный представитель объекта, присутствующий при проведении измерений:
фамилия, имя, отчество _____ должность **эколог** Аскольмова И.А.
подпись _____

	Должность	ФИО	Подпись
Измерения проводил(и)	Санитарный врач	Арзыкулов Ж.Т.	

Заключение: Согласно инструментальным замерам вибрация непостоянное, уровень вибрации по виброскорости на измеренных точках не превышает предельно-допустимого уровня.

Основание: Санитарные нормы СН 2.2.4/2.1.8.566-96 "Производственная вибрация, вибрация в помещениях жилых и общественных зданий

Санитарный врач _____ **Арзыкулов Ж.Т.**

общее количество страниц _3_ ; страница _3_

Annex F: Conclusion of the Ministry of Culture and Tourism, KR

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН МАДАНИЯТ, МААЛЫМАТ ЖАНА ТУРИЗМ МИНИСТРЛИГИ

МИНИСТЕРСТВО КУЛЬТУРЫ, ИНФОРМАЦИИ И ТУРИЗМА КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720040, Кыргыз Республикасы
Бишкек ш., Пушкин көч. 78
АЛК ЭСК Бишкек шаары, Биринчи филиалы
Эсеп-төлөм № 12005223818101048
р/с 20220121
ИНН 00812200410076 ОКПО 23549641
тел. +996(312) 62-04-82, факс 62-35-80

720040, Кыргызская Республика
г. Бишкек, ул. Пушкина, 78
Бишкекский филиал ОАО РСК
расчет № 12005223818101048
к/с 20220121
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тел. +996(312) 62-04-82, факс 62-35-80

№ 24 / 04 / 2016 ж.
Сиздин (биз) № 04-3/1565
Информ-от (ж.) №:

Компании
KOCKS Consult GMBH

Koblenz
Stegemannstr, 32/38
тел.: +49 261 1302-0

Министерство рассмотрев отчет «Археологического обследования на территории соединительных дорог – Альтернативная дорога Север-Юг, коридоры ЦАРЭС 1 и 3, общей протяженности 260 км на территориях Тонского района Иссык-Кульской области, Кочкорского и Жумгальского районов Нарынской области, Жайылского района Чуйской области Кыргызской Республики» выполненный Чергиновым Т. – доцентом Кыргызского национального университета имени Ж. Баласагына, согласно Открытого листа формы № 3 и заключения комиссии от 25 апреля 2016 года образованного приказом Министерства культуры, информации и туризма Кыргызской Республики № 164 от 21 апреля 2016 года, сообщает следующее:

Заказчику согласно законодательства Кыргызской Республики в сфере историко-культурного наследия необходимо провести археологические раскопки и документирование «на спас» с привлечением специалистов-археологов на нижеследующих недвижимых объектах историко-культурного наследия, расположенных в зоне проектируемого строительства автодороги:

– могильник Куйручук 1 **(N41°58'41.0" E074°51'56.0")** (79-ый км. по обе стороны автодороги от Кочкора к Чаеку);

– могильник Кыргыз 1 **(N41°52'24.2" E074°19'45.3")** (3,5 км. от поворота на право, мост через реку Кокомерен);

- могильник Кырчын 2 **(N41°52'59.4" E074°19'20.3")** (в 6-ти км. от поворота на право, мост через реку Кокомерен);

- могильник между селами Кырчын и Кызыл-Ой **(N41°54'46.8" E074°15'15.5")** (в 14-ти км. от поворота на право, мост через реку Кокомерен).

Также Заказчику обеспечить сохранность нижеследующих недвижимых объектов историко-культурного наследия с изменением маршрута проектируемого строительства автодороги в радиусе не менее 50 метров от могильника и организацией работ по разработке их охранных зон и представить на согласование. При не возможности исполнения вышеуказанных требований необходимо провести археологические раскопки и документирование «на снос» с привлечением специалистов-археологов, расположенных в зоне проектируемого строительства автодороги:

- объекты каменно-земляной насыпью **(N42.18314 E75.45456)** (27-ой км. автодороги от Кочкора к Чаеку);

- могильник **(N42°06'21.9" E075°12'00.5")** (44-ый км. автодороги от Кочкора к Чаеку (перевал Кыларт));

- могильник Кыларт **(N42°05'39.7" E 075°08'13.4")** (50-ый км. автодороги от Кочкора к Чаеку);

- могильник Куйручук **(N41.98436 E74.79124)** (86-ом км. автодороги от Кочкора к Чаеку);

- могильник **(N41°51'39.5" E074°20'00.4")** (в 2-х км. от поворота на право, мост через реку Кокомерен).

Заказчику разработать проект дороги в обход на тех территориях, где расположены и находятся под риском разрушения нижеследующие недвижимые объекты историко-культурного наследия (оседлого населения средневековья и этнографические погребально-поминальные сооружения) с привлечением представителей органов местного самоуправления и специалистов-археологов:

- Сары-Булунский караван-сарай **(N42.400664 E76.099044)** (8-ой км. от г. Балыкчы по направлению Кочкор);

- комплекс мавзолеев **(N41.97764 E74.91014)** (75-ый км. автодороги от Кочкора к Чаеку);

- комплекс мавзолеев **(N41.99129 E74.64144)** (100-м км. автодороги от Кочкора к Чаеку между селами Байбак и Дыйкан);

- **Кумбез Кожомкула** у въезда в село Кожомкул со стороны села Кызыл-Ой.

Кроме того, Заказчику организовать повторное археологическое обследование на наличие или отсутствие объектов историко-культурного наследия на отрезке автодороги от села Кожомкул до автодороги Бишкек-Ош.

В связи, с вышеизложенным с учетом выполнения вышеуказанных мероприятий будет рассмотрен вопрос проектируемого строительства «Соединительных дорог – Альтернативная дорога Север-Юг, коридора

ЦАРЭС 1 и 3, общей протяженности 260 км на территориях Тонского района Иссык-Кульской области, Кочкорского и Жумгальского районов Нарынской области, Жайылского района Чуйской области Кыргызской Республики».

Статс-секретарь. **Б. Секимов**

Ф. Дуйшеев, 55-40-23

Annex G: Information letter from MoTR

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН
ТРАНСПОРТ ЖАНА ЖОЛДОР
МИНИСТРЛИГИ

720017, Бишкек ш., Иванов көч., 42
тел. +996 (312) 31-43-85, 31-43-13,
факс: +996 (312) 31-28-11
E-mail: mtk@mtk.gov.kg
http://www.mtk.kg

МИНИСТЕРСТВО ТРАНСПОРТА
И ДОРОГ
КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720017, г. Бишкек, ул. Иванова, 42
тел. +996 (312) 31-43-85, 31-43-13,
факс: +996 (312) 31-28-11
E-mail: mtk@mtk.gov.kg
http://www.mtk.kg

№ 14-8/5879 «20» 07 2016 ж. (г.)
На №

КР Өкмөтүнүн Чүй облусундагы ыйгарым укуктуу өкүлчүлүгү

КР Өкмөтүнүн Нарын облусундагы ыйгарым укуктуу өкүлчүлүгү

КР Өкмөтүнүн Ысык-Көл облусундагы ыйгарым укуктуу өкүлчүлүгү

Жайыл районунун мамлекеттик райондук администрациясы

Кочкор районунун мамлекеттик райондук администрациясы

Жумгал районунун мамлекеттик райондук администрациясы

Балыкчы ш. мэриясы

Бишкек – Ош автожолун Бишкек-Нарын-Торугарт автожолу (Балыкчы ш. – Кочкор а. – Арал а. – Суусамыр а.) менен коридор аралык бириктирүүчү жолду реабилитациялоо долбооруна карата Техникалык-экономикалык негиздемени даярдоо үчүн Азия Өнүктүрүү Банкы тарабынан бөлүнгөн техникалык жардамды ишке ашыруунун алкагында, бул иштер үчүн Азия Өнүктүрүү Банкы тарабынан «KOCKS» консультациялык компаниясы тандалган.

Сунушталып жаткан долбоор Кыргыз Республикасынын региондорунун төмөндөгү социалдык-экономикалык көрсөткүчтөрүн жакшыртат:

- Түштүк региондордон Нарын жана Ысык-Көл облустарына адамдардын жана товарлардын жылуусунда жолго кеткен убакыттын кыскарышы;
- каттамды кыскартууга жана жакшы жол шарттарына байланыштуу транспорт чыгымдарын азайтуу;
- жергиликтүү жана эле аралык ташууларды жана кыймылдарды көбөйтүү;
- жергиликтүү жашоочулар үчүн кошумча киреше алып келүүчү мүмкүнчүлүктөрдүн пайда болушу.
- жаңы жумушчу орундарын түзүү;

- транспорт каражаттарынын (ТК) оң абалы/ пайдалануу чыгымдарын кыскартуу.

Техникалык-экономикалык негиздемени даярдоонун алкагында «KOCKS» консультациялык компаниясынын адистери тарабынан КР ТжКМ Инвестициялык долбоорлорду ишке ашыруу тобунун өкүлдөрү менен биргеликте "Курчап турган чөйрөгө таасирлерин баалоо отчетун" жана "Көчүрүү жана жерлерди алуу планын" даярдоо боюнча иштер аяктады.

Бул документтер менчик ээлеринин укуктарын коргоого, курчап турган чөйрөнү коргоого багытталган КР ченемдик-укуктук актыларына ылайык жана АӨБ Коргоо чаралары боюнча саясатынын талаптарын эске алуу менен даярдалды.

Азыркы убакта Техникалык-экономикалык негиздемени даярдоо боюнча иштер аяктап калды жана пландалган долбоордун таасирин тийиши мүмкүн, реабилитациялануучу автожол участогунун жээгинде жашаган, жергиликтүү калктын арасында пландалган долбоорго байланыштуу маалыматты жайылтууга тиешелүү Азия Өнүктүрүү Банкынын талабын аткаруу керек.

Жогоруда берилгендердин негизинде, КР "КР мамлекеттик органдарынын жана жергиликтүү өз алдынча башкаруу органдарынын жүргүзүүсүндө турган маалыматтарга жетүү мүмкүндүгү жөнүндө" мыйзамынын талаптарын аткаруу, ошондой эле Азия Өнүктүрү Банкынын Коргоо чаралары боюнча саясатынын талаптарын сактоо максатында. Сиздерден долбоордун мүмкүн болуучу таасири жөнүндө маалымдуулукту жогорулатуу максатында жергиликтүү калк арасында түшүндүрүү иштерин жүргүзүүнү өтүнөбүз. Бишкек – Ош автожолун Бишкек-Нарын-Торугарт автожолу менен коридор аралык бириктирүүчү жолду реабилитациялоо долбоору төмөндөгү калктуу пунктттарды камтыйт:

Чүй облусунун Жайыл району:
- Кызыл-Ой а.,Кожомкул а., Суусамыр а., Тунук а., Суусамыр айыл аймагы.

Нарын облусунун Кочкор району:
-Көк-Жар а., Көк-Жар айыл аймагы;
- Чекилдек а., Семиз-Бел айыл аймагыа;
- Эпкин/Ак-Учук а., Чолпон айыл аймагы.

Нарын облусунун Жумгал району:
- Жумгал а., Жумгал айыл аймагы;
- Куйручук а., Куйручук айыл аймагы;
- Түгөл-Сай а., Түгөл-Сай айыл аймагы;
- Баш-Кууганды а., Кырчын а., Баш-Кууганды айыл аймагы;
- Байзак а., Байзак айыл аймагы;
- Чаек а., Чаек айыл аймагы;
- Кызыл-Жылдыз а., Кызыл-Жылдыз айыл аймагы.

Балыкчы ш., Ысык-Көл облусу:

Тиркеме: Долбоор жана долбоордун мүмкүн болуучу таасири жөнүндө маалымат - 5 барактa.

Урматтоо менен,

Министр **З.Айдаров**

Аткар. Абдыгулов А. Тел. 31-43-56

1-тиркеме

Долбоор жана долбоордун мүмкүн болуучу таасири жөнүндө маалымат
(экологиялык жана социалдык маселелер).

Балыкчы ш., Таш-Сарай жана Орто-Токой айылдары.

Кочкор району:

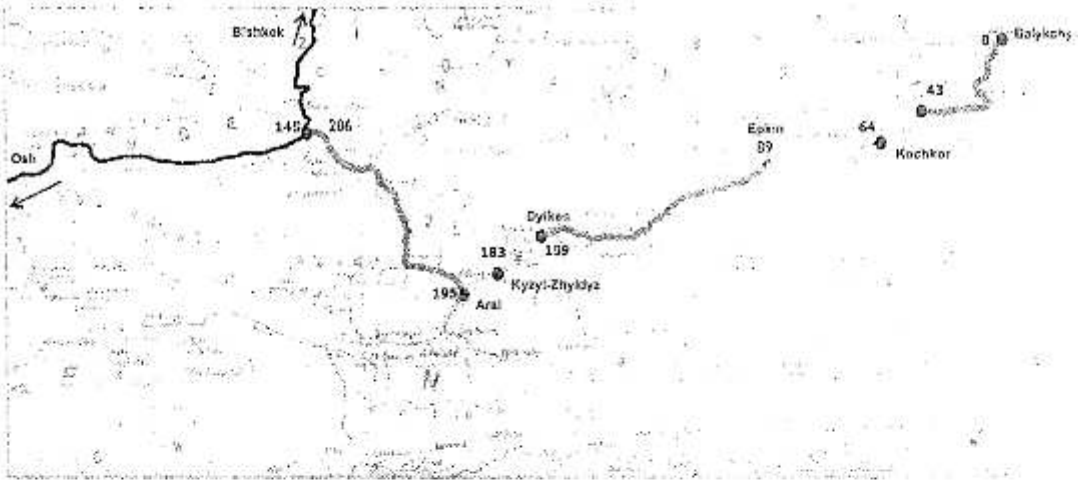
1. Көк-Жар а/а – Көк-Жар айылы
2. Семиз-Бел а/а – Чекилдек айылы
3. Чолпон а/а – Эпкин/Ак-Учук айылы

Жумгал району:

1. Жумгал а/а – Жумгал айылы
2. Куйручук а/а – Куйручук айылы
3. Түгөл-Сай а/а – Түгөл-Сай айылы
4. Баш-Кууганды а/а – Баш-Кууганды, Кырчын айылдары
5. Байзак а/а – Байзак айылы
6. Чаек а/а – Чаек, Ак-Татыр айылы
7. Кызыл-Жылдыз а/а – Кызыл-Жылдыз айылы

Жайыл району:

Суусамыр а/а – Кызыл-Ой, Кожомкул, Суусамыр, Тунук айылдары



Кыргыз Республикасынын Өкмөту Азия өнүктүрүү банкына (АӨБ) БАРЭК алкагында 1 жана 3-коридорлорду бириктирүүчү жолду жакшыртуу боюнча долбоорго кайтаруу кредитти жана/же грантты аныктоо, иштеп чыгуу жана даярдоо өтүнүчү менен кайрылган. ТППП негизги жыйынтыгы донорлордун каржылоосу үчүн ылайыктуу техникалык-экономикалык негиздемени даярдоо болуп саналат.

ТППП 5 участокту камтыйт:

- Балыкчыдан (км) 43 километр белгисине чейин (км 0 - км 43), болжол менен 43 километр (км);
- Кочкордон Эпкин айылына чейин (км 64 – км 89), болжол менен 25 км;
- Эпкинден (89 км) Баш-Кууганды чейин [мурдагы Дыйкан] (159 км), болжол менен 70 км;

- Дыйкан айылынан тартып (159 км) Кызыл-Жылдыз айылына чейин (183 км), болжол менен 24 км, мында Чаек айылын жана Кызыл-Жылдыз айылынын бир бөлүгүн айланып өтүү үчүн айланма жолду куруу каралууда; жана
- Аралдан тартып (195 км) Төө-Ашуу ашуусуна чейин (286 км), болжол менен 91 км.

Долбоордун алкагында корголбогон компоненттердин гармактык койгойлөрү жагы чечилет. Өкмөт менен айрым деталдарда макулдашууга жетишүү талап кылынат, аларга төмөндөгүлөр кирет: (i) Кыргыз Республикасында жол активдерин башкаруунун натыйжалуулугун жогорулатуу, (ii) өкмөттү транспорт секторундагы институционалдык реформалар менен колдоо, (iii) натыйжалуулукка негизделген тейлөөгө контракттарды жүргүзүү жана (iv) Кыргыз Республикасында жол коопсуздугун жогорулатуу.

Транспорт жана коммуникация министрлигине (ТжКМ) карштуу Инвестициялык долбоорлорду ишке ашыруу тобу (ИДИТ) курулуш баскычында ушул долбоор боюнча Аткаруучу орган (АО) катары чыгат. Мүмкүн болуучу финансылык жардамдын баштапкы бөлүгү катары, АӨБ бүтүндөй долбоор үчүн техникалык-экономикалык негиздемени жана болжолдуу долбоорду даярдоо үчүн «Кокс Консульт Гмбх», Германия, жалдады. Консультациялык кызмат көрсөтүүлөрдүн көлөмү баштапкы экологиялык изилдөөнү (БЭИ); жана социалдык талдоону жана жакырчылыкты талдоону жана 2009-жылдагы АОБ Кепилдиктер саясаты жөнүндө биллирүүгө (КСБ) ылайык кесепеттерин баалоону камтыйт.

Сунушталып жаткан долбоор Кыргыз Республикасынын региондорунун төмөндөгү социалдык-экономикалык көрсөткүчтөрүн жакшыртат:

- Түштүк региондордон Нарын жана Ысык-Көл облустарына адамдардын жана товарлардын жылуусунда жолго кеткен убакыттын кыскарышы.
- Каттамды кыскартууга жана жакшы жол шарттарына байланыштуу транспорт чыгымдарын азайтуу.
- Жергиликтүү жана эле аралык ташууларды жана кыймылдарды көбөйтүү.
- Жергиликтүү жашоочулар үчүн кошумча киреше алып келүүчү мүмкүнчүлүктөрдүн пайда болушу.
- Жаңы жумушчу орундарын түзүү.
- Транспорт каражаттарынын (ТК) оң абалы/ Пайдалануу чыгымдарын кыскартуу.

Кыргыз Республикасынын мыйзамдарына ылайык курчап турган чөйрөгө таасирине баалоо жүргүзүү керек. ТЭН баскычында курчап турган чойрого таасирин баалоону изилдөө Техникалык-экономикалык негиздемеге (ТЭН) карата Курчап турган чойрого таасирин алдын ала баалоо (КЧТАБ) катары каралат жана КЧТБ отчету менен тарифделет.

АОБ Коргоо Саясаты боюнча Жобосунун жиктемесине ылайык (2009) долбоор В [би] категориясына кирет жана курчап турган чөйрөгө таасирин толук баалоону (КЧТБ) талап кылбайт. АӨБ «В» категориясындагы долбоорлор үчүн саясатынын алкагында Баштапкы экологиялык баалоону (БЭБ) даярдоо керек.

Кыргыз Республикасынын мыйзамдарына ылайык долбоорду категориялаштыруу өткөрүлбөйт, бирок БЭБ жана КЧТАБ документтерин бирдей мазмунда катары кароого болот.

<u>Экологиялык жана Социалдык Баалоонун максаттары</u>

- Ар кандай түз жана кыйыр экологиялык тобокелдиктердин деңгээлдерин аныктоо жана баалоо жана алар менен байланыштуу кесепеттерди жумшартуу боюнча сунуштар
- Долбоордун БЭБ/КЧТАБ даярдоо
- Жарыгынышты коргоо ий-чараларынын планын (ЖКП) даярдоо.

Ушул БЭБ/КЧТАБ максаты сунушталып жаткан долбоордун курчап турган чойрого, дей соолукка, коопсуздукка потенциалдуу таасирин баалоо жана социалдык таасирин баалоо болуп саналат. Экологиялык баалоо процессинде, курулуш иштеринин, кутулуп жаткан

көлөмүнө байланыштуу курчап турган чөйрөгө эч кандай олуттуу жагымсыз жана кайтарымсыз таасирлер белгиленген жок. БЭБ/КЧТАБ боюнча ушул документ өзүнө бүтүндөй долбоордук цикл аралыгында жүргүзүлө турган минималдаштыруу, кыскартууга жана жумшартууга (же жабыркаган тараптарга компенсация голой берүүгө) багытталган, кесепеттерди жумшартуу боюнча тийиштүү чаралар менен аныкталган потенциалдуу таасирлердин, алардын мүнөздөмөлөрүнүн, чөлдүгүнүн, жайылуусунун жана узактыгынын, сезгич рецепторлордун жана көзгөлгөн топтордун негизинде Курчап турган чөйрөнү башкаруу планын (КЧБП) камтыйт.

Бардык участоктор үчүн БЭБ/КЧТАБ изилдоо болгон булактардын катарынан экинчи маалыматтын негизинде өткөрүлөт. Ошондой эле суунун, абанын сынамдарын алуу, ызы-чууну жана вибрацияны өлчөө өткөрүлдү.

Долбоорду сүрөттөө

Төмөндө көрсөтүлгөн жол участоктору жолдун II техникалык категориясына чейин реконструкцияланат:

- Балыкчыдан (км) 43 километр белгисине чейин (км 0 - км 43), болжол менен 43 километр (км);
- Кочкордон Эпкин айылына чейин (км 64 – км 89), болжол менен 25 км;
- Эпкинден (89 км) Баш-Куугандыга чейин [мурдагы Дыйкан] (159 км), болжол менен 70 км;
- Дыйкан айылынан тартып (159 км) Кызыл-Жылдыз айылына чейин (183 км), болжол менен 24 км, мында Чаек айылын жана Кызыл-Жылдыз айылынын бир бөлүгүн айланып өтүү үчүн айланма жолду куруу каралууда.

Аралдан тартып (195 км) Төө-Ашуу ашуусуна чейинки (286 км), болжол менен 91 км, жол участогу жолдун III техникалык категориясына чейин реконструкцияланат.

Долбоорлорго жолдун участогу тууралуу кененирээк төмөндө берилген:

- Кыргызстандын мамлекеттик стандартына ылайык, долбоорлонгон жол участокторун II, III техникалык категорияга чейин реконструкциялоо.
- Көпүрөлөрдү жана суу өткөрүүчү түтүктөрдү калыбына келтирүү, өндөө жана/же алмаштыруу
- Каптал арыктарды жана башка дренаждык курулмаларды куруу.
- Тирегич дубалдарды жана зарыл болгондо дарыяларды коргоо боюнча чараларды камсыздоо
- Талаптагыдай жол белгилерин жана белги салууларды камсыздоо
- Коргоочу тосмолорду камсыздоо.

Жол Кыргызстандын геометрикалык долбоордук ченемдерине ылайык иштелип чыгышы керек жана ал болжолдонгон кызмат өтөө мөөнөтү аралыгында жол кыймылынан болгон жүктөмдү натыйжалуу көтөрүү үчүн туруктуу болушу керек. Жол өтмө бөлүктүн кеңдигинен (тилкелердин туурасынын суммасы) жана жол жээгинин кеңдигинен турган, кыймылдын эки тилкеси менен жол болот. Төмөндө кесилиш боюнча конструктивдүү элементтер берилген:

- <u>II долбоордук жолу үчүн:</u>
- Тилкелердин саны: 2
- Тилкенин кеңдиги: 3,5-3,75 м
- Өтмө бөлүктүн кеңдиги: 7,00-7,50 м
- Жолдун четинин кеңдиги: 3,25-3,75 м (анын ичинде 0,50-0,75 м салынган)

- Жолдун жалпы узундугу: 15.00 м

➢ <u>III долбоордук жолу үчүн</u>:
- Тилкелердин саны: 2
- Тилкенин кендиги: 3.5 м
- Өтмө бөлүктүн кендиги: 7.00 м
- Жолдун четкинин кендиги: 2.5 м (анын ичинде 0.50 м салынган)
- Жолдун жалпы узундугу: 12.00 м

Курчап турган чөйрөгө күтүлгөн таасирлери жана жумшартуу боюнча чаралар

Таасирлери.

Жол долбоорунун таасиринин олуттуу бөлүгү түздан-түз курулуш иштеринен келип чыгаары болжолдонууда, ал эми айрым таасирлер пайдалануу убагында пайда болот. Бул таасир кыймылдын интенсивдүүлүгүнүн жана транспорт каражаттарынын кыймылынын ылдамдыгынын жогорулашы менен шартталган жана газдардын чыгындыларынын деңгээлинин жогорулашына жана ызы-чуу таасирине, анындай эле жөө жүрүүчүлөрдүн жана транспорт каражаттарынын катышуусу менен ЖТК потенциалдуу өсүшүнө кирет. Мындан тышкары зыяндуу заттардын төгүлүшү менен байланыштуу өзгөчө кырдаалдардын жогорку тобокелдиги болот.

<u>Таасирлердин төмөндөгүдөй түрлөру аныкталган</u>:

(i) ызы-чуу таасири, булгоочу заттардын абага чыгындылары, анындай эле вибрация. Бул Долбоордун жолго жакын калктуу пункттардын чегинде жана мектеп, оорукана, мечит ж.б. (мисалы: жолго жакын жайгашкан үй чарбалары; карьерлер, базарлар, маданий жана тарыхый баалуулуктар, чөп кесилиштер) сыяктуу, таасир этүүнүн сезгич реципиенттери жайгашкан жерлерде өзгөчө маанигe ээ;

(ii) сууларга жана дарыяларга таасири;

(iii) карьерлерде толуктагычтардын булактарын издөөнүн жыйынтыгындагы таасир;

(iv) топыракка жана өсүмдүктөргө таасири, анын ичинде участокторду таңдоо боюнча иштерден улам долбоордук жолдун жанындагы дарак көчөтүрөгө таасири;

(v) көпүрөлөрдү жана дренаждык курулмаларды реабилитациялоонун жыйынтыгындагы таасир;

(vi) асфальт өндүрүү (асфальт заводдору) жана толуктагычтарды майдалоо үчүн орнотмолордон болгон таасир;

(vii) подрядчынын жумушчу лагерлери тарабынан таасир. Мындан тышкары, таасирлер төмөндөгү топторго бөлүнгөн: долбоорлоо этабындагы таасир, куруу этабындагы таасир жана жумушчу этабындагы таасир.

Иш-чаралар.

Алдын ала долбоорлоонун жүрүшүндө жана долбоорлоо баскычында талаптагыдай пландоо/даярдоо аркылуу таасирлерден алыс болууга болот.

Таасирлерди жумшартуу боюнча чаралар төмөндөгүлөрдү камтыйт:

(i) эрозияга каршы иш-чараларды пайдалануу;

(ii) даректарды кыюудан алыс болуу үчүн; асимметрикалуу кеңейтүү;

(iii) жумушчулар үчүн катуу нускамаларды берүү менен маданий жана тарыхый объекттерге кол салуунун алдын алуу

Initial Environmental Examination

Project No.: TA 8887-KGZ
July 2016

KGZ: CAREC Corridors 1 and 3 Connector Road Project (Section “Aral [Km 195] to Too-Ashuu Pass [Km 286])

Prepared by Kocks Consult GmbH / Finnish Overseas Consultants Ltd. / CAC Consulting for the Ministry of Transport and Roads of Kyrgyz Republic for the Asian Development Bank.

ABBREVIATIONS

ADB	-	Asian Development Bank
ADT	-	Average Daily Traffic
AIDS	-	Acquired Immune Deficiency Syndrome
AP	-	Affected People
BoQ	-	Bill of Quantities
CAREC	-	Central Asia Regional Economic Cooperation
CEWP		Construction Environmental Work Plan
CITES	-	Convention on International Trade in Endangered Species
CO	-	Carbon Monoxide
CSC	-	Construction Supervision Consultant
CW	-	Civil Works
dBA	-	A-weighted decibels
DO	-	Dissolved oxygen
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EIP	-	Environmental Impact Permit
EMoP	-	Environmental Monitoring Plan
EMP	-	Environmental Management Plan
FCM	-	Family Medicine Centres
GRM	-	Grievance Redress Mechanism
h, hr	-	Hour
Ha	-	Hectare
HIV	-	Human Immunodeficiency Virus
IA	-	Implementing Agency
IEE	-	Initial Environmental Examination
IES	-	International Environmental Specialist
IPIG	-	Investment Projects Implementation Group
KDTP	-	Kyrgyzdortransproekt
Kg	-	Kilogram
Km	-	Kilometer
Kpa	-	Kilopascal
LAR	-	Land Acquisition and Resettlement
LARP	-	Land Acquisition Resettlement Plan
LHS	-	Left Hand Side
Ls	-	Lump Sum
M2	-	Square Meter
M3	-	Cubic Meter
Max.	-	Maximum
MESD	-	Ministry of Economic and Sustainable Department
Min.	-	Minimum
MOF	-	Ministry of Finance
MOTR	-	Ministry of Transport and Roads of the Kyrgyz Republic
MoCIT		Ministry of Culture, Informations and Tourism of the Kyrgyz Republic

MPC	-	Maximum Permissible Concentrations
NES	-	National Environmental Specialist
NGO	-	Non-Governmental Organization
No.	-	Number
NO2	-	Nitrogen Dioxide
PAM	-	Project Administration Manual
PAP	-	Project-Affected Person
PBM	-	Performance-based maintenance
PER	-	Public Environmental Review
PPMS	-	Project Performance Management System
PPTA	-	Project Preparatory Technical Assistance
RAP	-	Resettlement Action Plan
RHS	-	Right Hand Side
ROW	-	Right-of-Way
RP	-	Resettlement Plan
SA	-	Social Assessment
SAEPF	-	State Agency on Environment Protection and Forestry
SER	-	State Environmental Review
SO2	-	Sulfur Dioxide
SPS	-	Safeguard Policy Statement
SSEMP	-	Site Specific Environmental Management Plan
TA	-	Technical Assistance
TMP	-	Traffic Management Plan
TOR	-	Terms of Reference
TPH	-	Petroleum Hydrocarbon
TSP	-	Total Suspended Particulates
UNFCC	-	United Nations Framework Convention on Climate Change
WHSP	-	Worker’s Health and Safety Plan

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A. Executive Summary

1. The Government of the Kyrgyz Republic has requested the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and/or grant for the CAREC Corridors 1 and 3 Connector Road. The main outcome of the PPTA is to prepare a feasibility study suitable for donors financing. The project scope also includes soft components to tackle sector-wide issues. Agreement needs to be reached with the government on the exact details, including: (i) improve efficiency of road asset management in the Kyrgyz Republic, (ii) support the government with institutional reforms in transport sector, (iii) introduce performance based maintenance contracts, and (iv) improve road safety in the Kyrgyz Republic. The proposed Project will improve the following socio-economic indicators of the regions of the Kyrgyz Republic:

- Reduce the cost of passenger and cargo transportation between southern and Issyk-Kul and Naryn regions by providing direct access.
- Reduce transport costs due to route cutting and better road conditions.
- Increase in local and international transportation and movement.
- Origination of additional income-generating opportunities for local residents
- Creation of new jobs
- Good state of vehicles/Reduction of operating costs

2. The Section “Aral (Km 195) to Too-Ashuu Pass (Km 286)” will be financed by Eurasian Development Bank (EDB).

3. According to the categorization of ADB Safeguard Policy Statement, the project belongs to category “B” and doesn’t require full Environmental Impact Assessment (EIA). As a part of the ADB Policy, the project requires Initial Environmental Examination (IEE). In accordance with the legislation of the Kyrgyz Republic, this stage is considered as a preliminary environmental impact assessment (Pre-EIA) to feasibility study and shall be documented by EIA report. The Project will not be categorized according to Kyrgyz Republic legislation, however these IEE and Pre-EIA documents might be considered as equivalent.

4. The purpose of this IEE is to assess potential environmental, health, safety and social impacts of the proposed road project. With the expected construction scope, no significant adverse and irreversible environmental impacts had been noted in the environmental assessment process. This IEE document includes an Environmental Management Plan (EMP) based on the identified potential impacts, their characteristics, magnitude, distribution, and duration, sensitive receptors and affected groups with corresponding mitigation measures designed to minimize, reduce and mitigate (or compensate the affected parties), to be implemented for the entire project cycle.

5. The IEE study for Section “Aral (Km 195) to Too-Ashuu Pass (Km 286)” is being conducted based on secondary information from a number of available sources, while primary data were obtained from field parametric measurements along with the observations gathered from several field visits. Environmental public consultation was done and was attended by residents of the communities mentioned as well as those from surrounding villages.

Policy, Legal, and Administrative Framework

6. The IEE study was in conformance with the national legal framework of Kyrgyzstan consisting of the important laws in environmental protection, water protection, cultural heritage, public health, and other national environmental legislations. In addition, International Treaties that Kyrgyzstan was a signatory were also considered as part of the overall framework.

7. The Environmental assessment in the Kyrgyz Republic is founded on two subsystems: (i) OVOS (the Russian acronym for “Assessment of Environmental Impacts”), and (ii) Ecological Expertise (State Environmental Review, SER). The resulting EIS is then presented for public consultations, after which revisions are done according to the public’s feedback. Subsequently, the OVOS report, Statement of Environmental Consequences, and other supporting documentations are submitted for the State Environmental Review (SER). After which the project may be approved, rejected or send for re-examination.

8. Under ADB approval requirements, a set of specific safeguard requirements are required to be met by the Borrowing Country in addressing environmental and social impacts and risks. The project would undergo Screening and Categorization, formulation of Environmental Management Plan and Public Disclosure. Public Consultations for Category B would be required so that views of affected groups are taken into account in the design of the Project and within the mitigation measures proposed.

Description of the Project

9. The project road Section “Aral (Km 195) to Too-Ashuu pass (Km 286)” is a 91-km north to south highway. This Section begins at from the junction with the Aral-Kazarman road designated as Km 195 to the junction of Bishkek-Osh Highway designated as Km 286. Generally, this Section follows the existing alignment up to Bishkek-Osh Highway (Km 286). The road Section touches two Oblast – Naryn in the south and Chuy in the north. It starts at the south bridge approach at Km 195 within Aral, passes through some houses of Kyrchyn, both within the Zhumgal District of Naryn Oblast through the winding path alongside Kokomeren River, and entering Jayil District of Chuy Oblast.

10. The details of the proposed road Section project are:

- Rehabilitate and pave the project road to Technical Category III from Aral (Km 195) to Too-Ashuu pass (Km 286) according to Kyrgyzstan National Standard with Geometrical and Structural Requirements with design speed of 80 km/hour in rolling terrain (50 km/hour in mountainous terrain).
- Rehabilitation, repair and/or replacement of bridges and culverts.
- Construction of side drains and other drainage structures.
- Provision of retaining walls and river protection measures, where necessary.
- Provision of adequate road signing and marking.
- Provision of safety barriers.

11. The road is to be designed according to Kyrgyz geometric design standard, and accordingly, it shall be sufficient to carry the traffic loading efficiently within its projected service life. Effectively, these will be a two-lane road consisting of a carriageway width (sum of the width of lanes) and the width of the shoulders. The design elements for the cross section of the project road are as follows:

- Number of lanes: 2
- Lane width: 3.5 m
- Carriageway width: 7.00 m
- Width of shoulder: 2.5 m (of which 0.50m is paved)
- Total road width: 12.00 m

Description of the Environment

12. The road section “Aral (Km 195) to Too-Ashuu Pass (Km 286)” starts from the valley floor with Kokomeren River on the right-hand side and foothills of the mountain ranges which

are mainly eroded sediments deposits at the right hand side. After 20 km the road goes through a gorge nestled with mountains of fractured rocks conglomerate of sandstone and siltstones with a number of areas consisting of loose cobbles and loose sediments. The area is generally mountainous passing through except in the villages of Kyzyl-Oi and Kojomkul where the slopes are mild. The areas of Suusamyr and Tunuk are located on an elevated valley where Farmers practicing agro-pastoralism by grazing animals and at the same time producing winter fodder for their livestock. They cultivate mainly barley and sometimes perennial grass. Banks of the river are floodplains with terraces with a total height of up to 20-25 m of cut side logs and sais

Environmental Impacts and Mitigation Measures

13. The anticipated environmental impacts of the proposed road project are likely to be resulting directly from construction activities. Environmental and social impacts associated with the road construction consist of (i) impairment of access; (ii) dust generation; (iii) noise level aggravation; (iv) heightened emissions levels; (v) water contamination& sedimentation; (v) impacts on local flora and fauna; (vi) disruption to local economy; (vii) defacement of local topography; (viii) solid and liquid waste generation; (viii) road safety issues; and (ix) impacts on archaeological sites.

14. The construction entails a number of activities which are expected to introduce impacts and disturbances to the general environment, especially during the construction period. Most of these impacts are confined within the right-of-way, construction sites, and facility sites; while some activities can affect the outlying areas or even a wider area, especially if not properly mitigated.

15. Avoidance of impacts can be executed by proper planning/preparation during the Pre-engineering and design phase. The mitigation measures will consist of the following: (i) use of green measures for erosion; (ii) asymmetric widening to avoid felling of trees; (iii) avoidance of encroachment to archaeological and historical sites with strict instructions to workers; (iv) provision of road safety measures and traffic plan to avoid accidents and maintain access to people; (v) gaseous emissions will be minimized and controlled by proper and regular maintenance of equipments; (vi) dust is controlled by regular water spraying on exposed areas; (vii) noise is minimized at the vicinity of sensitive receptors by proper scheduling of works and provision of noise mufflers to trucks and equipment; (vii) surface water contamination is mitigated by avoiding petroleum spills and soil droppings in water and situating contaminating substances away from waterways and construction of settling ponds for clarifying water prior to discharge; (viii) material sources should be reinstated after usage; (ix) ensure usage and installation of safety measures at worksites and along the road; (x) strictly avoid possible habitat areas of biological organism and prohibit workers from harming indigenous local species; (xi) mitigation measures from blasting works and safe conduct of blasting works.

Analysis of Alternatives

16. In this IEE were considered two alternatives:

1. Zero option - inaction / do nothing
2. The road reconstruction project

17. The “Zero option” alternative scenario will mean that the road stays “as is”, in which no rehabilitation works. Considering the mentioned reasons and along with those presented in the “Country and Regional Strategy” and “Locality Specific Rationale”, the benefits of rehabilitating and reconstructing the road generally outweigh the expectations of the “Zero option” alternative. The second alternative is considering road reconstruction in the section “Aral (Km 195) to Too-Ashuu Pass (Km 286)” through existing road.

Consultation, Participation and Information Disclosure

18. In accordance with ADB's Public Communications Policy (2011) and SPS (2009), Public Consultation meeting for this section on the environmental aspects was undertaken on 18 March 2016 at 5 PM in the village hall in Suusamyr (Suusamyr Village Office). During the public consultation organized by IPIG, with the assistance of PPTA consultants (Kocks Consult, GmbH), prepared PowerPoint presentation regarding the technical features of the project and explained the potential environmental and social impacts with corresponding mitigation measures. At these instances, the participants were able to express what they thought about the project and were given a chance to ask clarificatory questions during the open forum. Forms were provided to the people for them to write in their own comments which incorporated in the IEE and serve as recommendations in the design phase.

19. Details of the Public Consultation are provided in Section G. Consultation, Participation and Information Disclosure of this document. The IEE shall also be disclosed to a wider audience via the ADB website. During the project implementation, periodic environmental monitoring reports shall be submitted by IPIG on behalf of MOTR and correspondingly also be uploaded in the EDB website and in KGZ on MOTR website.

Grievance Redress Mechanism

20. The Grievance Redress Mechanism (GRM) is a process through which the affected people need a trusted way to voice and resolve concerns about the project and the project also finds an effective way to address affected people's concerns. The GRM will cover issues related to social, environmental and other safeguard issues under Kyrgyz Law

21. With two stage appeals – the Local (village) Level and Central Level, along with greater participation of the local people, resolution of complaints will be better ensured. The complainant can appeal the decision of the local Court. The project level GRG does not in any way impede APs access to the judicial or administrative remedies the Kyrgyz Republic.

Environmental Management Plan

22. The Environmental Management Plan (EMP) for the project road, consisting of impact mitigation and monitoring plan, has been prepared as part of this IEE. A program of monitoring, the Environmental Monitoring Plan (EMoP), is also developed herein to ensure that all concerned agencies take the specified action to provide the required mitigation, to assess the level of project impacts on environmental quality and to determine whether any additional measures may be necessary. This EMP will be part of the contract documents consisting of specified measures covering most of the possible issues that can occur will enable the avoidance, reduction, and mitigation of adverse impacts in the project cycle. The Contractor shall adopt the mitigation measures, particularly those for the construction into his Site Specific Environmental Management Plan (SSEMP) consistent with their own work program. Supplementary Plans will also be drawn up by the Contractor for specific situations to ensure a focused action on any problem that might arise.

23. Operational framework of the EMP involves the national agencies (IPIG-MoTR&SAEPF), EDB Safeguard Specialists, Construction Supervision Consultant, Contractor, with the local governments and recognizing roles of NGO's and people's organization at the project site. The cost for implementing EMP will be financed by the loan, specifically the costs of mitigation measures will be included in the construction contracts, and the cost for environmental monitoring will be included in the consulting service of the CSC.

24. Mitigation measures and a monitoring plan have been developed and incorporated into the EMP. Under the guidance of CSC, the contractor will have to submit site-specific

Environmental Management Plans (SSEMP) for the following prior to commencing operations: (i) SSEMP in the sensitive sites such as main residential areas, cultural and historic sites including cemeteries, riverbanks or other waterways; (ii) layout of the work camp with sewage management and waste management plan; (iii) sitting and description asphalt and crashing plants, equipment maintenance and storage facilities; (iv) spoil soil management plan; (v) borrow site management including restoration; and (vi) method statement for bridge reconstruction works; (vii) blasting works and safe conduct of blasting works. The SSEMPs shall be endorsed by the construction supervision consultant before submission to IPIG for approval.

25. IPIG will promptly inform EDB of the occurrence of any risks or impacts, with detailed description of the event and proposed corrective action plan if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE. IPIG will report any actual or potential breach of compliance with the measures and requirements set forth in the EMP promptly after becoming aware of the breach. Monitoring and reporting. CSC will submit quarterly project progress report reflecting environmental safeguard compliance. CSC will assist IPIG in compiling and submitting semiannual monitoring reports (EMR) during project construction within one month after each reporting period. EMRs will be disclosed at EDB website and to local authorities.

Conclusions and Recommendations

26. The IEE/EMP-EMoP, as part of the contract documents, shall be adhered to by the Contractor. Accordingly, the Contractor shall require all his Sub-Contractors to follow also the EMP and such stipulations should also be shown in Sub-contracting agreements and which will be verified by the Engineer (or the CS Consultants).

27. Upon assessment of the impacts in this IEE process, the project is maintained at Environmental Category B; since the predicted impacts are “site-specific, with few irreversible, and in most cases mitigation measures can be readily designed and to be incorporated in the detailed designs.

28. Mitigation measures have been developed to be utilized for finalization in the detailed design phase, for implementation in the construction phase, and subsequently for the operations phase, to reduce all negative impacts to acceptable levels. As per assessment in this IEE, the proposed Road Project is unlikely to significant environmental impacts. To ensure environmental and social safeguards, the IEE recommends that:

- proper design should be produced;
- the strict monitoring is done;
- measures be implemented;
- avoid socioeconomic impact – hire local people;
- contractor should have SSEMP approved before commencing construction works;
- baseline measurements and periodic monitoring be done;
- contractor to designate environmental staff;
- CSC to provide sufficient training on EMP implementation and compliance monitoring for the CSC engineers and to the Contractor’s staff;
- CSC to assist IPIG in monitoring and reporting on EMP implementation
- IPIG-MoTR shall oversee environmental compliance and ensure that reporting requirements are followed.

B. Policy, Legal, and Administrative Framework

1. Introduction

29. The Government of the Kyrgyz Republic (the government) has requested for a project preparatory technical assistance (PPTA) from the Asian Development Bank (ADB) to identify, formulate, and prepare an ensuing loan and/or grant for the CAREC Corridors 1 and 3 Connector Road. The main output of the PPTA is a feasibility study suitable for donors financing. The study will cover five (5) sections:

- Balykchi (Km 0) to kilometre - post 43 (Km 43), approximately 43 kilometres (km),
- Kochkor(Km 64) to Epkin(Km 89), approximately 24 km,
- Epkin (Km 89) to Bashkugandy [Formerly Dyikan] (km 159), approximately 70 km;
- Bashkugandy [former Dyikan] (km 159) to Kyzyl-Zhyldyz (km 183), approximately 24km, where a Bypass Road is being envisioned to avoid the village of Chaek and part of Kyzyl-Zhyldyz; and
- Aral (Km 195) to Too-Ashuu pass (Km 286), approximately 91 km. The Section "Aral (Km 195) to Too-Ashuu Pass (Km 286)" will be financed by EDB.

30. The Investment Project Implementation Group (IPIG) within the Ministry Transport and Communication (MoTR) that shall be the Executing Agency (EA) for this project during the construction stage. As initial part of the possible funding assistance, the ADB has engaged Kocks Consult GmbH, Germany, to prepare a Feasibility Study and Preliminary Design for the entire project. The consultancy scope also includes an Initial Environmental Examination (IEE); and a social and poverty analysis and impact assessments, in accordance with ADB's Safeguard Policy Statement (SPS) 2009.

31. With reference to the Contract Agreement for Consultancy Services for the engagement, one of the main tasks of the Consultant is to prepare the Initial Environmental Examination (IEE) for the project in accordance with the requirements of the ADB's Safeguard Policy Statement (SPS) 2009; and also the relevant legislation of the Government of the Kyrgyz Republic. Such environmental safeguard requirements specify that the borrowers/clients are to undertake an environmental assessment process which entails assessing impacts, planning and managing impact mitigations, preparing environmental assessment reports, disclosing information and undertaking consultation establishing a grievance mechanism, and monitoring and reporting. The IEE document shall also include particular environmental safeguard requirements pertaining to biodiversity conservation and sustainable management of natural resources, pollution prevention and abatement, occupational and community health and safety, and conservation of physical cultural resources.

32. This IEE document includes an Environmental Management Plan (EMP) based on the identified potential impacts, their characteristics, magnitude, distribution, and duration, sensitive receptors and affected groups. The EMP shall address the potential impacts and risks identified by the environmental assessment with the corresponding mitigation measures designed to minimize, reduce and mitigate (or compensate the affected parties) and to be implemented for the entire project cycle.

Extent of IEE Study

33. This Initial Environmental Examination (IEE) Report is for the Section Aral (Km 195) to Too-Ashuu pass (Km 286), which has a distance of around 93 km. This road section shall be

rehabilitated into Category III road. Accordingly, with its setting and mode of rehabilitation, the project undertaking is classified under the ADB Safeguard Policy Statement 2009 as environment Category B, requiring an Initial Environmental Examination. The purpose of this IEE is to assess potential environmental, health, safety and social impacts of the proposed road project. With the expected construction scope it is expected that few impacts, if any, are irreversible, and in most cases mitigation measures can be designed to avoid or minimize them

34. Public Consultations meeting on the environmental aspects for Aral (Km 195) to Too-Ashuu pass (Km 286), in accordance with Kyrgyz legislation on public access to the information and ADB's Public Communications Policy (2011) and SPS (2009), was undertaken on 18 March 2016 in Suusamyr Village Administration Office. This was organized by the IPIG-MoTR through official communication to the local leaders inviting stakeholders in the surrounding villages.

2. Environmental protection legislation of Kyrgyz Republic

35. Environmental impact of the Aral (Km 195) to Too-Ashuu pass (Km 286) Road Rehabilitation Project is regulated by a number of environmental legislative acts of the Kyrgyz Republic.

Table 51: Relevant Laws and Regulations on the Environmental Impacts of Road Projects

N	Legislation	Number & Year of adoption	Purpose/content
Main laws on environmental protection			
1	The Constitution of the Kyrgyz Republic	2010	Land, its mineral resources, airspace, waters, forests, flora and fauna and other natural resources are used, but at the same time are under protection. Everyone is obliged to take care of the environment, flora and fauna of the country.
2	The Environmental Safety Concept of KR	No.506 dtd. 23.11.2007	It establishes the basic principles of environmental policy and determines global, national and local environmental issues; priorities in the field of environmental protection at the national level as well as tools to ensure environmental safety.
3	National Sustainable Development Strategy of the Kyrgyz Republic for 2013-2017	No.11 dtd. 21.01.2013	Provides a conceptual sustainable development framework aimed to satisfy the needs of current generations and not to endanger at the same time the needs of future generations.
4	Law of KR "On Environmental Protection"	No.53 dtd. 1999 in the wording dtd. 27.04.2009	Establishes the basic principles of environmental protection and provides legal authority to establish environmental quality, designate special protected areas, promulgate rules and procedures for the use of natural resources, establish environmental monitoring and control system and reinforce procedures for overcoming emergency situations. Among the standards and norms of environmental quality authorized under this law and related to the project there are: Standards of Maximum Safe Concentration ofHazardous Substances In Air, Water; Standards of Natural Resources Use; Standards of Maximum Safe Noise, Vibration Levels and Other Hazardous Physical Impacts. This law establishes the requirements for environmental examination (environmental assessment) intended by economic or other activities to prevent potential adverse environmental impacts. In addition, it prohibits financing or implementation of projects related to the use of natural resources without obtaining approval from the State Environmental Expertise.
5	Law of KR "On Environmental Impact Assessment"	No.54 dtd. 1999, in the wording dtd. 04.05. 2015	The main law related to environmental assessment. Its task is to prevent negative impacts on human health and environment occurring as a result of economic or other activities, and to ensure compliance of these activities with environmental requirements of the country.

N	Legislation	Number & Year of adoption	Purpose/content
6	Law of KR "General technical rules and regulations for environmental safety in the Kyrgyz Republic"	No.151 dtd. 2009	Is meant to protect the environment. It determines the main provisions for technical regulation of environmental safety and establishes general requirements for ensuring environmental safety during design and operations of businesses and other facilities of all legal and physical entities.
7	Regulation on procedure for conducting environmental impact assessment in the Kyrgyz Republic	No. 60 dtd. 13.02.2015	Establishes the procedure for assessing the environmental impact of the proposed activity (hereinafter EIA). The purpose of EIA is to prevent and/or mitigate the environmental impacts of the proposed activity and other related social, economic and other consequences.
8	Regulation on Water Zones and Strips of Water Bodies Protection in the Kyrgyz Republic	No.271 dtd. 7.07. 1995	Defines the procedure for establishing water zones and strips of water bodies protection in the Kyrgyz Republic, establishes a regime of economic activity and land use located in the water protection zones and strips. This law also defines responsibility for keeping them in proper shape.
9	Rules for the protection of surface waters in KR	on March 14, 2016 № 128	These Rules govern the protection of surface waters from pollution and depletion, in the implementation of the water users of different types of business activities that have or may have an adverse impact on the status of surface waters, irrespective of their legal form, as well as regulate the procedure for implementation of measures for the protection of surface water.
10	Law of KR "On Protection of Atmospheric Air"	No.51 dtd. 1999, in the wording dtd. 09.08.2005	Governs the relations on use and protection of atmospheric air.
11	Law of KR "On Production and Consumption Waste"	No.89 dtd. 2001	Defines the national policy in production and consumption waste management. It is aimed at preventing negative impacts from production and consumption waste on the environment and human health while handling it and their maximum involvement in the economy as an additional source of raw materials.
12	Law of KR "On Protection and Use of Flora"	No.53 dtd. 2001	Establishes the legal framework for ensuring effective protection, rational use and reproduction of flora resources.
13	Law of KR "On Wildlife"	No.59 dtd. 1999, in the wording dtd. 24.06.2003	Establishes the legal relations in the context of protection, use and reproduction of wildlife.
14	Law of KR "On local self-government and local state administration"	No.101 dtd. 2011	Establishes the principles for setting-up local authorities at the level of administrative and territorial units of the Kyrgyz Republic.
15	Law of the KR "On industrial explosives";	No. 110 dtd 21. 05. 2015	Defines the legal framework for the regulation of explosives trafficking on the territory of the Kyrgyz Republic, and ensuring the safety of personnel working with explosive materials, the population, as well as the protection of property and the environment;
16	Regulation on the procedure of consideration and issuance of industrial safety authorization documents.	No.301 dtd. 30.05.2013	Establishes the procedure for consideration and issuance of legal entities and individuals, allowing documents authorized executive body, endowed with special licensing features in the field of industrial safety, including conduct of explosive works (procurement, storage of explosive; license for explosive work, etc.)
Legislation on Land Acquisition			

N	Legislation	Number & Year of adoption	Purpose/content
17	The Constitution of the Kyrgyz Republic	2010	Clause 12 recognizes a diversity of forms of ownership and guarantees equal legal protection of private, state, municipal and other forms of property (Clause 12, paragraph 1). Land can be of private, municipal and other forms of ownership except for pastures, which cannot be privately owned (Clause 12, paragraph 5). Property is indefeasible. No one can be arbitrarily deprived of his property. Seizure of property by the state against the will of the owner is allowed only by court decision (Clause 12, paragraph 2). Seizure of property for public purposes specified in the law is possible by the court decision with fair and advanced compensation of property cost and other damages caused as a result of such alienation. (Clause 12, paragraph 2).
18	Civil Code	No.16 dtd. 8.05.1996 in the wording dtd. 30.05.2013	Determines that the person whose right is violated can demand full compensation for damages, unless the law or agreement consistent with the law says otherwise (Clause 14, paragraph 1). The Civil Code specifies the following losses subject to compensation: expenses incurred or to be incurred by the person whose right is violated in connection with restoration of violated rights (Clause 14, paragraph 2); loss or damage to property (Clause 14, paragraph 2); lost income that would be received by the person under normal civil turnover conditions if his right was not violated (lost profits) (Clause 14, paragraph 2); Compensation for loss of profits along with the other costs, at least in the amount of such income, to the person loosing land, assets or livelihood.
19	Land Code	No.45 dtd. 2.06.1999 in the wording dtd. 26.05.2009	Governs land relations in the Kyrgyz Republic, basis for the origin, procedure for exercise and termination of rights to land and their registration, and also aimed to create land and market relations in state, communal and private ownership of land and efficient use and protection of land. The Land Code is the main document, which regulates land use.
20	Law of KR «On transfer (transformation) of land»	No. 145 dtd. 15.07.2013	This law is developed in accordance with the Land Code of the Kyrgyz Republic and other normative legal acts of the Kyrgyz Republic. It defines the legal basis, conditions and procedure for transfer (transformation) of land from one category to another or from one type of land to another.
21	Law «On Highways»	No.72 dtd. 2.06.1998	According to Clause 4 the public roads are owned by the state and not subject to sale and cannot be passed into private ownership. This law (Clause 27) also provides that without prior approval of the State Automobile Inspectorate and the Ministry of Transport and Roads of the Kyrgyz Republic the following is prohibited among others: trade on the roadside; placement of kiosks, pavilions and similar structures; and, unauthorized use of road lands (Clause 23)
22	Regulation on valuation of assets		Valuation of assets is made based on the Provisional Rules of activities of valuators and valuation organizations (Government Resolution #537 dtd. August 21, 2003), property valuation standards (Government Resolution #217 dtd. April 3, 2006) and other national legislative provisions.
Law On Protection And Use Of Historical And Cultural Heritage			
23	The Law "On protection and use of historical and cultural heritage"	No.91 dtd. 26.07.1999	Establishes legal norms for protection and use of tangible historical and cultural heritage on the territory of the Kyrgyz Republic, which is of unique value for people. The law is mandatory for all legal entities and individuals. It defines their rights and obligations in the context of protection and use of tangible historical and cultural heritage. Historical and cultural heritage are the historical and cultural monuments associated with historical events in the life of the people, development of society and the state, material and spiritual creative works representing historical, scientific, artistic or other value.
Law on Access to Information			
24	The Law "On access to information held by public bodies and local self-government of the Kyrgyz Republic"	No.213 dtd. 28.12.2006	This law regulates the rights and obligations of public authorities to provide information to the local population, in order to achieve transparency of work of public awareness

International Conventions and Agreements

1	UN Framework Convention on Climate Change	2000	Combating global climate change and its consequences.
2	Aarhus Convention on access to information, public participation in decision-making and access to justice on environmental issues.	2001	To support the protection of human rights to a healthy environment and wellbeing, access to information, public participation in decision-making and access to justice on issues related to the environment.

36. Ratification of international legal acts involves implementation of international requirements into the national legislation and harmonization of the Kyrgyz legislation with the international legislation. However, this process is moving very slowly in Kyrgyzstan given that conventions are really frameworks that need to be translated into national laws, a process that is time consuming and complicated.

3. Required ADB Environmental Approval

37. ADB requires the consideration of environmental issues in all aspects of its operations. Superseding the previous environment and social safeguard policies, ADB's Safeguard Policy Statement, 2009 (SPS, 2009) sets out the policy objectives, scope and triggers, and principles for three key safeguard areas: (i) environmental safeguards, (ii) involuntary resettlement safeguards, and (iii) Indigenous Peoples safeguards. ADB adopts a set of specific safeguard requirements that borrowers/clients are required to meet in addressing environmental and social impacts and risks. Borrowers/clients comply with these requirements during project preparation and implementation. The environmental safeguard requirements are indicated in Appendix 1 of SPS 2009 (Safeguard Requirements 1: Environment). This states that ADB requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, and loans involving financial intermediaries, and private sector loans.

38. In the ADB's Screening and Categorization, the nature of the environmental assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impact are assigned to one of the following four categories:[11]

- Category A: Projects with potential for significant adverse environmental impacts. An environmental impact assessment and a summary EIA (SEIA) are required to address significant impacts.
- Category B: Projects judged to have some adverse environmental impacts, but of lesser degree and/or significance than those for category A projects. An initial environmental examination and a summary IEE are required to determine whether or not significant environmental impacts warranting an EIA are likely. If an EIA is not needed, the IEE is regarded as the final environmental assessment report.
- Category C: Projects unlikely to have adverse environmental impacts. No EIA or IEE is required, although environmental implications are still reviewed.
- Category FI: Projects are classified as category FI if they involve a credit line through a financial intermediary or an equity investment in a financial intermediary. The financial intermediary must apply an environmental management system, unless all subprojects will result in insignificant impacts.

[11] ADB. 2003. *Environmental Assessment Guidelines*, Manila.

39. The Section Aral (Km 195) to Too-Ashuu pass (Km 286) was classified based on ADB's Safeguard Policy Statement (2009), and ADB Methodological Guidelines on Environmental Assessment (2003) as a category "B", and IEE is required and regarded as the final environmental assessment report.

40. Public Disclosure: ADB will post the following safeguard documents on its website so affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

- For environmental Category A projects, draft EIA report at least 120 days before Board consideration;
- Final or updated EIA and/or IEE upon receipt; and
- Environmental Monitoring Reports submitted by Implementing/Executing Agencies during project implementation upon receipt

41. ADB also requires public consultation in the environmental assessment process. For Category-B projects, the borrower must consult with groups affected by the proposed Program and with local nongovernmental organizations (NGOs) if possible. The consultation for this needs to be carried out as early as possible in the Program cycle so that views of affected groups are taken into account in the design of the Program and within the mitigation measures proposed. In this IEE report is considered grievance redress mechanism (GRM), in Section H.

4. Permitting Processes in Kyrgyz Republic

42. The assessment of the possible effects of economic and other activities on the environment and human health, as well as the development of a list of measures to prevent adverse effects (destruction, degradation, damage and depletion of natural ecological systems and natural resources), and improve the environment are carried out in the framework of environmental impact assessment provided the environmental legislation of the Kyrgyz Republic. Environmental impact assessment is carried out according to the

- Regulations on the procedure for environmental impact assessment in the Kyrgyz Republic (13 February, 2015, #60);
- Regulations on the procedure of the state ecological examination in the Kyrgyz Republic (7 May, 2014, #248);
- Law "On Ecological Expertise" No.54 dtd. 1999, (with amendments as of 04 May 2015),
- Law "On Environmental Protection" No.53 dtd. 1999, and
- Law "General technical regulation on environmental safety."No.151 dtd. 2009.

43. The Environmental Management Plan (EMP) is developed on the basis of the EIA, design solutions and refined, is specified on each next stage of the project. EMP reflects all the possible negative impacts that have been identified EIA and includes mitigation measures these effects. Environmental assessment in the Kyrgyz Republic is founded on two subsystems: (i) OVOS (the Russian acronym for “Environmental Impacts Assessment”), and (ii) Ecological Expertise (State Environmental Review, SER). The ecological assessment based on a “list”, project screening is done to determine whether a project is the subject to environmental assessment or not. For cases that this is required, an OVOS is conducted by an OVOS consultant hired by a Project Proponent. The environmental assessment process with produce EIA documents which will be subjected for further reviews.

44. The resulting EIA is then presented for public consultations, after which revisions are done according to the public’s feedback. Subsequently, the OVOS report, Statement of Environmental Consequences, and other supporting documentations are submitted for the SER.

After which the project may be approved, rejected or send for reexamination. The outputs of the public consultation are incorporated in the Public Environmental Review (PER) which can be done both stage of the OVOS or also initiated in parallel to the SER. The SER duration depends on the complexity of the project, but should not exceed 3 months after submission of all the OVOS documents for the SER by the Project Proponent.

5. Environmental Standards

45. The following environmental standards are applied to the Project.

1. Air quality

Maximum permissible concentrations of harmful substances in ambient air according to Kyrgyz and international standards below in the Table 2.

Table 52: Maximum permissible concentrations of harmful substances

Pollutants	Maximum permissible concentration (mg/m3)		Concentration averaging period	
	According to national legislation	According to IFC*	According to national legislation	According to IFC*
Particulate Matter	0,5	0,02	daily average	1 year
Sulphur Dioxide (SO2)	0,5	0,02	daily average	24 hours
Nitrogen Dioxide (NO2)	0,085	0,04	daily average	1 year
Carbon monoxide (CO)	3,0	0,1	daily average	Maximum daily 8 hour mean

*World Health Organization (WHO). WHO Ambient Air Quality Guidelines.

2. Noise

Table 53: International (IFC) Noise Standards (dB)

Noise Level Guidelines*		
	One Hour LAeq (dBA)	
Receptor	Daytime 07:00 - 22:00	Nighttime 22:00 - 07:00
Residential; institutional; educational**	55	45
Industrial; commercial	70	70

*Guidelines values are for noise levels measured out of doors. Source: Guidelines for Community Noise, World Health Organization (WHO), 1999.
**For acceptable indoor noise levels for residential, institutional, and educational settings refer to WHO (1999).

Table 54: Kyrgyz Republic Noise Standards (dB)

Description of activity/category	Leq		Lmax	
	Day	Night	Day	Night
Areas directly adjacent to hospitals and sanatorium	45	35	60	50
Areas immediately adjacent to dwellings, polyclinics, dispensaries, rest homes, holiday hotels, libraries, schools, etc.	55	45	70	60
Areas immediately adjacent to hospitals and dormitories	60	50	75	65
Recreational areas in hospitals and sanitariums	35		50	
Rest areas at the territories of micro-districts and building estates, rest houses, sanitariums, schools, homes of aged, etc	45		60	

SN (Sanitary Norms) 2.2.4/2.1.8.562-96 “Noise at workplaces, in dwelling rooms, in public buildings and at the area of residential development”.

3. Surface water

Table 55: Surface Water quality standards

Pollutants	Maximum permissible concentration (mg/m3)	
	According to national legislation	According to EC legislation
Turbidity	Not less than 20 cm	Not less than 1,0 metres/depth
Petroleum oils	0,3 мг/л	not visible in the form of a film

GN 2.1.5.1315-03 with changes GN 2.1.5.2280-07 and SanPiN2.1.5.980-00
Directive 2006/44 / EC of the European Parliament and of the Council of 6.09 in '06 on the quality of fresh waters needing protection or improvement of quality in order to maintain fish life

C. Description of the Project

1. Need for the Project

46. Since Kyrgyzstan is a mountainous, landlocked country, regional commerce depends heavily on road transport, which dominates the Kyrgyz transport system and heavily dependent on road transport. As mentioned in Country Partnership Strategy with ADB[12], the road infrastructure has been routinely affected by climate-induced extreme events, including extreme temperatures, landslides, and mudslides. It is for this reason that further investment will be needed in the rehabilitation and maintenance of the road infrastructure.

47. The proposed project will help link the southern regions of Osh, Batken, and Jalal-Abad with the northern regions of Naryn, Issyk-Kul, Chui, and Talas, and then further connect to the regional corridors. The project will: (i) reduce the cost of passenger and cargo transportation between southern and northern regions by providing direct access, (ii) provide a more direct transit route between Kazakhstan and Tajikistan, and (iii) help stimulatetrade.

[12]Country Partnership Strategy: Kyrgyz Republic, 2013–2017 ADB, 2014.

2. Overview

48. This Section starts from the junction with the Aral-Kazarman road designated as Km 195 to the junction of Bishkek-Osh Highway designated as Km 286. The road passes through rugged and winding terrain along right bank of the Kokomeren River until it crosses it after Kyzyl-Oi Village. One side of the road is straddling the foothills of mountains that are prone to rock and landslides while the other side may be experiencing water scouring and erosion especially during flood flows. After Kyzyl-Oi Village, the road straddles the left bank of Kokomeren River prior to entering Kojomkul Village where it veers away from it up to the junction point at the Bishkek-Osh Highway.

49. This Road Section touches two Oblast – Naryn in the south and Chuy in the north. It starts at the south bridge approach at Km 195 within Aral, passes through some houses of Kyrchyn, both within the Zhumgal District of Naryn Oblast through the winding path alongside Kokomeren River, and entering Jayil District of Chuy Oblast. Most of the areas traversed by the Section are at the foothills of mountainous terrain with some mild sloping areas devoted to seasonal crops and largely for animal stock raising. After around 15 km, the road traverses narrower path with the left side constrained by steep mountain slopes and the right side bordered by the river.

50. As it enters Jayil District, the mountains recedes westward to provide for flatter area for Kyzyl-Oi Village, which is noted as a Community Based Tourism (CBT) site frequented by visitors mainly in summer. Around 43 km from its starting point; the road crosses the Kokomeren River with a bridge onto a wider space until it exits the mountainous area and enters the village of Kojomkul. From here on the road is at wider space and with wider curvatures while passing through the villages of Suusamyr and Tunuk. In these three villages, the areas alongside the road are flatter and devoted to agricultural crops and graze lands. A bridge spans over Karakol River after 56km (Km 251), which also drains into Kokomeren River.

51. At the initial portions of Section, rows of trees were planted by the roadside which may be affected in the actual road construction. Due to the mountainous path, it is envisioned that the road will be a Technical Category III road. In addition to that the road construction will be constrained by steep slopes of the mountains at the left hand side which are prone to land/rock slides and surficial erosion. In addition to that, transmission towers have been erected above steep slopes adding constraints to cutting the mountainsides to stabilize the slopes. Furthermore, at some spot, these transmission towers had been located too close to the road such thatrelocating them may become inevitable.

52. The table below shows the Geographical Jurisdictions that the road section traverses or is near to.

Table 56: Geographical Jurisdictions along the Road Section

Oblast	Rayon	Town	Village	Section / km
Naryn	Zhumgal		Kyrchyn	Km 195 – Km 286
Chuy	Jayil		Kyzyl Oi	
			Kojomkul	
			Suusamyr	
			Tunuk	

Source: The Consultant.

53. The map of the project road is shown in the following page.

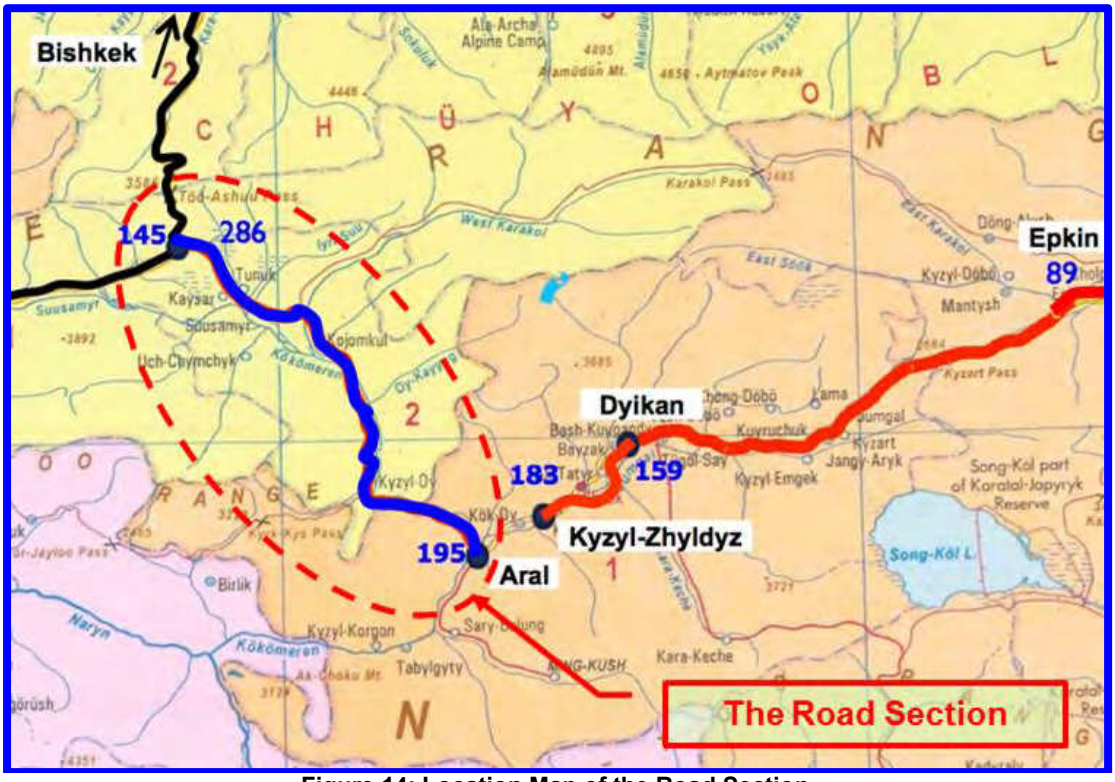

Figure 14: Location Map of the Road Section

3. Type and Technical Road Category of the Project

54. The Section "Aral (Km 195) to Too-Ashuu pass (Km 286)" will be upgraded to Technical Road Category III along the existing alignment.The details of the proposed road project are:

- Rehabilitate and pave the project road to Technical Category III from Aral (Km 195) to Too-Ashuu pass (Km 286) according to Kyrgyz National Standard with Geometrical and Structural Requirements (pavement works – replacement and/or construction of new pavement structure; road curvature improvements – for improve drivability and safety, curvatures and gradients will be improve, especially at existing narrow curves; carriage way widening – in a number of spots the road width will be widened to allow for safe two-way traffic, and pedestrian access; slope cuts – due to necessary widening and safety; slope stabilization – cuts will be stabilized by structural works);
- Rehabilitation, repair and/or replacement of bridges and culverts (bridge construction/repair – mostly repairs of bridge decks);
- Construction of side drains and other drainage structures (culverts and drainage works – replacement of old culverts and improvement of existing ones with installation of side ditches);
- Provision of retaining walls and river protection measures, where necessary.
- Provision of adequate road signing and marking (installation of road furniture – necessary safety features and furniture shall be installed at strategic locations along the road).
- Provision of safety barriers.

- The envisioned service life of the pavement based traffic load forecast is set at 20 years, with the normal routine and periodic maintenance

55. The road is to be designed according to Kyrgyz geometric design standard, and accordingly, it shall be sufficient to carry the traffic loading efficiently within its projected service life. Effectively, these will be a two-lane road consisting of a carriageway width (sum of the width of lanes) and the width of the shoulders. The design elements for the cross section of the project road are as follows:

- Number of lanes: 2
- Lane width: 3.5 m
- Carriageway width: 7.00 m
- Width of shoulder: 2.5 m (of which 0.50m is paved)
- Total road width: 12.00 m

The ensuing Figures are typical cross-sections for Technical Category III Road.

56. Permanent land allocation for the subgrade is not required on the sections between settlements. Temporary land allocation for quarries, allocation construction mashines and mechanisms is 20 hectares. During the construction provides arrangement of the construction site which will be identify on the detail design phase, and allocation for construction site have to - 1.0 hectares.

- Restoration and consolidation of alignment (stakeout)
- Coordination of the initiation and terms of construction works (with the traffic police, road administration, ecology administration, etc.);
- Preparation of the construction site;
- Preparation of sites for placing road equipment in the working area;
- Preparation of specialized areas for fuel storage;
- Felling of tress and clearing of areas;
- Demolition of existing engineering structures;
- Dismantling of fences;
- Demolition of buildings.

57. Planned volume of earthworks:

Table 57: Volume of earthwork

Description	Unit	Quantity
Excavation of top soil (vegetative layer)	m3	96,600
Excavation to spoil of unsuitable and surplus material, common soil	m3	1,415,100
Excavation to spoil of unsuitable and surplus material,rocky ground	m3	296,600
Formation of embankment, common material from cut	m3	341,000
Provision of Subgrade, selected material	m3	146,000

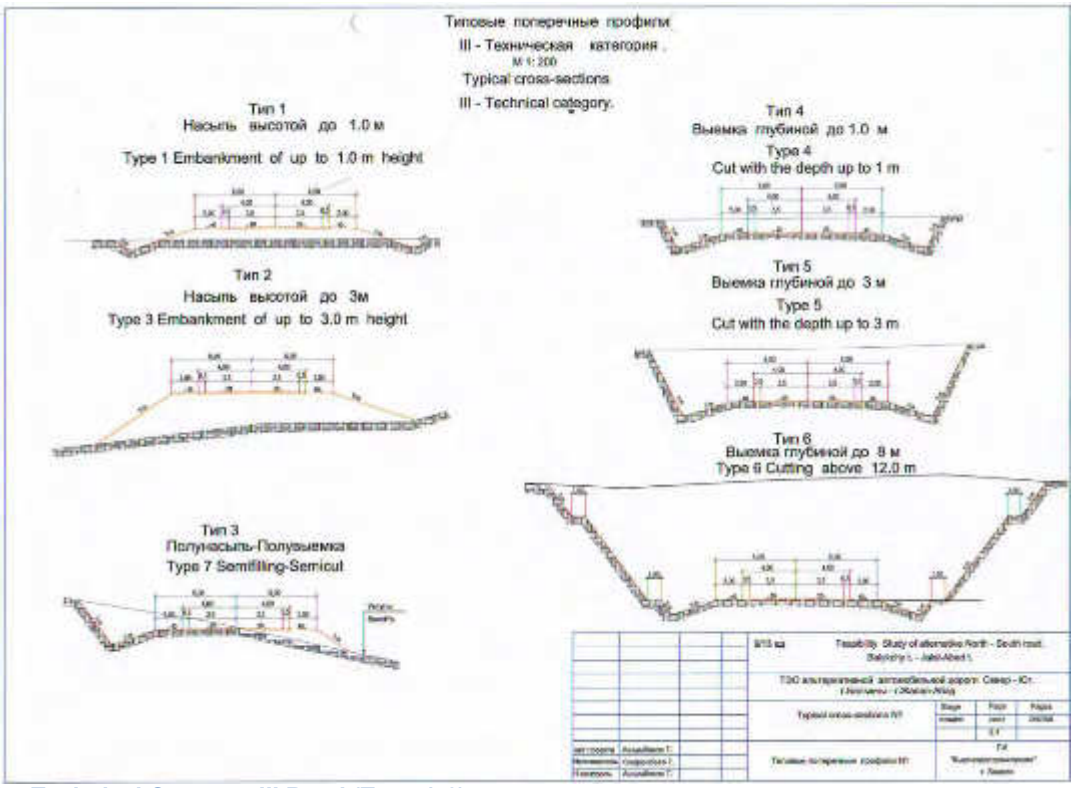

Figure 15: Technical Category III Road (Type 1-6)

Source: The Consultant

3.1. Bridges and Culverts

58. There are thirteen (13) bridges and 104 culverts along this section of the project road as shown in the Table below. In addition, there are minor water crossings that may be repaired or reconstructed into box culverts. These major bridges are defined below.

Table 58: Bridges in the Section

No.	Bridge Location	Name of crossing watercourse	Span Scheme	Bridge length, m	Design bridge width, m	Proposed Rehabilitation Measure
1	195+185	Kokomeren	3x24	78.5	12,25+2x1,6	repair
2	210+313	Tuura-Kayin	1x6.0	11.4	10+2x0.75	replacement
3	214+410	Kashka-Suu	1x6.0	12.8	10+2x0.75	replacement
4	217+795	Kobuk-Suu	2x12,0	26	10+2x0.75	replacement
5	219+138	Chon-Suu	1x6.0	17	10+2x0.75	replacement
6	221+737	Suhoy-Say	1x6.0	6	10+2x0.75	replacement
7	222+276	Chon-Boobek	1x6	6	10+2x0.75	replacement
8	231+368	Kichi-Boobek	1x6	12.2	10+2x0.75	replacement
9	236+748	Sary-Bogu	1x6	12	10+2x0.75	replacement
10	237+748	Kokomeren	3x24	78	10+2x0.75	repair, widening
11	238+085	Zhoo-Zhurok	1x6	10	10+2x0.75	replacement
12	251+062	Western Karakol	3x14	48	10.8+2x0.8	repair
13	263+019	Suhoy-Say	1x6	6	10+2x0.75	replacement

4. Temporary Ancillary Facilities

4.1. Material Sources and Cut & Fill

59. Considerable volume of materials will be obtained from borrow areas and will be used for construction of road embankments and bridge approaches. Several potential borrow areas are quite apparent in the general vicinity. Contractors involved in the recent road reconstruction works also can readily identify potential areas for borrow materials which can be used for the bridge approach roads. The prospective contractor will probably identify his own source of materials. However, the materials need to be approved by the construction supervision engineer prior to using them for the project.

60. Should the Contractor be sourcing the materials from existing and operational quarry site, the contractor should exert influence on the operator that all required permits from local authorities, get approval from territotrial departments of SAEPF are obtained and proper operational and management measures be instituted to minimize impacts to the general environment. On the other hand, should the Contractor decide to open a new borrow site, government permits are also required and borrow pit management plan will be developed as SSEMP. The guidelines indicated below should be followed in order to minimize impacts associated with the operation of borrow areas:

- All of the required environmental approvals should be secured and extraction and rehabilitation activities consistent with the requirements of SAEPF and/or permit conditions be carried out;
- Prior to operation of the borrow areas, the contractor should submit to SAEPF and construction supervision consultant (CSC) the following:
  - ✓ A plan indicating the location of the proposed extraction site as well as rehabilitation measures to be implemented for the borrow areas and access roads upon project completion;
  - ✓ A dust management plan which shall include schedule for spraying water on access road and schedule of the equipment to be used;
  - ✓ A schedule of regular dust suppression on all unpaved access roads during the construction period, particularly in sections where sensitive receptors, such as settlements, are located;
  - ✓ Location map of stockpiles which should be away from watercourses to avoid obstruction of flow and siltation;
  - ✓ Cover on haul trucks to minimize dust emission and material spillage;
  - ✓ Plan to undertake regular maintenance and repair of access roads to their

original condition whenever necessary

61. During the field investigations by the material specialist, suitable construction materials were located and inspected. However, near the road section, no suitable materials were found. During to construction period, the contractor should perform his own material survey and process the corresponding permits for the operation of material sources.

4.2. Construction materials

62. The Table provides a list of possible sites for borrow areas.

Table 59: Possible Borrow Areas

No.	Location	Description
1	Km 229+000	Operating borrow pit with coarse sand subsoil materials (LHS)
2	Km 237+000	On the LHS is an old open borrow pit with loamy clay subsoil materials
3	Km 240+000 to Km 241+000	Right hand side, an areas with loose rocks
4	Km 242+000, Km 243+000	LHS is the flood plain of the Kokomeren River. The crushing plant can be installed at the flood plain and could produce aggregates for concrete and asphalt. Existing subsoil materials are river run gravel.
5	Km 251+000	Flood plain of the Kara-Kol River where river gravel could be extracted (Both sides)

For strengthening of banks it is recommended to use material (Rock placement), which is produced during blasting operations on rocky areas (202-218 km) on the highway road in Kokomeren gorge.

4.3. Asphalt and Cement Batching Plants

63. In establishing asphalt plant at the site for the road pavement basically the binder course and the surface course; the Contractor should be guided by a number of items to protect the environment. Emissions will be produced in producing the asphalt mix likewise bitumen spill may occur during handling and mix preparation. For the cement batching plant for concreting works such as bridges, culverts and drainage works, cement dust can contaminate the air. In addition, the preparation, mixing and loading of concrete mix into the transit mixer and subsequent washing of trucks will result into soil and water contamination.

64. These two facilities should be situated at appropriate distances from the residences (not less then 500m) as well as the river (not less then 100m) so as not to result to water contamination. Within the project road, since the area is rural, there are ample spaces to set up these plants. The Contractor should obtain the necessary permits, negotiate properly with the landowners and reinstate the area after usage at the end of the project.

4.4. Construction Camp

65. The proper maintenance of all the service and sanitary facilities at the construction camp falls under the direct responsibility of the Contractor under the supervision of the construction supervision engineer for the project. The sanitary facilities or ablution include toilets, urinals, showers, washstands and a laundry area. In addition, equipment and maintenance yard will also have to be sited accordingly. Waste water should not be discharged into the river unless treated in compliance to local effluent standards. Solid waste collection and disposal should be planned properly. For construction camps, there are ample spaces in the area that the Contractor can select to set them up. It will be up to the Contractor to select the land parcels required, negotiate directly with the landowner and obtain the necessary permits for his facilities.

5. Alternatives

66. Two alternatives were considered in this IEE:

1. Zero option – the «Inaction»/ do nothing alternative
2. The road reconstruction

67. The second Alternative is considering the road reconstruction in the section “Aral (Km 195) to Too-Ashuu pass (Km 286)”. Reconstruction of the Category III road through the gorge Kokomeren and residential houses in Kyzyl-Oi, Kojomkul, Suusamyr, Tunuk and up to 286 km where the road

connects to the highway Bishkek -Osh.

6. Traffic Volume

68. Results of the Manual traffic counting road section converted into AADT by each vehicle type (Year 2015) in view of seasonal and daily correlation is shown in the Table below[13].

Table 60: Results of Manual Traffic Count (2015)

Analysis section	Name of the section	Vehicle Type	Car	Light Bus/Van	Medium Bus	Large Bus	Light Truck Pick Up	Medium Truck 2-axle	Heavy Truck 3-axle	Truck trailer	Truck Semi trailer	Total
3A	Aral-Suusamyr 195+000km-260+000km	Counting result	117	6	4	0	7	9	5	4	3	155
		Day/Month Factor (Tuesday/August) = 0.885										
		AADT	104	5	4	0	6	8	4	4	3	137
3B	Suusamyr - Too Ashuu 260+000-274+590km	Counting result	277	73	14	0	34	10	5	0	0	413
		Day/Month Factor (Thursday/August) = 0.832										
		AADT	230	61	12	0	28	8	4	0	0	344

69. As per estimate in the traffic study, the growth rate is as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After adding the diverted traffic and applying the growth rates the future traffic are around 1, 450 cars. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category III road will be sufficient to service the future traffic.

7. Proposed Schedule for Implementation

70. The schedule for the construction activities is at preliminary stage. The detailed design consultant will have to be recruited who will undertake the necessary design finalization along with all the contract documents. This IEE will form a part of the contract with specific provisions to form part of the Technical Specifications. The anticipated start of construction will be around March 2017.

D. Description of the Environment

1. Geomorphology

71. The area of road section covers various geomorphological relationships as follows:

- From km 195 to km 200 the road ascends mildly from the valley floor with Kokomeren River on the right-hand side. The terrain on the left hand side is generally foothills of the mountain ranges which are mainly eroded sediments deposits from the mountainous regions mixed with river deposits. Residents in the area are mainly herders and with some agriculture activities but less intensive as compared to those living in Zhumgal valley.
- From km 200 to km 218 the road goes through a gorge where the left hand side is steep foot of the mountain range with Kokomeren River on the right-hand side and again bordered by the steep mountain slopes. The mountains in the area are mainly fracture rocks conglomerate of sandstone and siltstones and in a number of areas consist of loose cobbles and loose sediments. A few rock/stone slides were noticed along the road and can be a major concern in these sections. Due to its higher elevations, snow tends to stay longer in these areas compared to the lower valleys.
- From km 218 to km 221 is the location of Kyzyl-Oi village (1,800m elevation) on the left-hand side of Kokomeren River. The valley in this spot forms a bowl surrounded by dry, red-coloured mountain slopes – hence the village name which means “red bowl”.
- From km 222 up to km 237 (the bridge site crossing over Kokomeren River), the road goes through narrow gorge with steep mountain slopes on the left hand side of similar geologic character of rocks, sandstone and siltstone conglomerates as well as

[13] This is part of the Economic Report fot this PPTA

deposited loose sediments and cobbles. Local trees mainly thrive alongside Kokomeren River where the banks is filled with river washed stones.

- From km 237 to km 243, the road runs on the east bank of Kokomeren River. In some places the road is narrowed by the presence of steep mountain slopes on the right hand side and river ravine on the left-hand side.
- From km 243 up to the end point at km 281 is the Suusamyr elevated valley or plateau (2200 m elevation) consisting of the villages Kojomkul (km 244), Suusamyr (km 257) and Tunuk (km 260). The Suusamyr valley is limited from all sides with Kyrgyz ridge and ridge Suusamyr Too. The area is a confluence of Suusamyr River from the northwest, Karakol River flowing from the east, and a minor river - Djoo-Djurok River. The area has lush vegetation, especially along the river banks, with wash deposits of stones and rocks. At the final stretch (km 266 – km 281) of this section are swamplands, primarily on the right hand side which are accumulated waters from snow melt from Too-Ashuu ranges. The area also is graze land for horses of local farmers.

2. Soil and geology

72. Black dark chestnut soils, mainly along the Zhumgal River, are widely spread in the study area. The top soil is of 0.15-0.25m thickness. Natural vegetation is highly developed in floodplains and on slopes and is represented by poplar, birch, willow, out of which shrubs- buckthorn, barberry, etc. In urban areas there is developed gardening (apples, apricots, pears, etc.). In settlements, there are ornamental plants (poplar), whereas gardening and horticulture is developed in homestead lands. The oldest rocks in the survey area are the Upper Ordovician granites (O3). The rest of the surveyed section is prevailed by upper-quaternary and modern quaternary deposits, presented by large-fragmental soils and in the form of case from pulverescent - clayey soils. Depth of occurrence is more than 10.0 m. According to the map of seismic regionalization of Kyrgyz Republic territory, the surveyed section relates to 8 point seismic zone (SNiP KR 20-02:2009).

3. Climate

73. Zhumgal rayon.A climatic characteristic of surveyed section is given according to long time observations of “Chaek” weather station located at 16-18 km westward from the beginning of section, km 195+500. The “Chaek” weather station is located at 1642 m above sea level. Climate of the region is continental with cold long winter; average monthly negative temperature keeps 5 months a year. Summer is warm. Absolute maximum and minimum temperature degree is 42.7°C and minus 34.4°C. Precipitation is not too much –average perennial amount is 253 mm.

74. Jaiyl rayon.The climate is characterized by the main indicators for the western part of Chui valley. The climate is continental with dry hot summers and moderately cold winters (except Suusamyr Valley). Average July temperature within 25C. Autumn is dry, warm, followed by a sharp transition to winter. Number of days with snow cover 71 with a height of 21 cm of snow in the valley part.

75. For bottom Suusamyr valley snow depth of 50 cm with the number of snow days in the year 158. For the northern slopes Suusamyr range, depending on the absolute height, the number of days with snow cover and snow depth increased, and are as follows: 2000 m - height of snow cover 48 cm - number of days 153; 2500 meters - 60 cm - 185 days; 3000 m - 110 cm - 217 days; 3500 m - 185 cm - 263 days.

By climatic characteristics the surveyed road sections relates to IV road climatic zone (SNiP KR 32-01:2004, Appendix B, table B.1)

4. Hydrology

76. In the western watershed after the Kyzart pass, melting glaciers, snowfields and rain supply the surrounding regions tributaries of rivers such as Zhumgal, Ortho Kuugandy, Kyzart, and Turuk. Zhumgal River is the east-left tributary of the Kokomeren River with maximum flow rate of 80m3/sec. Its catchment area is 2390 km2, with an average elevation of 2670 m and average slope of the river 24%. The river is hydrologically well investigated with observations carried out at the river gauging station located at a distance 78 km away from the headwater source.

77. The valley is formed by the two catchments of the Suusamyr River and Karakol River flowing from East and West respectively, which then join to form the Kokomeren river and flow south to the Naryn river.Kokomeren River belongs to the group of rivers with intermittent freeze-up. The typical ice phenomena include sludge ice, shore ice and floating shapes.

78. Kokomeren River is the right tributary of the Naryn River, collecting water from the slopes of the mountains surrounding Suusamyr and Zhumgal and depression. The main components are Suusamyr River Karakol (west) and Zhumgal. Above alignment gauging station located below the mouth of the river Zhumgal, Kokomeren catchment area of the river is 8,440 km2 and the average annual water consumption - 81.9 m3 / s. Maximum monthly flow is formed in June and is 218 m3 / s, the minimum flow equal to 29.6 m3 / s, is held in March.

5. Fauna

79. The fauna of this area is represented by a variety of types of ecosystems[14]. The main types of ecosystems and species common there:

- <u>Desert and semidesert (Aral - begining of Kokomeren gorge)</u>
  - Reptiles: desert lidless skink, lizard, arrow-snake, copperhead;
  - Birds: little owl, mongolian plover, short-toed lark, tawny pipit, common chats, black redstart, rocky nuthatch, desert mongolian finch, roodyshelduck (in reservoirs), bearded partridge, chukar partridge (in open habitats), turtle dove, black-bellied sandgrouse flies, orjok-duck lives in Zhumgal River watershed;
  - Mammals: great horseshoe bat, sharp-eared owl-moth, tolai hare, sand eel, steppe polecat, stone marten, gray marmot, muskrat (in reservoirs);
  - Fish: Suusamyr scaly osman, Marina, trout, snakehead
- <u>Spruce forest (Kokomeren Gorge)</u>
  - Birds: hawk, goshawk, merlin, kestrel, falcon, eagle owl, partridge, a large turtle, cuckoo, garden warbler, painted titmouse, finch Red Cap, juniper grosbeak, raven, crow, magpie
  - Mammals: shrews, tolai hare, gray marmot, mice, voles, bear, fox, wolf, stone marten, wild boar
- <u>Steppe (Suusamyr Valley)</u>
  - Reptiles: Alai gololaz, patterned snake, copperhead snake, Orsini's viper
  - Birds: cranes, hobby, harriers, lesser kestrel, bearded partridge, chukar partridge, quail, hoopoe, skylark, rock thrushes, rock sparrow, starling
  - Mammals: shrews, groundhogs, porcupines, mice, gray hamster

6. Flora

80. The flora of this area is also divided by ecosystems[15]:

- <u>Desert low mountains and middle zones (Aral - begining of the Kokomeren Gorge):</u>
  - *Tianschanica, Sympegma regelii, Kalidium cuspidatum, carex pachystylis, fectuca sulcata*
- <u>Spruce forests low-mountain and middle (Kokomeren Gorge):</u>
  - Spruce woodlands and meadows and bushes.
  - ✓ Meadows: *Geranium regelii, Iris ruthenica, Aegopodium alpestre, Polygala hybrid*
  - ✓ Shrub: *Cotoneaster melanocarpus, Berberis sphaerocarpa, Spiraea hypericifolia*
- <u>Steppe alpine zone (Suusamyr Valley):</u>
  - *fectuca sulcata, fectuca olgae, stipa krylovii, rr-S.lessingglana*

7. Endogenous and exogenous processes

[14] Source Atlas KR,Physical geography of Kyrgyzstan

[15] Source Atlas KR,Physical geography of Kyrgyzstan

81. **Seismic hazard**. According to seismic regionalization of the Kyrgyz Republic territory, the project area relates to 8-point seismic zone (SNiP KR 20-02:2009).

82. **Mudflow hazard**. Mudflow of storm origin may take place in rural districts by threatening homes, bridges, roads and channels. Mudflow may take place once in two or more years on the major part of the area's mountainous territory. Mudflows of storm origin may happen within April-September, most likely within May-July.

Table 61: Forecast of Possible Activation of Mudflows and Floods

N	Rural district	River	Settlement	Facilities that might be affected
1	Suusamyr	mudflows, Joo – Jurek River	Kojomkul village	Houses
2	-"-	Kokomeren river, right bank	Kyzyl- Oi	Suusamyr – Aral road (in 2013 137 m of dam constructed
3	-"-	West Karakol river	Karakol village.	Houses
4	-"-	West Karakol river	Suusamyr – Aral road	Bridge
5	-"-	Kokomeren river, left bank	Suusamyr – Aral road, 37km	Road bed

Source: Official website of Ministry of Emergencies, KR, 2015.

83. **Flooding**. Areas with high levels of groundwater are confined to lower terraces of Kokomeren river valleys.

Table 62: Forecast of possible development of flooding processes

N	Rural district	Settlement	Flooding reasons	Recommended safety measures
1	Suusamyr	Kyzyl-Oi village	High ground water level	Recommended to construct closed type collector drainage network

Source: official website of Ministry of Emergencies, KR, 2015

84. Rock fall danger.Rock falls may activate on the territory of Suusamyr rural district.

Table 63: Forecast of possible activation of rock fall

No	Rural district	Facilities that might be affected
1	Suusamyr – Aral road, 37 km	preventive measures: monitoring, slope trimming arrangement of waterproof strip, Near the slope ditch with depth of 1 m
2	Suusamyr – Aral road, 47 km	
3	Suusamyr – Aral road, 49 km	
4	Suusamyr – Aral road, 52km	

Source: official website of Ministry of Emergencies, KR, 2015.

8. Socioeconomic Information

85. The Section "Aral (Km 195) to Too-Ashuu pass (Km 286)" of the project road passes through Kyzyl-Oi Village, which is noted as a Community Based Tourism (CBT) site frequented by visitors mainly in summer, whereas a small village of Kyrchyn has limited economic activity. As the section passes through kilometers of gorge, settlements area quite sparse. More active economic activities can be observed in the cluster of villages within Suusamyr Ayil Okmotu within Jayil Rayon.

86. In the area the people have diversified agriculture activities – growing potatoes, garlic, cabbages and fodder crops. In the summer, people still live in yurts and graze sheep and horses on the lush grass. The area is well known for its kumyz, airan (yoghurt) and honey.

87. Further up the road is the Suusamyr Plain, located in the South-West of Chui Valley. Generally, this zone, located at 2000-3800 meters above sea level is used by farmers as summer pastures. Farmers are practicing agro-pastoralism by grazing animals and at the same time producing winter fodder for their livestock. They cultivate mainly barley and sometimes perennial grass. The territory of the local administration of the Suusamyr Aiyl Okmotu includes 6,645 hectares of arable

land.

Village authority's passport

Name of settlements included in this Suusamyr village authority and number of population, man:

- Suusamyr village -3159
- Tunuk village -902
- Kojomkul village -1032
- Kyzyl-Oi village -870

Table 64: Village Authority's Passport

#	Indicators	Information
	Administrative-geographic location:	Jaiyl region is located in the western part of Chui valley
	Distance to the country capital, km	165 km
	Distance to the nearest railway station, km	105 km
	Distance to the nearest airport, km	190 km
	Elevation above sea level, m	2400 and above
	Territory, 1000 km2	138645 ha
	Population – total, man	7048
	Number of village authority (village, rural authority) office	17
	Public associations:	
	Court of aldermen - number	4
	Public prophylactic center	1
	Law enforcement brigade - number	21 men
	Police assistance squads - number	1
	Ladies' committees - number	1
II. Social protection of population		
	Number of socially vulnerable population strata, under categories, man	
	Recipients of welfare due to low-income	8
	Retired people total	557
	Disabled	2501
	Including disabled children	2195
	War and labor veterans	1
	Single mothers, single fathers	3
	Unemployed (legally registered)	46
III. Employment of population		
	Average annual number of employed population (1000 man)	3989
	Particularly under economy branches:	
	- agriculture, hunting and forestry	7
	- transport and communications	1
	- trade; auto service, repair of household goods and personal demand items	102
	- public health service and social services	68
	- production and distribution of power, gas and water	7
	- Public administration	18
	- education	138
IV. Social-cultural development of region		
4.1	Education	
	Number of pre-school institutions on the v/a territory	-
	Number of children therein	-
	Number of kindergartners	-
	Number of general education schools on the oblast territory	5
	- elementary	
	- main (9-years old)	
	- secondary	5
4.2	Public health service	
	Number of health care institutions on the v/a territory (village first-aid stations)	4
	CGMP and hospitals	1
	Family practice centers	
	Number of independent groups of family doctors (GFD)	9
	Number of beds	15

	Number of doctors, man	6
	Number of medical personnel, man	62
4.3	Culture	
	Number of cultural institutions on the v/a territory:	
	Number of cultural centers	
	Number of libraries	4
	Number of museums	1
	Number of theatres	-
	Number of leisure houses	-
	Number of clubs	1
	Number of parks and children's playgrounds	
	Number of cultural workers, man	6
4.4	Physical culture and sports	
	Number of physical culture and sports institutions on the v/a territory:	
	Number of gyms	2
	Number of physical culture and sports employees	
4.5	Housing fund	
	total area of housing fund, 1000 m2	89611
	including: - private housing fund	89611
	total area of house per one man at an average, m2	12.7

V. Ensuring of sustainable growth

5.1	Agriculture, forestry, besticulture		
5.1.1	Total area of agricultural lands, ha	149268.0	
	Total area of plough land (ha),	6205	
	a) arable	2672	
	b) rainfed	3533	
	Total area of forestry fund lands (ha)	9400	
	Total area of hunting grounds (ha)		
	DFs lands	723.0	
	Agriculture enterprise:		
	Farm enterprises and peasant farm, including private	504	
	Agricultural cooperatives	11	
	Credit unions	1	
	Total volume of loan portfolio, million KGS	0.2	
	Volume issued loans, million KGS.	0.2	
5.1.2	Output of products (under types and in natural terms) for 2012	Volume of production in natural terms, 1000 t	Volume of production, million KGS
	Production of crop products (thous. tons)		
	- grain	8049,8	
	- potato	2850	
	- vegetables	75	
	- fruit and berries		
	Production of animal products:		
	- meat (in carcass weight) (thous. tons) live weight	103.9	
	- milk (thous. tons)	309.3	
	- egg, 1000 pcs	267.4	
	- wool (in physical weight) (thous. tons)	7.2	

9. Cultural and Archaeological Resources

88. In March 2016, an archaeological investigation was performed by a local archaeologist, historical and cultural heritage sites and objects in the vicinity of the project within the territories of Zhumgal district of Naryn oblast and Jaiyl district of Chui oblast in accordance with the Technical instructions and norms of the method of archaeological investigations[16].

89. In this section by results of study were discovered objects of cultural and historical significance. These are old Burial grounds. By the results of field visits found modern cemeteries along the road. It is important that the road design and consequently the construction have to ensure that impacts will be avoided or minimized.

90. Within the section the significant archaeological resources consist of the following:

1). 197 km - Burial ground (N41°51'39.5" E074°20'00.4") – This was a cemetery of early nomads

[16] Provisional Regulations on the procedure of the archaeological survey. Approved by Decree of the Government on July 11, 2014 under the number 386;Avdusin DAField Archaeology of the USSR.- M., 1980. - p.58-113.

(about 20 m at the left-side of the road), elevation 1479 m, and was noted around 10 meters to the east from Aral-Kojomkul road. The cemetery comprises of about 15 mounds with some construction noticeable on the ground surface. The stone-ground embankment of the mounds is 0.3 to 1.3 meters high with a diameter of 8 to 15 meters. It dates back approximately 1 thousand years B.C.

Figure 16: Burial Grounds near Kokomeren Bridge (N41°51’39.5” E074°20’00.4”)

91. 2) 198 km + 500 - Kyrchyn 1 Burial Ground (N 41°52’24.2” E074°19’45.3”) – This is a cemetery consisting of more than 30 mounds visible on ground surface in the territory of Kyrchyn village. The spot has been conventionally defined as Kyrchyn 1 cemetery. The mounds are located on both sides of the road and represented by objects of round and square masonry construction. The complex structure located on the eastern part of the road consists of mound with stone-ground embankment of height 1.6 meters, diameter 18-20 meters and further to the east are eightstone burial fences of rounded rubble stones. This burial ground is dated back to 1 thousand year C.E.

Figure 17: Kyrchyn 1 Burial Ground (N 41°52’24.2” E074°19’45.3”)

92. 3). 201 km - Kyrchyn 2 Burial Ground (N41°52’59.4” E074°19’20.3”) – in the northwest part of the territory of Kyrchyn village. This cemetery consists of more than 25 rolled rubble stones distinguishable on ground surface at elevation 1516 m. This cemetery has been commonly referred to as Kyrchyn 2 cemetery. The objects are located on both sides of the road and consisting of mounds with stone-ground embankment of height 0.2 to 1.5 meters and diameter from 6 to 17 meters. On the eastern part of the road, the group of mounds consists of four main and eight adjoining burials. The adjoining burials are mainly located around the second main burial at the southern part. This cemetery dates back 1 thousand years C.E.

Figure 18: Kyrchyn 2 Burial Ground (N41°52’59.4” E074°19’20.3”)

93. 4). 209 km - Burial Ground (N 41°54’46.8” E 074°15’15.5”) - This is a group of mounds found (elevation 1506 m) 15-20 meters on the right side of the road between Kyrchyn and Kyzyl-Oy villages. The cemetery consists of seven mounds with distinguishable round masonry construction and is mainly located in the first and second slope-ridge right bank of Kokomeren river - 5 mounds are located in the first ridge, with one of them is with external ring; 2 mounds are located in the second ringe and both of them are with external ring. The mounds’ heights are 0.5 meters with diameter is 5 to 15 meters. These burial grounds are supposed to be dated 1 thousand years B.C.

Figure 19: Burial Ground (N 41°54’46.8” E 074°15’15.5”)

94. 5). 243 km - Kojomkul Kumboz [Kojomkul Mausoleum] (42° 7'14.85"N, 74° 5'26.64"E) – Found at the entrance of the Kojomkul village. It is located around 20-25 meters at the left hand side of the road. This was erected in honor of Kaba uluu Kojomkul, a Kyrgyz legendary strongman who lived in the late 19th - early 20th century in Suusamyr

Figure 20: Kojomkul Kumboz (42° 7'14.85"N, 74° 5'26.64"E)

95. According to the results of field research, data cultural monuments were not detected in the visible area of the road route is elevated above ground facilities, so have not been identified and included in the survey list. Monuments are objects placed directly on the ground in the form of small hills and clusters of stones. In order to prevent possible impacts on cultural heritage in this area, it was decided to conduct archaeological research.

96. According to the study, it was determined that the objects are located at:

- 197 km - Burial ground (N41°51’39.5” E074°20’00.4”) – LHS, 15 – 100 m from the road.
- 198 km + 500 - Kyrchyn 1 Burial Ground (N 41°52’24.2” E074°19’45.3”) - 3 – 45 м, on both sides of the road.
- 201 km - Kyrchyn 2 Burial Ground (N41°52’59.4” E074°19’20.3”) - 10 – 100 m, on both sides of the road.
- 209 km - Burial Ground (N 41°54’46.8” E 074°15’15.5”) – RHS, 25 – 50 m from road. They are a unique and rare mounds on the territory of Kyrgyzstan.
- 243 km - Kojomkul Kumboz [Kojomkul Mausoleum] (42° 7'14.85"N, 74° 5'26.64"E) – LHS, 15-20 м from the road.

97. Based on the results of the research, report has been prepared, which was sent to the Ministry of Culture, Information and Tourism of the Kyrgyz Republic (MoCIT) for review (Appendix F). These objects of historical and cultural heritage are the objects of study and protection of MoCIT KR. To prevent exposure to these objects it is necessary to develop Management plan for objects of cultural heritage, according to the law protection zone of objects is not less than 50 m. Therefore, all questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government.

98. On the basis of the findings (Appendix F), during the detailed design, Consultant should send the road design along with the Management plan for objects of cultural heritage for coordination with MoCIT KR.

99. In accordance with the Law of the Kyrgyz Republic on historical cultural heritage in the event of cultural monuments found, all construction works must stop and report the findings to the local executive authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National Universtiy after Balasagyn); MoCIT KR.

10. SensitiveReceptors

100. Sensitive receptors are those areas where the occupants are more susceptible to the adverse effects of exposure contaminants, pollutants and other adverse substances that the activities may generate. These generally include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. Such facilities along the project road section as referred to the alignment sheet are:

- Kyzyl-Oi village school (km 220+200) – located at the right hand side near the CBT office
  - ✓ Kyzyl-Oy has FAP(Health post), a school, a mosque - 218 km +700
  - ✓ School and Sport ground area - 220 km + 400
- Kojomkol village school (km 245+200) – located at the right hand side of the road
  - ✓ Kojomkul village. Historical monument – Kojomkul's house - 243 km
  - ✓ Kojomkul village has a health post, school, mosque, museum, club and post office 244 km
- Suusamyr village (km 258+500) – alongside police station at the left hand side
  - ✓ Local health clinic, Mosque (7-8m from the road) - 245 km
  - ✓ Suusamyr village has a hospital, mosque, club, park-veteran museum, police station and shops - 257 km
- Tunuk village school (km 260+000) – located at the left hand side of the road
  - ✓ Tunuk village has a health post- 260 km
  - ✓ Mosque (RHS) and the shop (LHS) - 261 km +200
  - ✓ School (LHS) - 261 km + 800
- Cemeteries and other historical objects, described above.

Aside from the possible impact due to noise, dust, vehicular emissions during construction and operations of the project, public safety can be a concern when trucks, equipment and construction materials are brought to the sites near these sensitive receptors. Disturbances may occur during class hours and treatment period and traffic safety may be concern with hazards to children as they walk or commute to and from schools.

11. Baseline Measurements

101. Baseline measurements in water quality, air quality and noise/vibration were obtained in selected spots. Water quality measurements were obtained where construction will impact river quality. Air quality and noise/vibration measurements were obtain in likely receptor areas. These results shall be used as reference parameters in monitoring the impacts of construction and operations of the project. International standards were also presented herewith for comparison with KR standard; subsequently the more stringent standards shall be used as monitoring requirements.

102. Water quality and air quality measurement were done by the Ecological monitoring Department of the SAEPF. While noise and vibration measurements were done by the Department of the sanitary protection of the Ministry of Health.

11.1. Water Quality Measurements

103. Sampling was done according to GOST P 51592-2000 "Water. General sampling requirements", WSS 33-5.3.01-85 "Instruction on sampling for waste water analyses". Legislative requirements were observed.

104. As baseline data in water quality, it was decided that measurements would be done for the most relevant parameters: Turbidity and Total Petroleum Hydrocarbons (TPH). Therefore, the contracted laboratory was instructed to obtain the measurement in bodies of water. It was observed that the downstream areas utilize water from the river mainly for agriculture and domestic uses. Drinking water is obtained from installed wells and from springs. The results of such water quality testing are shown below.

Table 65: Water Quality Measurement Results within the Section

No.	Locations	Km in Road	Turbidity, cm	TPH, mg/l
Maximum Permissible Concentrations (MPC)				
According to national requirements			Not less than 20	0.3
According to EC legislation			Not less than 1,0 metres/depth	not visible in the form of a film
1	Kokomeren River in Aral village, bridge	195 +400	40	<0.05
2	Kokomeren River after Kyzyl-Oy village, bridge	273 + 000	37	<0.05

3	Karakol River in Kojomkul village, bridge	251 +000	32	<0.05

Note: Measurements done in Nov. 30 – Dec. 3, 2015, Annex E.

11.2. Air Quality Measurements

105. Measurement results will serve as reference values for monitoring during the construction phase. Air quality was measured at 4 points along the road, which were identified as areas sensitive to air pollution due to the proximity of schools, street markets and other special facilities.

106. In the project area there is no large industrial source of pollution affecting the air quality, but it is influenced by dust from cars. The nearest station air quality monitoring from the project area is located quite far away - in Tokmok (Chui valley) and Cholpon-Ata (Lake Issyk Kul). Naryn region has no air quality monitoring stations.

107. Most of roads are located along foothill and mountain areas with the perimeter surrounded by mountain ranges. The height of the terrain within 700-3615 m above sea level. Within the territory dominated by wetlands are dotted with sparse vegetation.

108. The only source of dust, noise and vibration is road transport. The content of inorganic dust in the air due both to climatic conditions of the region and with the movement of vehicles. For air quality the most relevant parameters to be measured would be Dust, SO2, and NO2. Accordingly, the contracted laboratory was instructed to obtain the measurement in populated areas along the project road. The results of such air quality testing are shown below.

Table 66: Air Quality Measurement Results

No.	Measurement Point Location	Chainage	Air Quality Parameters (mg/m3)		
			Dust	SO2	NO2
Maximum Permissible Levels (KR standards)			0,5	0,5	0,085
Maximum Permissible Levels (IFC)			0,02	0,02	0,04
1	Kyzyl-Oi village, near the CBT office and the school, RHS	220+200	<0.26	0.03±0.004	0.021±0.004
2	Kojomkol village, near the school, RHS	245+200	0.28±0.07	0.043±0.005	0.027±0.005
3	Suusamyr village, police station, LHS	258+500	<0.26	0.04±0.005	0.031±0.006
4	Tunuk village, near the school on the road, LHS	260+000	<0.26	0.057±0.007	0.035±0.006

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

11.3. Noise and Vibration Measurements

109. The main sources of the noise in the study area are those generated by vehicle engines, especially those carrying heavy loads running over unpaved road and at low speed. This noise is also aggravated by the noise of friction of tires on the road surface. Since there not many settlements in the area, noise is not a major problem. All noise measurements were taken at 3 m from the roadside.

110. The noise level is expected to decrease rapidly with distance from the road: at a distance of 8-9 meters from the road where reconstruction will be done, noise level drops to a level less than 60 dB (a), i.e. up to the recommended maximum level at night for the populated areas. According to the regulations limits outside noise from road transport is 80 dBA for vehicles with an engine capacity of 150 kW or more. When measuring noise in the environment as it is necessary to measure the wind speed, air temperature, barometric pressure, altitude and time data recording of the measurement (e.g., day or night).

111. Vibration is a danger to human health and the environment and mainly generated by transport, construction equipment, industrial facilities and othersources.In the area of the planned works vibration occurs when operating heavy vehicles. The most effective vibration shield can be realized at the stage of designing the project. When designing the vibration parameters will govern: sanitary and technical standards for vehicles and vibration sensitivity for building structures.

112. Normally, as a means of protection against vibration effects on the environment is the usage noise protection wall or fence of varying heights. Low construction near the tracks can significantly reduce vibration exposure. The simplest and most effective is the usual earth mound with upset it shrubs, which also serves as a sound absorber, and at the same time strengthens the roots of the earth mound.

113. The enforcement of the standards of pollution noise and vibration lies with the Department of

Sanitary and Epidemiological Surveillance Ministry of Health of the Kyrgyz Republic. The measurements were done for points at 3 m from the roadside. The noise and vibration levels are below the prescribed limit as shown below.

Table 67: Noise and Vibration Measurement Results

No.	Measurement Points	Locations	Aspects		
			Noise, dBA		
			Day	Night	
KGZ Maximum Permissible Levels			70	65	108
IFC Guidelines: - for Residential; institutional; educational			55	45	
- for Commercial & Industrial			70	70	
1	Kyzyl-Oi village, near the CBT office and the school, RHS	220+200	52		88
2	Kojomkol village, near the school, RHS	245+200	42		86
3	Suusamyr village, police station, LHS	258+500	55		92
4	Tunuk village, near the school on the road, LHS	260+000	54		91

Note: Measurements done in Nov. 30 – Dec. 3, 2015. Annex E.

E. Environmental Impacts and Mitigation Measures

1. Impacts in the Project Phases

114. The environmental impacts and mitigation measures presented in this IEE Report were based on the results of the conducted field surveys. The Section “Aral (Km 195) to Too-Ashuu pass (Km 286)” will entail upgrading of road along its existing alignment. In some spots, road runs close to sensitive receptors such as schools, mosques, cultural and historical sites or others.

115. It is anticipated that main impacts will include the following: (i) noise, dust, vehicle emission, noise and vibration, which is especially of high significance within the settlements alongside the Project road and where sensitive receptors are located such as schools, hospitals, mosques, cemeteries and other cultural historic objects; (ii) impacts on water courses and rivers due to bridge rehabilitation, construction, blasting works along the rivers; (iii) impacts from material transportation from borrow sites; (iv) impacts of tree cutting alongside the Project road due to site clearance activities; (v) impacts from asphalt plant and aggregate crushers; and (vi) impacts from contractor's working camps. Impacts have been divided in to design phase, construction phase, and operation phase. The main impacts from reconstruction of the road are described below in Table 18.

Table 68: Main Environmental Impacts

<table>
<tr><th>No</th><th>Component</th><th>During design</th><th>During construction</th><th>During the operation period</th></tr>
<tr><td>1</td><td rowspan="2">Air pollution</td><td>Level of impact on atmospheric air shall be determined by correct planning and placement of asphalt concrete mixing plants, crushing plants, quarries. The impact will be reduced by compiling a management plan for dust suppression, quarry management, inspection of machines and machinery, review of procedures required by the national legislation in the field of opinion and permits obtaining. Requirements of standards on MPC of pollutants in ambient air should be determined.
Provide for mitigation measures and determine points of monitoring of given parameters, especially near sensitive receptors.
No any other impact is expected.</td><td>Construction machines and machinery are sources of emission of air pollutants during construction,
the main pollutants are:
• carbon monoxide;
• hydrocarbons;
• nitrogen dioxide;
• soot;
• sulfur dioxide;
• inorganic dust
• benzpyrene
Dust generated due to vehicular traffic, operation of equipment, upon excavation and welding.
To determine hazard category of the facility, it is necessary to estimate the hazard category in accordance with the KR Law “General technical regulations to ensure environmental safety in the Kyrgyz Republic”.
While studying and considering similar construction work during reconstruction of roads, hazard category of the facility was determined as II, III.
The II hazard category requires calculation of pollutants’ dispersion in ambient air to determine dispersion distance and maximum ground level concentration of harmful substances. For the category III, hazards defined by calculation of emissions mass are design values and used as maximum permissible emissions.
Short-term impact is expected.</td><td rowspan="2">Atmospheric air pollution depends on traffic density. According to conducted calculations, planned traffic density will be 1,450 vehicles per day.
Having studied and considered various similar calculations to determine pollutant emissions under various traffic intensity during the operation period, we can conclude that maximum ground-level concentrations of pollutants at a distance of 3 m to 5 m from the road will not exceed the maximum permissible concentration.
Long term impact is expected.</td></tr>
<tr><td>2</td><td>It determines the location of rock for drilling and blasting works, methods and ways to conduct the work.
No any other impact is expected.</td><td>Blasting works in mountainous area along the Kokomeren River. During blasting works, the following substances will be emitted into the atmosphere: Inorganic dust: 70-20% SiO2, Carbon monoxide, Nitrogen (II) oxide, Nitrogen (IV) oxide.
When blasting operations, emissions are considered as the burst release and are subject for calculation and counting to compare with maximum permissible emissions. In order to reduce the environmental impact of blasting works, it is necessary to provide mitigation measures.
Short-term impact is expected.
Table 69: Potensial sites for blasting works
<table>
<tr><th>No</th><th>Blasting sites</th><th>Monitoring</th></tr>
<tr><td>201-202 km</td><td>Mountainous area; the road is narrow. It is necessary to widen the road by drilling, jack hammering and blasting</td><td></td></tr>
<tr><td>203 -205 km</td><td>Mountainous area, excavation of block-cobble rock materials for crushed stones.</td><td></td></tr>
<tr><td>207 -209 km</td><td>Mountainous area, blasting works shall be performed.</td><td></td></tr>
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<table>
<tr><td>210 – 212 km</td><td>Mountainous area; road development may entail jack-hammering and blasting</td><td></td></tr>
<tr><td>210km</td><td>Bridge site; there is a monument called Kara-Teke 10 meters away from the bridge.</td><td>Sampling water on oil, turbidity. Point selection - the bridge</td></tr>
<tr><td>222 km</td><td>Possible Blasting site</td><td></td></tr>
<tr><td>222+276</td><td>Chon-Boobek, replacement bridge.</td><td>Sampling water on oil, turbidity. Point selection - the bridge</td></tr>
<tr><td>225 km + 500 m</td><td>Road section passes through foothills of the mountain, which may require rock-blasting.</td><td></td></tr>
<tr><td>229 km +500 m</td><td>Possible Blasting site</td><td></td></tr>
<tr><td>233 km + 900</td><td>Possible site for mountain rock blasting</td><td></td></tr>
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<tr>
<td>3</td>
<td>Noise and vibration impact</td>
<td>Noise impact shall be determined by correct planning and placement of asphalt concrete mixing plants, crushing plants, quarries. Set up requirements for technical inspection of machines and machinery. Determine requirements of standards on maximum permissible level of noise and vibration within the sensitive receptors. Provide for mitigation measures and determine points of monitoring of given parameters, especially near sensitive receptors.
No any other impact is expected.</td>
<td>Within the period of construction works, sources of non-continuous noise are running engines of construction and road-building machinery. Sound is expected to generate at the construction site upon operation of construction equipment, delivering of building materials, digging of trenches and pits, removal and delivery of soil, blasting works etc.
The blasting works is additional source of noise and vibration. However, these works are conducted far from populated areas and other sensitive receptors. These works should be carried out during daylight hours, in accordance with the Blasting Works Management Plan.
Short-term impact is expected.
Sensitive receptors are those areas where the occupants are more susceptible to the adverse effects of exposure contaminants, pollutants and other adverse substances that the activities may generate. These generally include, but are not limited to, hospitals, schools, daycare facilities, elderly housing and convalescent facilities. Such facilities along the project road section as referred to the alignment sheet are:
• Kyzyl-Oi village school (km 220+200) – located at the right hand side near the CBT office;
• Kojomkol village school (km 245+200) – located at the right hand side of the road;
• Suusamyr village (km 258+500) – alongside police station at the left hand side
• Tunuk village school (km 260+000) – located at the left hand side of the road
• Cultural and historical sites:
✓ Burial ground, 197 km – LHS, 15 – 100 m from the road.
✓ Kyrchyn 1 Burial Ground, 198 + 500 km - 3 – 45 м, on both dised of the road.</td>
<td>Noise and vibration levels at higher traffic intensity may also have a negative effect on sensitive receptors, especially at night.
Level of noise and vibration impact shall depend on road traffic intensity and road pavement. However, having examined and studied calculations of similar facilities, we can conclude that levels of noise impact will be low and sound wave shall spread to a distance of less than 5-8 m from the road. At a distance of 8 m from the road noise and vibration levels of die down. According to measurements carried out in November 2015, the existing road coating noise and vibration levels do not exceed the required standards (table 17). In the villages on that distance are located fences or gardens of the local residents. The impact will be insignificant.</td>
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<td>✓ Kyrchyn 2 Burial Ground, 201 km - 10 – 100 m, on both sides of the road.
✓ Burial Ground, 209 km – RHS, 25 – 50 m from road. They are unique and rare mounds on the territory of Kyrgyzstan.
✓ Kojomkul Kumboz, 243 km – LHS, 20 -25 м from the road.</td>
<td>Short term impact is expected.</td>
</tr>
<tr>
<td>4</td>
<td>Surface waters</td>
<td>Impact on water body will be determined by correct planning and designing of location of bridges, culverts and crossings, in view of consolidation of banks against erosion. Determine requirements of water protection zones, standards on MPC of pollutants in water, mitigation measures and points of monitoring water bodies.
In order to prevent natural hazards, such as seasonal floods and flooding of the territory, the given section should be subjected to more thorough hydrological and geological study. Protected zone of the rivers depends on volume river flow and usually comprise at least 50 m.Kokomeren River flows along the reconstructed roads and sometimes comes close to the road. In these cases it is necessary to apply a mitigation measures.
No any other impact is expected.</td>
<td>Surface waters may be polluted due to discharging of production and domestic wastewater. Some pollution of surface water may result from spills of fuel and lubricants from equipment and containers to streams by washing. It may also be polluted during construction, reconstruction of bridges and sedimentation during the blasting works.
Out of common pollutants of water bodies, the biggest concern may cause leaking of oil products into water. First signs as individual colored spots appear already when upon spilling of 4 ml/m2. Maximum permissible concentration for oil and oil products is 0.1 mg/l - 0.3 mg/l (according to Kyrgyz standards). To prevent contamination of surface, it is necessary to provide mitigation measures, which will be described in the Environmental Management Plan (EMP).
During the construction period, water bodies will be affected upon repair, widening 13 bridge 103 culverts will be replaced. This impact will be expressed in possible contamination by soil, remaining parts of pipes, concrete headwalls, oil products, oils and by debris on the culverts areas. Short-term impact is expected.
Bridges in the Section
<table>
<tr><th>No.</th><th>Bridge Location</th><th>Name of crossing watercourse</th><th>Span Scheme</th><th>Bridge length, m</th><th>Design bridge width, m</th><th>Proposed Rehabilitation Measure</th></tr>
<tr><td>1</td><td>195+185</td><td>Kokomeren</td><td>3x24</td><td>78.5</td><td>12,25+2x1,6</td><td>repair</td></tr>
<tr><td>2</td><td>210+313</td><td>Tuura-Kayin</td><td>1x6.0</td><td>11.4</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>3</td><td>214+410</td><td>Kashka-Suu</td><td>1x6.0</td><td>12.8</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>4</td><td>217+795</td><td>Kobuk-Suu</td><td>2x12,0</td><td>26</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>5</td><td>219+138</td><td>Chon-Suu</td><td>1x6.0</td><td>17</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>6</td><td>221+737</td><td>Suhoy-Say</td><td>1x6.0</td><td>6</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>7</td><td>222+276</td><td>Chon-Boobek</td><td>1x6</td><td>6</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>8</td><td>231+368</td><td>Kichi-Boobek</td><td>1x6</td><td>12.2</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>9</td><td>236+748</td><td>Sary-Bogu</td><td>1x6</td><td>12</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>10</td><td>237+748</td><td>Kokomeren</td><td>3x24</td><td>78</td><td>10+2x0.75</td><td>repair, widening</td></tr>
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<td>The River’s floodplain might be polluted by runoff from roads and bridges, accidental spills of oil products and oil as well as lead, which are often concentrated on the roadside. Short-term impact is expected.</td>
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<tr><td>11</td><td>238+085</td><td>Zhoo-Zhurok</td><td>1x6</td><td>10</td><td>10+2x0.75</td><td>replacement</td></tr>
<tr><td>12</td><td>251+062</td><td>Western Karakol</td><td>3x14</td><td>48</td><td>10.8+2x0.8</td><td>repair</td></tr>
<tr><td>13</td><td>263+019</td><td>Suhoy-Say</td><td>1x6</td><td>6</td><td>10+2x0.75</td><td>replacement</td></tr>
</table>

Drilling and blasting works can have a negative impact on water bodies. From Table 19 it can be seen that at 210 km and 222 + 276 km, there are water bodies that crosses the road. Water bodies polluted with soils, dust, remnants of the rocky rocks, the surface layer of soil, vegetation; these contaminants can cause siltation of the water body, and the deterioration of water quality. These water bodies are merged with the river Kokomeren.
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<td>5</td>
<td>Contamination and erosion of soil</td>
<td>Level of impact on soil and ground will be determined by correct planning and placement of asphalt concrete mixing plants, crushing plants, road alignment in mountainous area. Determine requirements for transportation of materials and waste.
No any other impact is expected.</td>
<td>
During the construction period, asset of work processes associated with construction of roadbed usually causes the greatest damage to environment. Soil contamination is first observed on lands temporarily used as borrow pit, construction site as well as on the road being reconstructed. Soil might be also contaminated by installation and operation of asphalt concrete mixing plant.

Soil might be contaminated by POL coming from construction equipment. It is assumed that this effect will be minimal and take place only within the roadside. Such impact might be reduced, if machinery is maintained in good condition by proper disposing of used oil. Soil shall be slightly eroded in the roadside due to road reconstruction, since major work is executed on the existing road with protective works in the drainage system.

Borrow areas, areas of the camp, placement of asphalt concrete mixing plants, crushing plants.
Impact of borrow pits will be expressed by air pollution, noise, vibration, impact on soil and ground.

Land acquisition according to the project documentation will be: temporal distribution of land - 20 ha. During the construction, location of the construction site will identify on detail design phase, and temporary allotment for construction has to - 1.0 ha.
Short-term impact is expected.
<table>
<tr><th>Description</th><th>Unit</th><th>Quantity</th></tr>
<tr><td>Excavation of top soil (vegetative layer)</td><td>m3</td><td>96,600</td></tr>
<tr><td>Excavation to spoil of unsuitable and surplus material, common soil</td><td>m3</td><td>1,415,100</td></tr>
<tr><td>Excavation to spoil of unsuitable and surplus material,rocky ground</td><td>m3</td><td>296,600</td></tr>
<tr><td>Formation of embankment, common material from cut</td><td>m3</td><td>341,000</td></tr>
<tr><td>Provision of Subgrade, selected material</td><td>m3</td><td>146,000</td></tr>
</table>
</td>
<td>Main impact will be expressed in pollution of the roadside soil by lead compounds.
Long term impact is expected.</td>
</tr>
<tr>
<td>6</td>
<td>Flora and</td>
<td>It is necessary to consider impact on the flora and fauna of the</td>
<td>During the construction period, reconstruction of road may cause</td>
<td>During the operation period,</td>
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	Fauna	given section. Habitat is a formed ecosystem. Determine the requirements for management of trees. No any other impact is expected.	insignificant impact on flora and fauna due to accident going of construction machinery beyond the construction site. There might be observed the following factors as well: • Factors that prevent natural migration of species to temporary and permanent habitats, exchange of gene pool, reproduction, etc. These factors are road construction elements such as - slopes, embankments, excavation, grade, fence and roadbed. • Anxiety factors that frighten animals and violate their habitat are noise, vibration, light from the traffic flow. As we know animals reaction to disturbance factor may differ according to species. Collision with oncoming traffic can cause death of fauna representatives on roads. All these factors lead to decrease in number of populations. Given that the road had existed for a long time before reconstruction, established way of wildlife habitation in adjacent territory, we can assume little additional impact on flora and fauna, which will be caused by road reconstruction. <u>Tree cutting.</u> Tree cutting along the road in the preliminary assessment, the estimated number of trees to be affected is 2, 570. Short-term impact is expected.	impact will be expressed by noise and vibration on local fauna, animal migration path, striking of animals crossing the street by vehicles, illumination of the road vehicles' headlights and blinding animals. Long term impact is expected.
7	Social environment	Impact is associated with planning and designing of the road alignment through settlements, sensitive areas. No any other impact is expected.	During construction, the most dangerous type of transport pollution is emission of exhaust gases into air and other types of energy loss: noise, vibration, electromagnetic radiation. When mitigation activities are properly carried out, this negative impact will be reduced. Impact of construction process will last for relatively short time, though there may occur accidents due to the poor state of the road. In general, the effect on the social environment of the road reconstruction project will only be positive. During construction period, many jobs will be created, particularly for local residents, who can participate in reconstruction of the road.	Noise and vibration at night. The positive impact will be expressed in radically improved movement conditions, travel time on the road and increase road safety. This, in turn, shall result in improvement of social situation of population in the project area. Long term impact is expected.
8	Cultural and historical sites	Impact is associated with planning and designing of the road alignment near the cultural and historical sites. During conducted archaeological investigation, objects of cultural heritage were found along the road alignment. These objects are located at a distance around min 3 and max 100 m from the road alignment. The expansion of the road will not affect these sites of cultural heritage (expansion will be in existing ROW + 1.5m on both side), but it is necessary to take mitigation measures from physical impact of machines and mechanisms, as well as construction workers. It is necessary to determine the protection zone of these objects, and coordinate with local authorities and during construction to ensure their fencing. No any other impact is expected.	During construction, impact to cultural sites will be in the form of physical abuse and vibration exposure from operating machinery. Physical disturbance of these sites by construction workers. Short-term impact is expected. Cultural and historical sites: • Burial ground, 197 km – LHS, 15 – 100 m from the road. • Kyrchyn 1 Burial Ground, 198 + 500 km - 3 – 45 м, on both sides of the road. • Kyrchyn 2 Burial Ground, 201 km - 10 – 100 m, on both sides of the road. • Burial Ground, 209 km – RHS, 25 – 50 m from road. They are unique and rare mounds on the territory of Kyrgyzstan. • Kojomkul Kumboz, 243 km – LHS, 20 -25 м from the road.	No any other impact is expected.
9	Safety	During the designing period, impact is associated with designing of safe crossings for people and animals. Determine necessary safety aids, stops.	During construction period, construction and road building machinery shall influence on traffic resulting in impeded movement, possible crowding of cars and machinery, violation of traffic rules and possible emergencies.	There may be cases of accidents: striking of people, animals when they cross the

		Determine requirements for informing of public about access to the road and interaction with Road Patrol Service. No any other impact is expected.	In order to prevent such situations, we need to provide for mitigation measures to regulate traffic. Blasting works. Short-term impact is expected.	road. During operation period, the impact on traffic expected minimal due to arrangement of road signs and markings. Short-term impact is expected.
10	LARP issues	Impact is associated with planning and designing of the road alignment through settlements, which may cause land acquisition from municipalities or private individuals (demolition of structures, resettlement of people, economic displacement). The impact will be expressed in land withdrawal for permanent use from private individuals and municipalities. Number of affected people is specifiedin the report on resettlement and 4 houses and 2 shops will be relocated according to the report. Resettlement and compensation will be addressed as a part of the resettlement plan No any other impact is expected. Table 20 below describes Summary of project impact magnitude according to the geographicallocation and types of impact.	During construction period, persons, who sell and plots will be covered by road extension, will be subjected to impact. Fences of private persons, lands of municipal areas, business facilities and government organizations might be affected. By the time such impact may be temporary or permanent relocation. The impact will be reduced due to developed plan of resettlement and economic displacement. Short-term impact is expected.	No any other impact is expected
11	Construction camps	During the designing period, impact is associated with determination of places for arrangement of camps. Determine requirements for management of construction camp. No any other impact is expected.	During construction period, construction camps will be established outside the territory of villages. There may be formed of solid domestic waste, bad housekeeping, soil contamination may take place, local flora and fauna might be impacted on the territory and thereby cause concern of local population. The Environmental Management Plan includes measures focused on mitigation of such impact. Short-term impact is expected.	No any other impact is expected
12	Emergency situation	impact is associated with planning and designing of the road alignment in the areas with natural disasters (flooding, mudflow, rock fall) No anyother impact is expected.	The main types of natural disasters are mudflows, floods, rockfalls. The rockfalls have the most impact on the road at 232-247 km. The impact is in the form of move of mountain mass of soil on the road, flooding of some sites, raising the level of groundwater, the impact on the stability of the bridges. Long term impact is expected. Depending on weather conditions.	Long term impact is expected. Depending on weather conditions

Table 70: Summary of project impact magnitude according to the geographic allocation and types of impact

No	Village	TOTAL Affected land parcels	AHs	Vulnerable	Severely affected	Designation of affected land parcel			Project affected land parcels attached with						
						State	Title/ mortgaged parcels	Possession/ without title	Land Acquisition	Fence/ walls/	Residential House	Shops to be demolished	Supplementary structures	Fruit trees	Nonfruit trees
1	Kyr chyn	11	9	1	0	1	0	11	0	0	0	0	0	0	33
2	Kyzyl –Oi	33	29	13	0	0	3	30	0	5	2	0	2	26	288
3	Kojomkul	44	43	23	0	1	2	40	0	3	2	2	4	2	153
4	Tunuk	1	1	1	0	0	0	1	0	20	0	0	0	0	96
	Total	89	82	38	0	2	5	82	0	28	4	2	6	28	570

2. Mitigation measures

2.1. Pre-construction phase

116. The Detailed Design and Pre-construction Phase covers the period when the Design Consultant accepts the design work up to finalization of the Tender Documents and prior to the engagement of the contractor for the actual construction. The engineering designs shall include all the necessary work relevant to detailed site surveys, design computations, technical drawings, environmental and social requirements, technical specifications and tender documents. This will be followed by Tendering process from which the Client/Employer shall decide on the Contractor for the civil works. Since this will be funded by the Eurasian Development Bank (EDB), guidelines of the financier and the Client/Employer will govern with the environmental guidance obtained from this IEE Report.

117. Avoidance of impacts can be executed by proper planning/preparation during the pre-engineering and design phase. Contract documents should include clauses be formed based on the IEEs and EMPs of the project and communicated with sufficient emphasis to the Contractor. A number of these impacts are discussed below and reflected appropriately in the EMP.

118. During the pre-construction and detailed engineering phase, the design engineers should be guided on a number of items need to be considered in the production of road and bridge designs, and which will have relevance to the environmental aspects of the project. These items are as follows:

- To minimize impacts of erosion, side slopes of embankments will be designed to reflect soil strength and other considerations as included in the project specifications in order to reduce slips or erosion; for embankments greater than 6m, stepped embankments will be used. Use of “green measures”, such as planting native vegetation will be a favored mitigation approach
- For geology and seismic conditions, cuts on the mountain and hillsides should be stable or be reinforced; earthquake loading shall be applied to the design of structures, to ensure that seismic events do not have negative impacts during the operational phase of the Project.
- On Flora and fauna –The Design Engineers should provide guideline in the design for the Contractor to ensure that his ancillary facilities such as asphalt plants, construction camps and others are properly sited to protect indigenous flora and fauna. The Contractor should be instructed to avoid loss of trees, where possible, and should employ techniques such as asymmetrical widening. Where trees must be felled, the Contractor should be instructed that each tree removed should be replaced by at least two new saplings of the same or similar species and be planted at suitable locations, or as designated by the tree owner.

- On cultural and historical sites – The Design Engineers should provide guideline in the design for the Contractor to employ techniques during construction works with minimal or no impact to any cultural, historical or archeological structures along the road. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing cultural and historical sites.
- Health and Safety –The Contractor shall be provided guidelines in the design or in the Technical Specifications to ensure that traffic safety issues shall be responded to during the construction phase of the Project, including incorporation of: (i) Safety barriers; (ii) Traffic signs; (iii) Road crossings; (iv) Speed bumps; and (v) Speed limits.

119. **Uncontrolled Establishment of Material Sites** - This situation will be avoided by requiring the Contractor to follow the mandatory steps in establishment of material sites as defined by KR Regulation, specifically to acquire all required permits material sites from local authorities, get approval from regional departments of SAEPF under the Government of KR, prepare a "Quarry or Borrow Pits Development and Restoration Plan". All of these relevant documents should be submitted to IPIG-MoTR of KR for the purpose of securing a license to extract materials from the State Agency for Geology and Mineral Resources.

120. **Unmanaged waste asphalt - concrete temporary storage and processing areas** - Old asphalt pavement will be removed and be replaced in the new pavement. Storage or stockpile areas of old asphalt should be situated where they pose no risk of contamination to the environment. In coordination with local authorities, location of old asphalt stockpile areas will be identified, with a minimal distance of 500m from any settlement. Preferably, storage areas should be in state-owned land. If private lands will be used, a negotiated rent on the property should be established with the land owner. All temporary asphalt pavement storage and processing areas shall be agreed upon with the regional departments of SAEPF of KR under the Government of KR. Old asphalt should be trucked away in blocks and stockpiles should be no higher than 2.5 m.

121. There are two ways of using old asphalt:

- The transfer of old asphalt to Local RMU of MoTR for upfilling of the secondary roads;
- Use the old asphalt to strengthen the top coating of the shoulders with the addition of gravel-sand mixture with 15cm thickness.

122. **Establishment of Asphalt and Concrete batch plants** – Due to the noise and emissions, batch plants for the pavement should be installed with a minimum distance of 500m to residential areas. Should aggregate crushing be adjacent to the batch plants, dust suppression equipment (standard on most modern crushers) will need to be installed on the crushing unit. The entire process of establishing a plant will be controlled by SanPiN 2.2.1/2.1.1 Design, construction, reconstruction and operations of enterprises; planning and construction of residential sites/ and Sanitary-hygienic zones and sanitary classification of enterprises, structures and other facilities" and Sanitary-epidemiological rules and standards. SanPiN 2.2.1/2.1.1.006-03.

123. **Material Transport Route Plan** – Estimates from the preliminary design for the section show those 487,000 cubic meters will be the cut volume and 1,711,600 cubic meters for fill volume for the road section. Truck traffic will considerably impact local roads as well as the communities they traverse. Haul routes should be planned with CSC with sufficient maintenance to minimize dust, noise generation and disturbance to residents by restricting the hauling time between 07:00 and 18:00. For Quarry site, the most probable sites are along Kokomeren River. During the field investigations by the material specialist, suitable construction materials were located and inspected. The following are the possible borrow areas for the section:

Possible Borrow Areas

No.	Location	Description
1	Km 229+000	Operating borrow pit with coarse sand subsoil materials (LHS)
2	Km 237+000	On the LHS is an old open borrow pit with loamy clay subsoil materials
3	Km 240+000 to Km 241+000	Right hand side, an areas with loose rocks
4	Km 242+000, Km 243+000	LHS is the flood plain of the Kokomeren River. The crushing plant can be installed at the flood plain and could produce aggregates for concrete and asphalt. Existing subsoil materials are river run gravel.
5	Km 251+000	Flood plain of the Kara-Kol River where river gravel could be extracted (Both sides)

Source: The Consultant.

124. **Management of Blasting Works** - The Contractor for explosives works must have a validlicense and a passport of blasting works. Blasting works are conducted based on the application and situational plan, in coordination with local authorities and with SIETS permission for works. For blasting activities it is also necessary to develop a Blasting Works Management Plan.

125. **Environmental Safeguard Training** - CSC will designatehis his environmental specialist for the implementation of EIAs, their EMPs and monitoring compliance with environmental clauses contained in the contract specifications. Correspondingly, the Contractor will do the same. Preferably during the early part of the construction, the CSC will providesufficient briefing seminar on EMP implementation and compliance monitoring for the CSC's inspectors as well as the contractor. Such seminar should be conceptualized during the design phase.

126. Along the rehabilitation segments of the Section "Aral (Km 195) to Too-Ashuu pass (Km 286)," the expected main ecological impacts at the design phase of the project relate to minimizing the loss of trees along the road sections. Impacts on the ecological environment are minimal since the project activities will be mainly located on the existing road corridor.

127. **Water contamination** can occur in three main rivers and their tributaries: (i) Kokomeren bridge (km195 +400); (ii) Kokomeren Bridge (km 273 + 000); and (iii) Kara-Kol River Bridge (Km 251+000). The design engineer should consider the imminent contamination issue during construction of bridge and road segment at these points. Special measures and technical specifications be clearly stipulated to eliminate any adverse water quality impacts. Construction methodology from the Contractor should incorporated measures to prevent and to mitigate water contamination during construction.

128. Although, there are no special protected areas or biodiversity hotspot within 500m on either side of the alignment for its entire length, the river bank can be considered as ecologically relevant sites which warrant special consideration. The design engineers should take these items into consideration in finalization of the designs.

129. **Tree Management P**lan – Within the alignment, there are considerable trees that will be affected. In the preliminary assessment, the estimated number of trees to be affected is 2, 570. A replacement ratio of 1:2 is recommended to ensure that the tree replacement rate does not fall below the number to be replaced. The CSC shall produce the plan with IPIG-MoTR. Areas for replanting shall be decided with IPIG-MOTR and the local officials. The cost for replanting can be part of the project to be implemented by the Contractor during the construction period to ensure that plant care will be provided. Since the target will be survivability of the trees, payment can be contingent to the number of trees that will survive within the contract period.

130. **Maintenance of Access during construction** – Construction of bridges and culverts over water necessitates detour roads to be temporarily arranged. In so doing, normal traffic will be impaired and cause access issues to motorists. In addition, these detour roads need to be maintained for connectivity and safety purposes. Traffic plan incorporating these detour roads should be formulated by the contractor. During the design stage, the designers should also anticipate the need for detour and to include this issue as part of the work requirements. Adequate local assessment and consultation should be done in order to avoid this particular social issue during the actual construction.

131. **Livestock and Pedestrian Crossings** – Since the road section traverses residential areas, farmlands and pasture grounds, the need to provide pedestrian and livestock crossing becomes

important. Category III Road allows design speed of 80 km/hour in rolling terrain (50 km/hour in mountainous terrain) for vehicular traffic, such that crossing people (especially children) and livestock (sheep, cattle, horses, etc.) pose real danger. The design should identify spots for safe location of these crossings in coordination with the local residents. These crossings should also be dimensioned appropriately to adequately serve the purpose, considering its intended function and safety considerations. It is important to have full utility of these road features to serve the needs of the residents and the agricultural community. The crossing of people in the residential ares will be installed through every 200-250 m.

132. **Bus Stops** – With the improvement of the road, it is anticipated that bus traffic, especially by the mini-buses (marshrutka) will increase. With the new road, for safety purposes, designated bus/transport stopswill have to be decided in the detailed design. This required sufficient discussion with MoTR and the local community. Around 16 bust stops will be constructed.

133. **Cultural and historical sites** - The objects of historical and cultural heritage are the objects of study and protection of the Ministry of Culture and Tourism of the Kyrgyz Republic (MoCIT KR). To prevent exposure to these objects it is necessary to develop Management plan for cultural and historical sites, according to the law protection zone of objects is not less than 50 m. Therefore, all questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government.

134. On the basis of the findings of Archaelogical Study (Appendix F), during the detailed design stage, Consultant should send the road design along with the Management plan for objects of cultural heritage for MoCIT KR approval.

2.2. Construction phase

135. A specific environmental section shall be included within the main Bid Documents indicating that the Contractor shall be responsible for conforming to the requirements of the EMP. As such this EMP shall be included as an annex to the Contract Bid Documents.

136. The implementation of measures prioritizes on avoidance; followed by reduction; then mitigation; and finally, if all else fails, replacement of what was impacted or compensation to the impacted parties. Under the guidance of CSC, the contractor will have to submit site-specific Environmental Management Plans (SSEMP) for the following prior to commencing operations: (i) SSEMP in the sensitive sites such as cultural and historic sites; (ii) layout of the work camp with sewage management and waste management plan; (iii) sitting and description asphalt and crashing plants, equipment maintenance and storage facilities; (iv) spoil soil management plan; (v) borrow site management including restoration; and (vi) method statement for bridge reconstruction works.

137. The SSEMPs shall be endorsed by the construction supervision consultant before submission to IPIG for approval.The SSEMP shall then be updated from time-to-time to incorporate any changes in the field conditions while construction will be in progress. The SSEMP should also contain the following Annexure:

- Dust Suppression Plan
- Camp and Workshop Management Plan
- Solid and Liquid Waste Management Plan
- Borrow Pits Management Plan
- Material Processing Plants/Equipment and Storage Facilities
- Spoil Soil Management Plan
- Material Source Management and Reinstatement Plan
- Method Statement for Bridge Construction
- Blasting Works Management Plan
- Cultural & historical sites Management Plan

138. The typical construction process will entail, first the closure or restriction of existing traffic at the work sites and establishment of detour road. The provision of the new detour road will entail, stripping and clearing of vegetation, excavation, filling and leveling of the area, provision of embankment fill and necessary surfacing for the existing traffic.

139. Road widening will entail earthwork and breaking of rocks, which need to be hauled to some designated stockpiles. These works by themselves disturb the natural surroundings, and affect vegetation. It is important that measures for proper maintenance of the detour road be established to respond to traffic and community safety, control of dust, noise and emissions. Replanting of affected trees should be done as soon as possible and schemes for detour roads and soil stockpiles should favor tree preservations. Waterways should be respected and contamination should be prevented.

140. **The succeeding stages would entail demolition of existing pavement and bridges**. This will involve scarifying old pavement structure, and earthworks to conform to design requirements. For the bridges, it will be breaking the structures at the existing connections and removal of deck and girder elements by use of heavy equipment. These old bridge components will be placed in designated areas, which will not impact the natural environment, impede traffic and cause safety concerns to the general public. The bridge abutments and underlying foundations will be excavated and removed to give way for replacement structures. This breaking, demolition and removal of old elements will generate considerable noise and dust and chunks of debris will drop into the existing waterway. To minimize the risk of water contamination, the demolition and construction activities will be highly advisable in the summer months.

141. **The succeeding steps will involve construction of the new pavement and bridges**. The pavement construction will entail embankment filling, subbase, base course and asphalt pavement layer construction. In the end the final wearing course will be laid along all throughout from the existing road, on to the approach roads, and onto the deck slab in such a manner to have smooth layer of road and bridge pavement. Embankment works will entail transport of approved fill materials from borrow pits or from cuts if found to be suitable. The suitable materials for subbase and base course will come from quarries or borrow pits of approved properties. These pavement substructures will be engineered and compacted to desired degrees with the use of graders, and compactors in accordance with designs and specifications. The asphalt pavement layers will be provided by asphalt plants with crushed stones and rocks for the aggregate requirements. It will be the responsibility of the Contractor that asphalt plant would produce the necessary required bituminous mix in conformance to environmental requirements for asphalt plant siting and operations.

142. The bridge construction will start with the substructure such as the foundation systems and piers. This will be followed by the superstructure elements of girders, deck slab and railing. The construction of the superstructure components such as the girder and deck slab will involve installation of formworks, casting of concrete and in some instances, post tensioning of tendons when necessary. The important guideline to be brought forward is the use of precast elements to minimize pouring and casting of superstructure elements over water to minimize contamination. Concrete batch plants will provide the necessary concrete for these structural elements from approved sites with operational guidelines in accordance with environmental protocols and industry standards.

143. For the Section “Aral (Km 195) to Too-Ashuu pass (Km 286)”, the primary relevant issues consist of air and noise emissions, proper management of earthworks, waste materials and contractor good-housekeeping practices associated with fuel and lubricant management, work camp waste disposal, and occupation health and safety practices for the contractors workforce. The following is a discussion of highlights of the details provided in the EMP

144. **Air quality** impacts are expected to be generated by construction activities, such as, construction machinery exhausts, emissions from asphalt plants, dry exposed soils and material stock piles, dust from haul roads and construction activities, as well as aggregate crushers, but will be temporary as the work progresses along the entire section of the road. Sensitive receptor sites within the villages of Kyzyl Oi, Kojomkul, Suusamyr, and Tunuk should be considered as areas of mitigation in terms of air quality, noise/vibration. Results of the periodic measurements should be used to monitor the level of impacts and corrective/mitigation measures be performed when these parameters exceed their allowable limits. Emissions can be minimized and controlled by proper and regular maintenance of equipment. Dust is controlled by regular water spraying on exposed areas.

145. **Noise.** Construction activities are expected to generate significant but temporary noises from various construction tools such as jack hammers and other similar machines that could produce noise of about 89-90dBA at about 10 m from the work site. Also, vibration due to large pavement breaking machines as well as a big percentage of trucks going in and out of the area is expected to be

generated within 6-8 m from the carriageway but attenuating at 10 m.

146. To reduce emission levels, the contractor must implement the following mitigating measures (i) keep construction equipment in good condition (ii) prevent idling of engines by shutting off machineries not in use for more than 3 minutes (iii) prohibit use of machinery or equipment that cause excessive smoke emissions (iv) utilize low emission machineries.

147. Noise attenuating devices and temporary baffles as well as earthworks storage areas should be used in sensitive areas in order to reduce noise levels and prevent unnecessary disturbance to the surrounding communities.

148. In order to reduce the negative impacts of noise, construction work must be limited to 7:00 - 18:30 in urban areas and 06:00 – 19:00 within 500 m of settlements as well as limiting hauling traffic through settlements. Good mufflers should be installed to trucks and equipment, especially when working near sensitive receptors. Also, noise generated must be limited to 70db(A) and must be strictly enforced within areas of sensitive receptors. Monitoring of noise during construction stage will be conducted according to the EMP.

149. **Surface water** – Several types of waterways are found to be crossed by the project road. These are either man-made such as irrigation canals and flood control ditches, as well as naturally occurring rivers. These waterways will become receptors of potential negative environmental impacts such as pollution form construction area runoff, and change in surface hydrology due to increased sediment load.

150. In order to mitigate negative impacts on the waterways, the following must be implemented: (i) store stockpiles of topsoil and other such materials at a safe distance from surface waters; (ii) long term stockpiles must be covered with grass or other suitable coverings; (iii) create settlement ponds where construction activities are near natural waterways.

151. Unsustainable construction practices such as improper handling and storage of construction materials (e.g., concrete, asphalt, lubricants, fuels, and solvents etc.) can pose risk of contaminating the waterways crossed by the project road. Embankments and construction materials like fill, sand and gravel can be washed out by rainwater into watercourses during downpours. Oil and grease from leaks in engines can also accumulate in surface waters and should be properly controlled. To prevent these, appropriate mitigation measures must be taken such as (i) regular maintenance of all construction equipment, (ii) chemicals and oil must be properly stored into impermeable and bounded areas away from surface waters.

152. Within the section, the critical spot are the Kokomeren River in Aral village, bridge, Kokomeren River after Kyzyl-Oy village, bridge and Karakol River in Kojomkul village, bridge. The Contractor should be extra careful in these spots as construction activities can directly contaminate the surface waters and consequently affect the biological species in these areas. Contamination should be avoided and disturbance to biota be minimized. Water quality measurements should be done during actual periods of construction at these sites.

153. During the construction of bridges construction site dimensions shall be as minimal as necessary. Construction site should be placed at levels that exclude them washed away chance during the river flooding. The discharge of polluted water, landfills, parking cars and the construction of temporary facilities within the water protection zones on the banks of rivers. On construction sites should provide capacity for the collection of sewage and garbage. The roads within the water protection zones should include the collection of water from the roadway surface with its subsequent treatment or sewage in into place (spill control system), eliminating the pollution of water sources. The quality of discharges into water bodies must meet the established requirements.

154. In the water protection zones (not less than 50 m) of rivers it prohibits contamination of the earth surface, including the garbage dump, waste production, as well as parking, cleaning and repair of motor vehicles and road construction machinery, fueling. All works in water protection zones must be carried out based on permission from the local authorities.

155. Drilling and blasting work can have a negative impact on water bodies. Blasting works will be conducted around the km 201 and km 235, where the water bodies cross the road. Water bodies are polluted with soils, dust, remnants of the rocky rocks, the surface layer of soil, vegetation; these

contaminants can cause siltation of the water body, and the deterioration of water quality. These streams are merged with the river Kokomeren.

156. In order to prevent negative impacts from blasting works it is necessary to protect water bodies with wooden boards (5m x 5m) mounted on poles. Utilization of methods for drilling and blasting works (drilling of small blast hole), such as the trace is small charges to prevent the explosion of a large expansion of the rock material, as well as its layered explosion in small amounts and remove.

157. Blasting operations in the fishery waters and river bank zones are permitted only in extreme cases where the performance of work by other means is impossible. This decision should be taken on the basis of the calculation of the dangerous explosion wave radius for fish or seismic zone actions in the explosions on the river banks. It should also include measures for screening in order to reduce the impact of the blast wave and the protection of fish fauna.

158. The project should also include the restoration works after the construction of the bridge: the removal of the bed of the river banks, backfilled during the construction of supporting structures; cleaning of the river bed and the flood plain from cluttering of the objects, extracting and hauling piles of scaffolding and temporary supports; dismantling of temporary facilities on the construction site layout and land reclamation, including borrow area and access roads.

159. To prevent soil erosion as a result of the concentration of water flows, it is necessary consider the strengthening of channels and outlets of drainage facilities.

160. In order to prevent the erosion of the river banks, in areas close to the river to the road layout (238-239 km), provide river bank protection riprap. Material for rock placement will take where blasting work in the rocky soil. Stone material will be laid along the banks of the river

161. The environmental impacts associated with this work can be minimized if culverts are rebuilt properly, i.e., properly sized and with the correct slope and downstream erosion/scour protection measures applied. If possible culvert work should take place during the dry season, since otherwise temporary bypasses will be necessary. However, a number of culverts convey irrigation water, which flows, based on a prescribed irrigation schedule.Contractors will need to liaise closely with farmers to establish working hours and not affect crop growing. Nearly all structures will be concrete box culverts, precast, with each section set in place and sealed with a special commercially available gasket/sealant material.

162. **Disturbance of agricultural lands** can occur when trucks and equipment roll over them during construction activities. During construction, it can occur that equipment and trucks have to maneuver over agricultural lands and in so doing introduce compaction to these areas and render the soil unfit for agriculture. The Contractor should prevent unnecessary disturbances of agricultural lands.

163. During site clearing and stripping, topsoil storage area should be identified. Mostly the roadside corridor is frequently used as temporary storage areas. These stockpile soil should be protected against erosion. For example, by seeding the stockpiles with fast growing shallow root grasses. To ensure proper soil management the contractor will submit a soil management checklist to commencing operation. This checklist will include a simple listing of measures for minimizing water and wind erosion losses. As long as topsoil stockpiles remain unused, the seeded grass cover will remain in place.

164. **Borrow Areas** – Before opening of a new borrow site, the contractor, within the purview of this IEE, should have the extraction permit, approval of a development plan, and later approval of borrow pit restoration plan. The Contractor shall obtain all required permits for use of borrow pits and disposal areas from local authorities, get approval from regional departments of SAEPF under the Government of KR, prepare a “Borrow Pits Development and Restoration Plan” and submit all necessary documents to MOTR of KR to obtain a license to extract aggregate materials from the State Agency for Geology and Mineral Resources. These requirements do not apply to existing borrow areas or aggregated facilities. When using private borrow pit, all permits (licenses, approvals from local authorities, regional departments of SAEPF under the Government of KR, etc.) are responsibility of the owner of borrow pit which should be indicated in the agreements signed between the contractor and the borrow pit owner. The contractor will need to prepare a site development plan

which must provide the following information:

- capacity and operation hours of a borrow pit;
- development and extraction sequence of borrow pit;
- technique and mechanisms for stripping and excavation operations;
- operation and time schedule for borrow pit development;
- extraction method and transport plan, including route(s);
- safety rules and hours of operation;
- expected quality of extracted materials;
- topsoil storage/protection and environment protection steps; and,
- rehabilitation of disturbed lands when site is decommissioned.
- Calculation of mobile sources' emission charge.

165. To minimize dust, the contractor shall develop a dust suppression program and have it approved by the CSC. The Program will ensure unpaved haul routes leading to settlements be water-sprayed regularly to suppress dust. Trucks hauling earth/materials be covered when transporting materials, especially through settlements. Air quality measurements at receptor sites (primarily those specified in the baseline measurements) be done as prescribed in the Environmental Monitoring Plan.

166. **Disposal site for spoil soils and other construction wastes** – Excavation or cuts of soil materialsalong will require temporary or permanent areas for deposition. This should be done with proper arrangement with the land owner on which the excess soil will have to be deposited. Permanent spoil soil deposit areas should be coordinated with local officials and proper permit obtained accordingly. Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of topsoil, timeframes, haul routes and disposal site. For construction waste, the Contractor shall establish a solid waste management plan covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate local and national regulations.

167. **Safety for workers** and local people, especially around the sensitive receptors - The Contractor shall establish necessary safety measures specified in the design or in the Technical Specifications to ensure that community and traffic safety issues shall be responded to during the construction phase of the Project, including incorporation of: (i) Safety barriers; (ii) Traffic signs; (iii) Road crossings; (iv) Speed bumps; and (v) Speed limits. Social impacts along the vicinity of the road during construction, such as impairment of the usual access, community health and safety concerns, plus socio-economic conflicts. If any traffic re-routing needs to be done, sufficient advisory and notification should be provided to the people and motorists. Dust and noise nuisances should be minimized during construction. Protective barriers and fencing should be provided to prevent people and animals from loitering at the project site for safety purposes.During the construction phase, it may be inevitable that existing traffic will be disrupted and local accessibility will be impaired, which can cause problems with the local community. To mitigate this situation the Contractor should: (1) Submit a traffic management plan to local traffic authorities prior to mobilization; (2) Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions; (3) Allow for adequate traffic flow around construction areas; (4) Provide adequate signalization, appropriate lighting, well-designed traffic safety signs, barriers and flag persons for traffic control; and (5) Provide temporary access where accessibility is temporarily restricted due to civil works.

168. Safety measures during blasting operations. Blasting work is carried out in strict accordance with the Regulation on the procedure of consideration and issuance of industrial security authorization documents, No.301 dtd. 30.05.2013, for conduct of blasting. Before start the work, install and shield signs of the danger zone boundaries, which at the time of the explosions will be encircled with posts. The approximate radius is 450-500 m zone, adapted by calculation or Regulation. When the depth of wells is more than 10 m duplication of electric explosive network is required. Location of pits, wells, and cameras are applied to the executive plan of the explosive field. Militants (detonating cartridges) set in the charges in final form. Blasting operations are carried out in a fixed time, as well as well-audible signals (ready, fire, rebound), which all should be well known. Explosives (explosives) are stored in special warehouses protected separately from explosives (NE).

Installation of shields near power lines is obligatory mitigation measure during blasting works.

169. **Impacts on cultural and historical sites** – During construction the contractor must apply in writing to the MoCIT KR and local authorities in defining the protection zones around these sites. Also Contractor should employ techniques during construction works (vibration) with minimal or no impact to any cultural, historical or archeological structures along the road. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing cultural and historical sites, especially near the following:

- Burial Grounds near Kokomeren Bridge;
- Burial ground Kyrchyn 1;
- Burial Ground Kyrchyn 2;
- Burial Ground, and
- Kojomkul Kumboz.

170. The Contractor should strictly instruct its workers on disturbance of these sites. In case of any chance finds of artifacts during construction, the Contractor should immediately notify the Engineer (CSC) for further protective actions.

171. In accordance with the Law "On protection and use of historical and cultural heritage", Contractor must stop all construction works and report the findings to the local municipal authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz after Balasagyn), MoCIT KR.

172. **Blasting works** will be conducted at the site from km 201 to km 235, the site is in mountainous area along the Kokomeren River. During blasting works, the following substances will be emitted into the atmosphere: Inorganic dust: 70-20% SiO2, Carbon monoxide, Nitrogen (II) oxide, Nitrogen (IV) oxide. When blasting operations, emissions are considered as the burst release and are subject for calculation and counting to compare with maximum permissible emissions.

No	Blasting sides	**Monitoring**
201-202 km	Mountainous area; the road is narrow. It is necessary to widen the road by drilling, jack hammering and blasting	
203 -205 km	Mountainous area, excavation of block-cobble rock materials for crushed stones.	
207 -209 km	Mountainous area, blasting works shall be performed.	
210 – 212 km	Mountainous area; road development may entail jack-hammering and blasting	
210km	Bridge site; there is a monument called Kara-Teke 10 meters away from the bridge.	Sampling water on oil, turbidity. Point selection - the bridge
222 km	Possible Blasting site	
222+276	Chon-Boobek, replacement bridge.	Sampling water on oil, turbidity. Point selection - the bridge
225 km + 500 m	Road section passes through foothills of the mountain, which may require rock-blasting.	
229 km +500 m	Possible Blasting site	
233 km + 900	Possible site for mountain-blasting	

173. In the area of road widening, horizontal wells will be drilled and explode by using explosive substance - ammonite 6 ZhV-90mm.

174. In order to reduce the environmental impact of blasting works, it is necessary to provide mitigation measures.The main measures are hydro-dust suppression and conduct of blasting works for breaking of rocks in small volumes stratified (top to bottom) horizontal blasting hole charges in small diameter with a preliminary pre-splitting along the contour of the explosive volume.Installation of shields near power lines is obligatory mitigation measure during blasting works.

175. **Asphalt, Concrete and Crushing Plant Pollution** - During the selection of a site for bitumen plant, concrete plant, stone crusher equipment, which emit pollutants, noise and transmits vibrations, the contractor will need to comply with SanPiN 2.2.1/2.1.1 and SanPiN 2.2.1/2.1.1.006-03, and establish a specific buffer zone around any such facility. In the KR this is referred to as a sanitary-hygienic zone, and is a mandatory element of any facility that affects habitats and human health. The sanitary-protection zone (SPZ) separates the area of an industrial site from residential areas,

landscape and recreation areas, parks, and health resorts with mandatory demarcation of boundaries by using specialized information signs.

The boundaries are as follows:
Class II – SPZ 500m.
- ✓ Production of asphalt-concrete at fixed plants.
- ✓ Production of asphalt-concrete at mobile plants.

Class III – SPZ 300m.
- ✓ Production of crushed stone, gravel and sand, milling of quartz sand.

Class III – SPZ 300m.
- ✓ Borrow pits of gravel, sand, and clay.
- ✓ Bitumen plants

Class IV – SPZ 100m.
- ✓ Concrete solution plants.

176. **Contractor Good Housekeeping**. Garbage and sewage and solid and liquid waste from equipment maintenance can be serious pollutants and disease vectors. The contractor will therefore need to practice good worksite and construction camp management. Inspections by the CSC environmental specialist will take place monthly and any no compliance issues such as strewn garbage, open waste pits, oil soaked ground and unsanitary washing facilities for workers, the contractor will be subject to an immediate fine and a stop-work order will be issued if clean up is not underway within 12 hours of detection. If the contractor does not act, the CSC will retain an outside firm to clean up the area and this amount will be deducted from the contract total.

177. **Occupational Health and Safety**. For health and safety protection of workers and adjacent communities, the following shall be provided: (i) Adequate health care facilities (including first aid facilities) within construction sites; (ii) Training of all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work; (iii) Personal protection equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection in accordance with KR legislation; (iv) Clean drinking water to all workers; (v) Adequate protection to the general public, including safety barriers and marking of hazardous areas; (vi) Safe access across the construction site to people whose settlements and access are temporarily severed by road construction; (vii) Adequate drainage throughout the camps so that stagnant water bodies and puddles do not form; (viii) Sanitary latrines and garbage bins in construction site, which will be cleared when reaching capacity by the contractors to prevent outbreak of diseases.

178. Where feasible the contractor will arrange the temporary integration of waste collection from work sites into existing waste collection systems and disposal facilities of nearby communities. This shall be taken into consideration when deciding the place for the camp. The contractor will arrange for extra payment if community services are to be used.

179. The contractor shall hire a qualified health and safety expert who will provide safety training to the staff according to the requirements of the individual work place. Prior to the commencement of works, the work site personnel shall be instructed about safety rules for the handling and storage of hazardous substances (fuel, oil, lubricants, bitumen, paint etc.) and also the cleaning of the equipment. In preparation of this the contractor shall establish a short list of materials to be used (by quality and quantity) and provide a rough concept explaining the training / briefing that shall be provided for the construction personnel. The contractor shall provide information to workers, encouraging changes in individual's personal behavior and encouraging the use of preventive measures. The goal of the information is to reduce the risk of HIV / STD transmission among construction workers, camp support staff and local communities.

2.3. Operations and Maintenance Phase

180. After the Handing-Over to the Client, a one-year defects liability period ensues, in which the Contractor will still be responsible in remedying any deficiency or flaws in the overall works. After which the Operation and Maintenance Phase follow, in which the Client takes over with full responsibility for the operations and maintenance of the road. Impacts on the environment shall be on the usage of the road by vehicular traffic and subsequent maintenance activities to retain the service

level of the infrastructure.

181. The projected service life of the road is 20 years and over this operations period, the impacts related to traffic o the environment are rather viewed as cumulative on account of the functions of the road components and can be in conjunction with other activities. Time-wise these impacts can also be long-term as they may manifest after construction and continue to persist for the entire usage and operation of the road. The perceived impacts and corresponding mitigation measures during the operation of the road will be on:

- Traffic safety to the communities – traffic safety signages, signals, speed regulators, grade separation crossings, etc. should be installed.Enforcement of safe traffic speed should be heightened to instill discipline on motorists.
- Biodiversity – areas which can be habitats of flora and fauna should be protected by the national and local government from public intrusion. Instructional signs should be installed and enforcement of regulations should be strengthened.
- Water quality – spills from vehicles should not reach the bodies of water to avoid water contamination. Petroleum and chemical discharges from vehicles should be prevented by designating stops at safe distance from any existing waterways.
- Air quality – the good air quality can be maintained by vehicles running in good condition to minimize emission levels. The authorities should discourage usage of outmoded vehicles with high emissions. Trees should be planted to act as carbon sinks to vehicular emissions.
- Noise – noise levels can be minimized by proper maintenance of vehicles. In addition, sensitive receptors can be shielded from noise by installing sound barriers or planting buffer trees along the alignment.

Air Quality and Noise

182. Air Quality- The proposed project will result in better road condition, increased speed of vehicles, and the increase of traffic volumes along the project road. As per estimate in the traffic study, the growth rate are as follows: (i) 2011-2024 = 4.2%; (ii) 2025-2029 = 3.7%; (iii) 2030-2035 = 3.2%; and (iv) 2036-2040 = 2.8%. After adding the diverted traffic and applying the growth rates the future traffic is around 1, 450 cars. Comparing this value with Road Classifications for Kyrgyz Republic, it shows that Category III road will be sufficient to service the future traffic.

183. After computations the maximum traffic can be around 1, 450 vehicles per day, with this growth, will come the elimination of older more polluting vehicles from the fleet, fewer stops and starts due to better road conditions and traffic management, better engine technology and vastly more fuel efficient vehicles. Further, Kyrgyz Republic will receive better refined fuels with lower emission factors per liter used. The air quality in the project corridor was presented in Table 16 and estimated as normal. Conditions can be improved by enforcement of annual inspections, especially for the small and large buses and trucks, which contribute most of the emissions. Secondly the required use of catalytic converters and other pollution abatement devices needs to enacted into law and enforced. Having studied and considered various similar calculations to determine pollutant emissions by various traffic densities during the operation, we can conclude that the maximum ground-level concentrations of pollutants at a distance of 3 m to 5 m from the road shall not exceed the maximum permissible concentration.

184. A high grade road, properly signed, with good lane markings and careful intersection management, will allow the traffic to move more smoothly thus reducing the high emission due to frequent acceleration and deceleration. Road safety features such as, streetlights, traffic lights pedestrian crossings, livestock crossings and other visual means to reduce accidents will be installed along the road.

185. Noise - The noise survey completed in Nov 2015 (Table17) showed that noise levels along the project corridor and for about 3 m on either side of the carriageway, not exceed the Kyrgyz Republic standards. Noise levels that interfere with sleep and impact schools and hospitals now exist along the road.

186. In operation period, level of noise and vibration impact shall depend on road traffic intensity

and road pavement. However, having studied calculations of similar facilities may conclude that levels of noise impact will be low and sound wave shall spread to a distance of less than 5-8 m from the road and at a distance of 8 m from the road noise and vibration levels of die down. According to measurements carried out in November 2015, the existing road coating noise and vibration levels 3 m to both sides do not exceed the required standards (Table 17). In the villages on that distance are located fences or yards of the local residents.

187. The only real mitigation measure is to install noise barriers, along the noisiest stretches, based on further noise testing during the operation period. An option could be the construction of earthen berms helping to deflect the noise. It may be possible to use the crushed asphalt as a base for building the berms, then landscaping them with topsoil and vegetation including local drought resistant plants such Loch broadleaf.
Therefore, noise testing will take place at the same sites used during the 2015 survey. The schedule will be conducted 2 times for a six-month period during year 1 of the operating period. The resulting date will be used to determine the best noise mitigation measure.

Soils and erosion control

188. If the contractor properly implements the measures defined in the EMP for the construction period and CSC's environmental specialist completes a post-construction environmental audit to confirm all mitigative measures were implemented and remain operational, soils and erosion issues associated with the road should be negligible. Confirming that topsoil and planting were put in place as the work was being completed (not after the construction is completed) the tree planting was done and trees are healthy and being maintained will be essential. On the engineering site inspection of the culverts will be critical since their placement at too steep an invert slope will result in serious and chronic downstream (exit) scouring. To avoid this invert slope should be at the same grade as the natural waterbody and a concrete pads or preferably energy dissipation installation such as large rocks and rock gabions, installed.

189. Further, culverts need to be inspected to ensure that all debris and construction materials have been removed and any stream diversion structures have been completely removed. To that end the CSC and IPIG will prepare a culvert inventory that will provide a photo of each culvert and its condition during each inspection, which should be annually and submitted to MOTR of KR. Two photos will be required, one at the upstream and a second at downstream end of each culvert.

190. MoTR will assign this work will be assigned to the contractor during the one-year warranty period, after road becomes fully operational; and after that period, taken over by MOTR's maintenance unit.

Ecological Environment

191. The only ecological issue that could arise during the operating period is a failure to properly maintain the large tree plantations, and also the noise attenuation berms (if these are to be built) landscaping. The local ecosystem will be significantly altered by the cutting of the trees and therefore the replanting and tree maintenance program, until the trees are at least 9-10 years old will be critical to reestablishing the pre-cutting conditions of roadside shade during the summer and windbreaks during the winter. The roadside forest, admittedly planted many decades ago, is the only mature tree assemblage within many km of the alignment. It is home to many thousands of creatures, mostly insects and birds and is an open forest-track ecosystem. It has a microclimate and huge benefits for people living under them or benefiting from their shade and shelter. Therefore, as stated many time in this IEE, cutting should be minimized to the greatest extent possible by using innovative designs that build the trees into the road structure.

Socioeconomic Environment

192. Livestock and Pedestrian Crossings– Since the road section traverses residential areas, farmlands and pasture grounds, the need to provide pedestrian and livestock crossing becomes important. Category III Road allows design speed of 80 km/hour in rolling terrain (50 km/hour in mountainous terrain) for vehicular traffic, such that crossing people (especially children) and livestock (sheep, cattle, horses, etc.) pose real danger. Also on the road need to install the road signs indicating the places of transition of people and livestock. The crossing of people in the residential ares will be installed through every 200-250 m.

3. Climate Change Impacts on the Project Road

193. In this PPTA a Climate Change Study of the Project Road was included as a separate sector. This study focused on the following impacts to the project road:

- River floods and water logging in spring, due to more intense rainfall. This will mainly affect lower altitudes and areas susceptible to flooding;
- Heat stress in the summer, especially at lower altitudes;
- Mudslides related to more intense rainfall in the spring at medium altitudes (and in a lesser degree also high altitudes);
- Flush floods in the summer especially at higher altitudes, related to higher temperatures together with the increase in winter, spring and autumn rainfall (snow at higher altitudes).

194. The study made reference to the climate simulations done by the International Fund for Agricultural Development (IFAD) for Kyrgyzstan in which it indicated that the "Aral (Km 195) to Too-Ashuu pass (Km 286)"project area is located at an area mudslides. According to the Global Risk Data Platform modeling, the section is subject to the risk of landslides. It was also noted in the said study that Suusamyr basin was one of the areas where the highest avalanche activity occurred. The section does not, however, cross the highest mountains most at risk of avalanches. Rising winter temperatures can in the future increase the risk of unpredictable avalanches, as temperature changes can be more sudden.

195. The hazards related to flooding have been studied using UNEP's Global Risk Data Platform which entails hazards modeling was developed by the World Meteorological Organization (WMO) and the United Nations Education and Scientific Cultural Organization (UNESCO). As per data in the Platform, the flood hazard will increase along major rivers in the Central Asia region, but Kyrgyzstan and the project area is less influenced by this than the neighboring countries. The project area is located in areas of low risk, whereas the risk increases at higher altitudes.

196. The values of seasonal temperature changes by year 2100 anticipate a greater increase of summer temperature in comparison to other seasons, and the minimum increase is predicted for the winter period. On the positive side, warmer winters due to climate change can alleviate the clearing snow; which would mean less maintenance cost during the winter months.

F. Analysis of Alternatives

197. In this section were considered two alternatives:

1. Zero option – the «Inaction»/ do nothing alternative
2. The road reconstruction project

1. Zero option – the «Inaction»/ do nothing alternative

198. Within the framework of ADB's SPS 2009, an important consideration the alternative "Zero option" is being devoted on. The alternative "Zero option" presents case scenario in which the project is not to be done at all. By comparative evaluation, it can be inferred whether the project is necessary at all or provide some insights on how to properly proceed should the project be fully implemented.

199. Atmospheric air. The existing road surface does not meet the requirements of III road category. In most of the road sections, there is no "cold asphalt" road pavement. Due to unevenness of the road, vehicle engines run unevenly by releasing large amount of exhaust gases. Dust formation is most likely to happen on places where there is gravel surface, which also affects atmosphere.

200. Noise and vibration. Noise and vibration are a major factor of concern people day and night. Lack of coverage of the road, spreading the sound waves at great distances from the road creating a high noise and vibration impact on the population at night and in the daytime. The most sensitive recipients are residents of nearby houses to the road, kindergarten, hospital and other private facilities

201. Surface water. In places, where the road crosses channels and bridges, we can observe destruction of given structures and erosion of banks. In case of accidental destruction of some culverts and erosion of banks, we may observe pollution of water body. Runoff from the road surface

flows to channel and river by causing water bodies' pollution with oil products and oils. This impact will be expressed in possible soil contamination with oil products, oils and waste.

#	Bridge Location	Name of crossing watercourse
1	195+185	Kokomeren
2	210+313	Tuura-Kayin
3	214+410	Kashka-Suu
4	217+795	Kobuk-Suu
5	219+138	Chon-Suu
6	221+737	Suhoy-Say
7	222+276	Chon-Boobek
8	231+368	Kichi-Boobek
9	236+748	Sary-Bogu
10	237+748	Kokomeren
11	238+085	Zhoo-Zhurok
12	251+062	Western Karakol
13	263+019	Suhoy-Say

202. Soil. Impact on soil is expressed in soil disturbance due to destruction of roadbed and going of vehicles beyond the right of way on nearby areas. Erosion due to concentration of water flows by artificial structures, ditches and channels. Soil and water might be contaminated by oils, gasoline of vehicles.

203. Flora and fauna. Impact on flora and fauna will be negligible, as the road is existing road and has already caused anthropogenic impact.

204. LARP and social issues. Economic relocation and resettlement is not applicable. Social aspect is expressed in violation of communication routes of local residents, increase in time spent on the road to places of work and leisure. Poor traffic conditions for agricultural machinery, animal-drawn transport, cyclists and cattle driving. High accident risk might be created on the road and intersections with other roads. Moving vehicle causes vibration of buildings and structures. Dust pollution and gas contamination.

205. Safety. The road is not equipped with traffic indicators, signs, markings, which create prerequisites for accidents among population and vehicles crash. Violation of speed limits results in collisions and runs over people, animals and vehicles. There is no established road crossing places for people and cattle

206. If zero option is implemented, the benefit will be less traffic density and few road accidents.

The negative side is increased noise and vibration, lack of proper road pavement, negative social aspect, and impossibility to develop the region's economy

2. Alternative - the road reconstruction

207. This Alternative is considering the reconstruction existing road of the section Aral (Km 195) to Too-Ashuu pass (Km 286). The Road section from Aral (Km 195) to Too-Ashuu pass (Km 286) will be reconstructed and the total distance will be 91 km. Main specifications of the projected road are given in Section C the Project description.

During the pre-construction stage, reconstruction of the road will not have any environmental and social impacts. This period, the work will be associated with the design and proper planning of works, as well as informing the public and other stakeholders about the proposed work.

During the construction period, atmosphere air will be affected by vehicles, operation of road equipment and machinery, excavation and undermining of mountain areas' soil, sandy gravel, crushed stone and operation of asphalt mixing plant. The impact will be provided by pollutant emissions from the operation of machinery and mechanisms, the formation of dust.

The impact will be exerted on the water bodies (irrigation channels, Kokomeren, Karakol Rivers) from operation of the machinery, construction camps, and possible contamination of water by oil and oil products, soil, residues of construction and household waste products.

Impact on soil and land resources expressed by extraction of soil, ground, temporary diversion of land, and contamination by oil products, construction and household waste, disturbance of topsoil by its misuse and stockpiling.

The impact on the historical and cultural heritage will be expressed in the physical impact (vibration and possible infringement of workers) to the cemeteries and burial grounds located in the vicinity of the road. During the operation, the main impact will be on air, physical factors as noise and vibration will have an impact, especially in the settlements. More detailed analysis of the alternatives of the environmental and social impacts is given in **Section E the Environmental Impacts and Mitigation Measures.** Given that the reconstruction of the road will be carried out on the existing road and the environment has formed anthropogenic ecosystem, it can be concluded that the impact of the projected road on the environment will be insignificant, but in social terms the impact will be positive.

G. Information Disclosure, Consultation, and Participation

208. Formal and informal public consultations were done for the project during the study period. During the site visits some informal discussions were done with the villagers and some village heads as field information were being gathered. The IPIG organized a formal public consultation was arranged with the district heads to invite people of affected villages to present and discuss with them environmental and social issues relevant to the rehabilitation of the road.

1. Public Consultations and Participation

209. For Aral (Km 195) to Too-Ashuu pass (Km 286), in accordance with ADB's Public Communications Policy (2011) and SPS (2009), Public Consultation meeting on the environmental aspects was undertaken at 5:00 PM on 18 March 2016 in Suusamyr Village Office (see Photo below). This was organized by the IPIG-MoTR through official communication to the local leaders inviting stakeholders in the surrounding villages. As recorded there were 14 residents from the villages (see attendance sheet in Annex B) through which the road section will traverse.

210. During the public consultation the Consultant (Kocks Consult, GmbH), prepared PowerPoint presentation regarding the technical features of the project and explained the potential environmental and social impacts with corresponding mitigation measures. This event was organized by IPIG-MoTR representatives17. The representatives of the MoTR-IPIG answered questions and clarify any issues that were raised. In addition, the participants also were provided a sheet of paper on which the can write their questions and comments. Printed hand-outs of the presentation were prepared and distributed to the people for their information and as a way of disseminating the environmental concerns of the project to the general public. Below is a photo of the public consultation.

Figure 21: Public Consultation in Suusamyr (18 March 2016)

[17] Mr. Asylbek Abdygulov, environmental specialist of IPIG-MoTR; Mr. Ruslan Satybaldiev, project coordinator of IPIG-MoTR

211. The questions raised verbally during the forum were responded right away. As mentioned above, the people who attended were provided with a sheet of paper on which to write their questions and comments on the project. The recorded questions and corresponding responses by the IPIG-MoTR were captured in a video with the transcript shown in Annex C. The verbal and written comments and questions that were raised were compiled and presented as follows and in Table 21:

212. Comments/Recommendations:

Traffic Safety:

- Need for Traffic lights near schools

Additional Infrastructure:

- Need for drainage along some streets
- Need for street lighting and sidewalks along the road
- Need for improvement along Kokomeren River bank

Economic impact:

- Need for local hiring/employment

Environmental Concern:

- Need for more protection of the environment, local population and health of the people.
- Contractor to comply with the laws.

Information to the People:

- Keep the people informed
- Contractor to have good coordination with local officials

Table 71: Questions of Participants, PC meetings

Data	Place	Participants	Questions	Answers	Note
March 18, 2016	Suusamyr v. authorities	IPIG /MoTR Asylbek Abdygulov safeguard specialist Ruslan Satybaldiev Regional Project coordinator Kocks Consult Sam Sapuay International safeguard consultant Lola Shatirishvili, resettlement specialist	Jobs to be created by the project	Detail design will be develop later	
			Duration of Construction	3 year and 1 technical guarantee	
			Ditches along the road	Project include all road facilities	

213. Generally, the comments were minor with the following recommendations - the need for traffic lights, drainage and pipe culverts, riverbank improvement, local hiring, compliance of contractors to law, adequate information to people, and good coordination of contractor with local officials. The questions on the other hand were on local hiring, job creation, additional drainage, and construction duration and construction quality.

214. Several of the comments were already incorporated in this IEE/EMP such as concerns on damage to infrastructure and reconstruction of utilities. On the impact to infrastructure, provisions in the EMP were included to undertake good planning to enable infrastructure service not to be disrupted.

215. During the field works unofficial meetings were carried out by team of environmental specialists with the local population about the planned project and its possible impact on the environment.

216. Public consultation on social issues were conducted earlier and the public were given information leaflets on Kyrgyz and Russian languages, also was presented presentation and carried out survey.

During the public consultation on environmental issues was noted on a good awareness of the planned activity, but it was also noted that the local population is more interested in social issues, and few questions were on environmental issues.

217. Reconstruction of the road is planned on the existing road alignment and related with its expansion. The existing road is anthropogenic ecosystem and has already been impacted on the environment. As defined in the IEE the impacts have the same type of effects on the entire road. However, this section has the sensitive areas, such as historical and cultural sites (cemeteries and burial grounds).

218. The organization of public consultations conducted IPIG, Ministry of Transport, together with environmental specialists of KOCKs. To the public consultation were invited stakeholders from 4 villages along the road.

On the result of the meeting, it became clear that most of the attending people were representatives of various governments and municipal structures and they were directed by local authorities.

219. Following the meeting, representatives of the IPIG, Ministry of Transport have talked with representatives of the local administration about the composition of the participants in the public consultations and after that explanations were received. Local authorities decided that this work is preliminary stage (feasibility study). During the detailed design stage the environmental and social impacts will be more specific and Design Consultant will invite residents and other stakeholders.

220. In this stage, for getting information on environmental issues, representatives of the structures and the elders of villages have been sent, who subsequently may inform concerned residents.

221. In order to more effectively engage local population in the process of informing on social and environmental impacts of the project, additional public consultation will be required. It is necessary to hold a public consultation at the stage of detailed design for a representative stakeholder interaction.

222. Carried out one meeting does not reflect the full understanding and awareness of the local population. In public consultation should involve all interested parties, including residents of settlements, which may be affected, or in some way can be subjected to the effects of the proposed activity. The route of the road passes through the villages and the reconstruction of the road (to improve its qualitative state) and increasing the intensity of the movement, which can affect both positively and negatively on the people living in this area. In this regard, and according to the legislation of the Kyrgyz Republic, public discussion should involve all stakeholders, to identify their opinion, to give advice and suggestions on the proposed activity.

223. In order to inform a larger number of population of the villages along the road on the environmental and social issues of the project, IPIG/MoTR KR sent information letters with the results of the conclusions of IEEs to Rayon authorities, heads of village municipalities, and village elders for greater public awareness on possible types of environmental and social impacts during implementation of the road reconstruction project. This information letter is attached in Annex G. Also for more effective engagement with stakeholders, it is necessary to share the place of public consultations in every village along the 90 km road.

224. The organization of public consultation is necessary to fix the participants, by registration of the participants of the sheet indicating your name, position, address and telephone number. Provide information for feedback to direct suggestions and comments.

2. Information Disclosure

225. ADB endorses the IEE it is made available as information to the public, both in English and in Russian languages.

226. The procedure for public consultation in Kyrgyz Republic includes the following steps:

(i) public notification on public discussions;
(ii) 2) providing public access to the EIA documentation from the project initiator and / or in other accessible locations (local authorities, the territorial bodies of environmental protection), as well as disclosure of the EIA report on the website of the proponent (if website exists);

(iii) the general public familiarizes with the EIA documentation;
(iv) in the case of public interest:
- Public notice on the date and place of the meeting to discuss the EIA documentation;
- Collection and analysis of comments and suggestions, summarizing the results of public discussion of the EIA documentation.

227. The Russian Version of the IEE will be available in the IPIG-MoTR office and copies shall be made available to the people through the Ayil Okmatu offices along the project road. The IEE shall also be disclosed to a wider audience via the ADB website and in KGZ at the MOTR website. During the project implementation, periodic environmental monitoring reports shall be submitted by Implementing/Executing Agencies and correspondingly also be uploaded in the EDB website.

228. Should additional information be required at any time about the project, the public may visit the IPIG-MoTR or interact with the future construction supervision consultant who will be selected for the project. On-site consultations will be held for clarifications and provision of necessary information to the public and the stakeholders on as need basis.

H. Grievance Redress Mechanism

1. Objectives

229. The Grievance Redress Mechanism (GRM) is a process through which the affected people need a trusted way to voice and resolve concerns about the project and the project also finds an effective way to address affected people's concerns. In this project, the grievance mechanism will be in place by which the affected people will be fully informed of their rights and procedures for addressing complaints whether verbally or in writing during consultation, survey, time of compensation and implementation of the project. Care will always be taken to prevent grievances rather than going through long redress process.

230. The GRM will cover issues related to social, environmental and other safeguard issues under the Kyrgyz Law.

2. Grievance Redress Group (GRG)

231. The GRG will be established for the duration of project implementation. The GRG is taskedwith all activities needed to discuss a grievance, assess its validity, assess the scope of eventual impacts, decide eventual compensation needed and instruct/facilitate the functioning of the Grievance redress mechanism.

2.1. Functioning of the GRG within the Grievance Redress Mechanism

The Grievance redress mechanism (GRM) involves the following 2 stages appeals:

Stage 1, Local (Village) Level

- The grievances will first be lodged at the level of the complainant's village community. The complainant will report his case to the Local Point of Contact (LPC) The LPC will trigger the action of the Grievance Redress Group (GRG) which will assess the situation and seek a solution through consultation with complainants, local Roads Maintenance Unit (RMU) the oblast Ombudsman, and the selected AP representative.

Stage 2, Central Level

- In case within additional 15 days the grievance is still not resolved at local level the complainant will further raise the issue to MOTR's headquarters in Bishkek again with the support of the LPC, AP representatives, and the oblast Ombudsman. The GRG will decide on the eligibility and on the complaint case and prepare the resolution, subject to IPIG/MOTR consent.

232. GRM proceedings will entail one or more meetings for each complain and may require field investigations by specific technical or valuation experts. Grievance cases shared by more than one complainant may be held together as a single case.

233. For deliberations at the local level, the meetings will be held in the village of the complainant.

For appeals at central level, the meetings will be carried out at in MOTR office in Bishkek with field trips of GRG members to the village of the complainant.

2.2. Composition of GRG

234. GRG will be established by the order of MOTR. The GRG is composed at different levels of appeal by the following individuals/officers.

Local Level GRG

235. Local level GRG will be established at each Ayil-Okmotu along the project roads with the provision of members of following composition:

GRG Member	Position held
Head of Ayil-Okmotu	Chairman
Representative of RMU	Member
Female and Male APs	Members (2)
Local Point of Contact	Member
Ombudsman of the Oblast	Observer
Consultant	Invited Expert

Central Level GRG

236. The central level GRG will be represented by 5-7 members of the following composition.

GRG Member	Position held
Head of IPIG of MoTR	Chairman
Project Coordinator at IPIG	Member
IPIG safeguards unit representative	Member
Representative of the RMU	Member
Local Point of Contact	Liaison between Local & Central GRG
Ombudsman of the Oblast	Observer
Representatives of APs (Male & Female)	Additional Observers

At each level of appeal, the GRG will be assisted as needed by the professional capacity needed to solve each specific case. This will include among others:

- Representatives of State Rayon Administration
- Representatives of the Rayon Branch of the State Agency for Architecture and Construction
- State Registration Services of the Rayon
- Ministry of Agricultural
- State Agency for Environment and Forestry
- Ministry of State Property
- Ministry of Emergency
- Technical expertise from professional engineers, and Consultants with relevant experience in environmental safeguards.

2.3. Duties of GRG Members

Local Point of Contact

237. Once AP files a complaint, the LPC is to undertake and complete the following tasks:

- screen the complaint for eligibility and, if found eligible register it the Complaints Log;
- draft a complaint memo to be signed by the complainant, indicating the name of complainant, date and place the case of complaint occurred, apply the date and place of complaint submission, and attach supporting documents, as necessary;
- send the complaint memo to all members of GRG , agree the date of GRG meeting;
- request the rural administration authorities to organize the meeting;
- facilitate the GRG meeting by providing a storyline for the complaint and provide factual details and relevant documents obtained;
- communicate request and queries of the complaints to the members of GRG (on central level to GRG/IPIG/EDB);

- maintain the records of the meetings and communications between GRG and complainants
- ensure administrative and organizational support to GRG members;
- raise awareness of project stakeholders, including CBOs, NGOs AHs and local authorities on the GRM, it functions and objectives.
- liaise between local and central GRGs to convey the information of the case of complaint that was not resolved on local level and became the case to be reviewed on a Central Level.

Chairman of GRG / Head of Ayil-Okmotu

238. Once the GRG Chairman is informed about the meeting date and schedule he/she is responsible to:

- review the complaint(s) and supporting materials if any ahead of the GRG meeting;
- manage to obtain any additional information prior to GRG meeting date;
- involve relevant task expert if such need is obvious after review of the complaint(s);
- ensure members attendance and chair GRG meeting;
- ensure simple complaints (like notification of when construction starts or a copy of the entitlement brochure etc.) are handled /resolved at the local level during the meeting;
- ensure that records (of each meeting, communication between GRG and complainant(s)) is accurately recorder by assigned member (Meeting Secretary) and saved in the GRG files;
- convey requests and enquiries of the complainants to GRG members on Central Level if not resolved on Local Level.

RMU Representative

239. Once notified of a complaint and summoned by the LPC to a grievance meeting the RMU representative will:

- Review all relevant recording of complaints and submitted documents of proof;
- Participate to all grievance meetings, provide opinions and analysis, take minutes of the discussions (Secretary of the Meeting);
- Accompany eventual assessment/valuation specialists in the field;
- Ensure that claims from damages due to construction works are reviewed by the RMU and technical experts and assess the damages /losses incurred;
- Based on the position reports of GRG members and on his/her understanding of the case prepare the final grievance report and recommendations to be sent to complainant, other members of the GRG and if needed to IPIG as well. The summary report should determine, whether the case is:
  - ✓ solved without further action; or
  - ✓ solvable but requires compensation or other action; or
  - ✓ not resolved and requires pending actions, such as forwarding the complaint for review on the higher-Central Level, to the Court, or to investigation to prosecutor's office.
- If the complaint is considered valid and the needed compensation/action is to be approved by IPIG the case is forwarded to GRG on Central Level with the request to proceed the review and ensure execution of the redress action; and
- When the complaint remains unresolved by Local Level GRG, and a complainant offered to lodge claim on the Central Level agree to act so, RMU representative coordinates with LPC and GRG Chairman to assists the complainant in lodging the complaint at a higher appeal level;
- In parallel inform IPIG/MoTR and proceed with the organization of the central level appeal meeting.

Representatives of the APs

240. Two representatives of the APs, male and female persons from the affected community will participate in all GRG meetings to:

- act as the full right member of GRG;
- provide relevant information related to the submitted complaints; and
- provide other GRG members as relevant with a position note to be reflected in the final meeting report.

Invited Consultant /Field expert

241. Once notified of Meeting time and location the Consultant will:

- Review all relevant recording of complaints and submitted documents of proof;
- If feasible visit the place of complaint to visually observe the spot and be fully aware of important details to share with GRG members during the meeting;
- assist the GRG members to get into the insight of the complaint and assist them in finding feasible, reasonable, mutually agreeable and doable solutions.

IPIG Project Coordinator

242. Once notified that a complainant has lodged an appeal case at the Central level IPIG project coordinator will:

- contact the complainant(s) and draft a note with his/her understanding of the complaint;
- participate to the appeal meeting, provide opinions and analysis, take minutes of the discussions;
- if needed summon again assessment/valuation specialists and accompany them in the field;
- request the chairperson to organize meetings, as necessary;
- maintain communication between GRG and the complainants; and
- Complaint Register is kept with IPIG and a copy shared with the Consultant.

Representatives of IPIG Safeguards Unit

243. Once notified that a complainant has lodged at central:

- participate to all grievance meetings, provide opinions and analysis;
- accompany eventual assessment/valuation specialists in the field, and
- provide other GRG members as relevant with a position note to be reflected in the final meeting report.

Ombudsman

244. Once notified of a complaint and a summoned by the LPC to a grievance meeting is submitted the Ombudsman will:

- monitor complaint handling process and ensure that decisions made by the GRP are equitable and objective;
- provide independent opinions and recommendations related to the decision made on the case by the GRP team;
- advise the complainant(s) on their rights and entitlements, as necessary;
- participate to all GRG meetings and site visits;
- participate in eventual assessment/valuation in the field; and
- prepare a position memo at the end of the meeting(s) and forward it to LPC/chairperson of the GRG.

GRG Chairperson/Head of IPIG of MoTR

245. Once notified that a complainant has lodged an appeal case at central level, the GRG chairperson will:

- contact the complainant(s) and draft a note with his/her understanding of the complaint;
- trigger the GRG members through a letter of invitation;
- chair the GRG meetings and ensure that minutes of the meeting are shared with all relevant parties;
- review the content of each response prepared after deliberations to ensure accuracy as well as consistency of answers provided to the complainants;
- ensure the administrative and organizational support for GRG members to work; and
- support the decision made by the GRG and ensure that the follow-up actions are taken.

IPIG Project Coordinator

246. Once notified that a complainant has lodged an appeal case at central level project coordinator will:

- contact the complainant(s) and draft a note with his/her understanding of the complaint;
- participate to the appeal meeting, provide opinions and analysis, take minutes of the discussions;
- if needed summon again assessment/valuation specialists and accompany them in the field;
- request the chairperson to organize meetings, as necessary;
- maintain communication between GRG and the complainants; and
- Complaint Register is kept with IPIG and a copy shared with the Consultant.

Representatives of IPIG Safeguards Unit

247. Once notified that a complainant has lodged at central level, the representatives of IPIG safeguard and technical unit will:

- prepare the chronology of events to understand sequence of developments prompting the complaint;
- provide environmental and resettlement opinion on impacts claimed by the claimant;
- examine large claims over USD$10,000 with financial expert at Ministry and involve a qualified valuer;
- request the chairperson to organize meetings, as necessary; and
- maintain communication between GRG and the complainants.

Technical Experts

248. Once summoned to provide expert advice for the assessment or valuation of an impact claimed by a complainant the relevant technical expert will carry out the needed investigations and prepare a report to be handed to the complainant and the other members of the GRG. The tasks will include:

- provision of relevant technical opinion for the case reviewed;
- carry out the needed investigations relevant to their expertise; and
- provide recommendation when the legal opinion from the relevant state agencies is necessary.

2.4. Grievance Resolution Process

249. The LPC of GRGs will be regularly available and accessible for APs to address concerns and grievances. He will assist the aggrieved APs in formally lodging their claims to the GRG. The complaints and grievances from the APs will be addressed through the process described below.

Steps	Action level	Process	Timeline
Step 1	Resolution	At initial stage, the LPC will give hearing to the aggrieved person and try to give acceptable solutions. If any aggrieved AP is not satisfied with the solutions, then the aggrieved AP will lodge grievances in written to the concerned local GRG within 3 days.	3 days
Step 2	GRG Resolution	After receiving written complaints of AP, the LFP will review and prepare a Case File for GRG hearing and resolution. A formal hearing will be held with the GRG at a date fixed by the LPC in consultation and the aggrieved APs. On the date of hearing, the aggrieved AP will appear before the GRG at the office of concerned Ayil-Okmotu and produce proof in support of his/her claim. The LPC will note down the statements of the complainant and document all proof. The decisions from majority of the members will be considered final from the GRG and will be issued by the LPC and signed by other members of the GRG. The case record will be updated and the decision will be communicated to the complainant AP by the LPC within 14 days of submission. If any aggrieved AP is not satisfied with the solutions, then the LPC will lodge grievances in written to the central GRG at MoTR with conclusion and supporting documents prepared at local level.	14 days
Step 3	Resolution of GRG Central	After receiving written complaints of AP, the GRG Chairperson of the central GRG will review and prepare a Case File for GRG hearing and resolution. A formal hearing will be held with the GRG at a date fixed by the GRG Chairperson and the aggrieved APs. GRG members will contact the complainant and visit his village. The IPIG Project Coordinator will note down the statements of the complainant and document all proof. The decisions from majority of the members will be considered final from the GRG and will be issued by the GRG Chairperson and signed by other members of the GRG. The case record will be updated and the decision will be communicated to the complainant AP by the IPIG Project Coordinator within 15 days of submission.	15 days
Step 4	Court of law	The court of law will be the last resort before the AP. Project Affected Persons can appeal to court should s/he disagrees with the decision of the Control Authority.	N/A

3. Additional Mechanisms Available for Grievance Redress

250. Any physical and legal person, any appellant can communicate his/her concern to the Court at any stage of grievance redress. The GRC will not restrict or influence the AP from applying to court for legal remedies.

251. If the complaint is found invalid, the GRG formulates a response and sends a written letter to the complainant, explaining the reasons of rejection. The complainant can appeal the decision of the local Court. The project level GRG does not in any way impede APs access to the judicial or administrative remedies the Kyrgyz Republic.

I. Environmental Management Plan (EMP)

1. EMP

252. The EMP describes the various measures proposed under this Project, which were designed to avoid, mitigate, or compensate the adverse environmental impacts that may result from the Project. As such the EMP considers all phases of the Project cycle, namely the detailed design, construction and operational phases of the Project.

253. To ensure that the proposed mitigation measures will be carried out by the contractors during the construction stage, the design consultant will clearly set out in the tender and contract documents the contractor's obligation to undertake the respective environmental mitigation measures.

254. The EMP consists of two tables. Table 22 summarizes the environmental mitigation measures, and Table 23 provides an overview of the environmental monitoring. At the end is a statement which includes the timeframes and responsibilities for carrying out the environmental monitoring.

Table 72: Environmental management plan

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
DETAILED DESIGN PHASE				
Road alignment in areas of tree plantations. There is a considerable number of tree losses involved. Approximately 2,570 trees need to be felled on the Aral – Too-Ashuu	Tree losses that cannot be prevented. Main species are Populus alba, Elm	Any tree losses are compensated by new plantations. Plantations shall be conducted after technical works have been completed. Planting time shall be restricted to spring (March till April) and/or autumn (September till October). Locations for tree plantings are within the existing Right of Way (RoW) at the locations where tree losses occur. Trees to be planted shall have the following parameters: 1,5 – 2 m height, age 5 – 6 years. Distance in between individual trees shall be 6 – 8 m. Species: Populus alba (30%), Elm (70%), and deciduous shrubs Lohan in the villages	Design Consultant	IPIG of MoTR
Rehabilitation and/or replacement of existing culverts, implementation of new culverts. In this section it is planned to replace / repair the 103 culverts	Potential damage to local irrigation system if new culverts should not be sufficiently dimensioned or in case that not all existing culverts should be rehabilitated in the course of the road rehabilitation.	In the course of the road rehabilitation all existing culverts will be cleaned, repaired or replaced, depending on their respective conditions. All culverts are sufficiently dimensioned in order to prevent any damages or blockages to the existing local irrigation systems.	Design Consultant	IPIG of MoTR
Rehabilitation / reconstruction of 13 bridges	Potential water erosion processes at bridge and river embankments.	Design of erosion protection measures at lower parts of bridge embankments. Prefabricated concrete protection plates prevent erosion processes at the lower and lateral parts of bridge and river embankments. Detailed design of the respective protection measure is drafted in the technical design documentation for the respective bridges.	Design Consultant	Construction supervision Consultant (CSC) IPIG of MoTR
Road traversing cattle crossings	Accidents because of collision with cattle	Further impacts from the road may include cattle crossing the road. This will be clarified during public hearings. Depending on the situation, mitigation measures will be specified as appropriate. Possible mitigation measures would be the provision of warning signs in accordance with relevant road safety standards. In addition, reflectors may be provided on trees in the critical sections and the road fenced near pastures.	Design Consultant	CSC, IPIG of MoTR
Cultural and historical sites protection.	Potential Construction works impacts on cultural and historical sites and monuments finding chance. Cultural sites: • 197 km - Burial ground - LHS, 15 – 100 m from the road. • 198 + 500 km - Kyrchyn 1 Burial Ground - 3 – 45 м, on both sides of the road. • 201 km - Kyrchyn 2 Burial Ground - 10 – 100 m, on both sides of the road.	The objects of historical and cultural heritage are the objects of study and protection of the Ministry of Culture and Tourism of the Kyrgyz Republic (MoCIT KR). To prevent exposure to these objects it is necessary to develop Management plan for cultural and historical sites, according to the law protection zone of objects is not less than 50 m. All questions related to the establishment of protection zones, procedures, management plans should be coordinated with MoCIT KR and local government. On the basis of the findings of Archaelogical Study (Appendix F), during the detailed design stage, Consultant should send the road design along with the Management plan for objects of cultural heritage for MoCIT KR approval.	Design Consultant	CSC, IPIG of MoTR, MoCIT KR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
	• 209 km - Burial Ground) – RHS, 25 – 50 m from road. They are unique and rare mounds on the territory of Kyrgyzstan. • 243 km - Kojomkul Kumboz – LHS, 15-20 м from the road.			
Blasting works	Potential impact to water bodies and air quality. Safety issues.	Blasting works will be conducted at the site from km 201 to km 234, along the Kokomeren River. In order to reduce the environmental impact of blasting works, it is necessary to provide mitigation measures near the blasting sites (installation of shields near power lines and water bodies, dust hydro-supression measures, etc) and personnel&community safety measures.	Design Consultant	IPIG of MoTR
CONSTRUCTION PHASE				
Top soil preservation	Loss of top soil.	Removing of top soil occurring within site clearing corridor. Topsoil shall be removed and stored for reuse. Long-term stockpiles of topsoil will immediately be protected to prevent erosion or loss of fertility. For erosion protection it will be sawn with a fast growing vegetation, e. g. grass	Contractor	CSC, SETI, IPIG of MoTR
Road alignment in areas of tree plantations. Embankment filling of the tree stem area.	Tree losses due to embankment fill.	A maximum fill up of the tree stem area of 30 cm can be accepted. Fill up material in the tree stem area has to be organic soil. A filling up of more than 30 cm will damage the tree. In this case cutting can't be prevented and a new tree is to be planted as a compensation measure at the respective location within the existing RoW. Species to be planted are walnuts, maple ash tree, elm tree, white poplars, white willow, white acacia. Plantings shall be conducted after technical works have been completed. Planting time shall be restricted to spring (March till April) and/or autumn (September till October). Quality of newly to be planted trees shall be 16 to 18 cm of stem circumference at least in 1,5 m height.	Contractor	CSC, SETI, IPIG of MoTR
Bottom of embankment of designed road lying very close to tree rows	Potential damaging of trees during construction activities	Implementation of a temporary vegetation protection fence during construction activities.	Contractor	CSC, SETI, IPIG of MOTR
The road crosses or comes close to the Kokomeren, Tuura-Kayin, Kashka-Suu, Kobuk-Suu, Chon-Suu, Suhoy-Say, Chon-Boobek, Kichi-Boobek, Sary-Bogu, Zhoo-Zhurok, Western Karakol rivers	Alteration of surface water hydrology resulting in increased sediment by increased soil erosion at construction site	Implementation of settlement ponds at locations where construction site comes close to natural watercourses to retain sediments and mitigate possible impacts on water hydrology. Oil and solid waste management need to be described in the SSEMP and consider these sensitive receptors (rivers and their floodplains). No campsite are allowed near river floodplains. In order to prevent the erosion of the river banks, in areas close to the river to the road layout (238-239 km), provide coastal protection riprap. Material for rock placement will take where blasting work in the rocky soil. Stone material will be laid along the banks of the river.	Contractor	CSC, SETI, IPIG of MOTR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
Prevention of water pollution next water objects:Kokomeren Tuura-Kayin Kashka-Suu Kobuk-Suu Chon-SuuChon-Boobek Kichi-Boobek Sary-Bogu Zhoo-Zhurok Western Karakol	Pollution of surface water	During the construction of bridges construction site dimensions shall be the minimum necessary. Construction site should be placed at levels that exclude them flooding in the flood. The discharge of polluted water, landfills, parking cars and the construction of temporary facilities within the water protection zones on the banks of rivers. On construction sites should provide capacity for the collection of sewage and garbage. The roads within the water protection zones should include the collection of water from the roadway surface with its subsequent treatment or sewage in into place (spill control system), eliminating the pollution of water sources. The quality of discharges into water bodies must meet the established requirements. In the water protection zones (not less than 50 m) of rivers it prohibits contamination of the earth surface of the earth, including the garbage dump, waste production, as well as parking, cleaning and repair of motor vehicles and road construction machinery, fueling. All works in water protection zone must be carried out based on permission from the local authorities. The water protection zone is prohibited production of local building materials without permits and approvals of environmental authorities.	Contractor	CSC, SETI, IPIG of MOTR
	Water pollution from blasting works	In order to prevent negative impacts from blasting works: - protect water bodies with wooden boards (5m x 5m) mounted on poles. - Use methods of drilling and blasting works (drilling small blast hole), such as the trace is small charges to prevent the explosion of a large expansion of the rock material, as well as its layered explosion in small amounts and remove. Blasting operations in the fishery waters and river bank zones are permitted in extreme cases where the performance of work by other means is impossible. This decision should be taken on the basis of the calculation of the dangerous explosion wave radius for fish or actions seismic zone in the explosions on the shore. It should also include measures for screening in order to reduce the impact of the blast wave and the protection of fish fauna.		
Operation of borrow areas and quarries	Potential disfigurement of landscape, vegetation losses and damage to access roads Increased dust emission Siltation and obstruction of surface waters	Some proposed borrow areas are already in operation. Therefore environmental impacts concerning potential disfigurement of landscape, vegetation losses and damage to access roads are kept to a minimum. New sites for quarries need to be developed in accordance with the requirements and procedures for obtaining permission Wet aggregates and/or provide cover on haul trucks to minimize dust emission and material spillage. Locate stockpiles away from surface waters. Prior to start material extraction the contractor shall submit his SSEMP through the Construction Supervisor (CS) to the Safeguard Department of the IPIG of the MoTR indicating the location of the proposed extraction site as well as rehabilitation measures and implementation schedule for the borrow areas and access roads. Rehabilitation measures may not be necessary for borrow areas still in operation after road works have finished. The SSEMP needs to address the sensitive issues of avoidance of transportation thru residential areas as far as technically feasible and closure rehabilitation.	Contractor	CSC, IPIG of MOTR
Operation of aggregate crusher	Increased dust emission and noise emission	Careful site selection of aggregate crusher in order not to interfere with any sensitive receptor. Distance to next settlement and residential houses at least 300 m downwind. Site selection for aggregate crusher has to be approved by the Safeguard Department in the IPIG of the MoTR.	Contractor	CSC, IPIG of MOTR
Operation of asphalt	Odor emission and safety risks	Asphalt plants shall be 500 m downwind from any settlements and residential	Contractor	CSC, IPIG of

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
plant		houses. Provide spill and fire protection equipment and submit an emergency response plan (in case of spills, accidents, fires and the like) to the authority in responsibility prior to operation of the plant. Secure official approval for installation and operation of asphalt plants from MoTR.		MOTR
	Water pollution due to spilled bitumen	Bitumen will not be allowed to enter either running or dry streambeds nor shall it be disposed of in ditches or small waste disposal sites prepared by the contractor. Bitumen storage and mixing areas must be protected against spills and all contaminated soil must be properly handled according to legal environmental requirements. Such storage areas must be contained so that any spills can be immediately contained and cleaned up.	Contractor	CSC, IPIG of MOTR
Site selection, site preparation and operation of contractor's yard	Potential soil and water pollution	The contractor shall submit documents for approval (short statement and site plan in appropriate scale) which indicate: Site location, surface area required and layout of the work camp. The layout plan shall also contain details of the proposed measures to address adverse environmental impacts resulting from its installation. Sewage management plan for provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses; Waste management plan covering provision of garbage tons, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations; Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination. Prior to the commencement of works the site installations shall be inspected for approval. The selected site will not be on top of ground water area or near surface waters.	Contractor	CSC
	Competition for water resources	Prior to establishment of the work camps, conduct consultations with local authorities to identify sources of water that will not compete with the local population.	Contractor	CSC
Site selection, site preparation and operation of contractor's yard (continuation)	Health and safety risks to workers and adjacent communities	For health and safety protection of workers and adjacent communities the following shall be provided: adequate health care facilities (including firstaid facilities) within construction sites; training of all construction workers in basic sanitation and health care issues, general health and safety matters, and on the specific hazards of their work; personal protection equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles, and ear protection in accordance with legal legislation; clean drinking water to all workers; adequate protection to the general public, including safety barriers and marking of hazardous areas; safe access across the construction site to people whose settlements and access are temporarily severed by road construction;	Contractor	CSC, IPIG of MOTR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
		adequate drainage throughout the camps so that stagnant water bodies and puddles do not form; sanitary latrines and garbage bins in construction site, which will be periodically cleared by the contractors to prevent outbreak of diseases. Where feasible the contractor will arrange the temporary integration of waste collection from work sites into existing waste collection systems and disposal facilities of nearby communities;		
Work site operation / Operation of equipment maintenance and fuel storage areas	Worker's health and soil / water pollution	The contractor shall hire a qualified health and safety expert who will provide safety training to the staff according to the requirements of the individual work place. Prior to the commencement of works, the work site personnel shall be instructed about safety rules for the handling and storage of hazardous substances (fuel, oil, lubricants, bitumen, paint etc.) and also the cleaning of the equipment. In preparation of this the contractor shall establish a short list of materials to be used (by quality and quantity) and provide a rough concept explaining the training / briefing that shall be provided for the construction personnel. Locate storage facilities for fuels and chemicals away from watercourses. Such facilities will be bounded and provided with impermeable lining tocontain spillage and prevent soil and water contamination. Store and dispose waste/used oil consistent with environmental legal requirements. Work site restoration: After completion of construction works the contractor shall execute allworks necessary to restore the sites to their original state (removal and proper disposal of all materials, wastes, installations, surface modeling if necessary, spreading and leveling of stored topsoil).	Contractor	CSC;
Operation of construction camp	Road construction projects bear a high potential risk to affect local communities and the health and well-being of those that live in or near to the temporary work camps by supporting the spread of STD and HIV/AIDS. In addition, the transport sector itself actually helps the epidemic, as infrastructure and associated transport services give people and infections mobility.	Providing information to workers, encouraging changes in individual's personal behavior and encouraging the use of preventive measures. The goal of the information is to reduce the risk of HIV/ STD transmission among construction workers, camp support staff and local communities.	Contractor	CSC, IPIG of MOTR, local health units of the Ministry of Health
Earth works and various construction activities	Loss of topsoil	Topsoil on the sections to be used as a stockpile for surplus construction material shall be removed and stockpiled to reuse them to cover these areas upon completion of works. In addition a soil management plan shall be provided detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites.	Contractor	CSC
Earth works and various construction activities (continuation)	Siltation of surface waters and/or impact on soils due to improper disposal of excess materials	Mostly all excavated material will be reused. In addition the reclaimed asphalt pavement will be recycled for the 1. The transfer of old asphalt to Local RMU of MoTR for up-filling of the secondary roads; 2. Use the old asphalt to strengthen the top coating of the road shoulders by	Contractor	CSC

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
		adding the gravel-sand mixture with 15cm thickness.Thus potential impacts due to the need for disposal of excess material will be kept to a minimum.		
	Competition for water resources	Conduct consultation with local authorities to identify sources of water (for spraying and other construction requirements) that will not compete with the local population.	Contractor	CSC
	Air pollution due to exhaust emission from the operation of construction machinery	The contractor will maintain construction equipment to good standard and avoid, as much as possible, idling of engines. Banning of the use of machinery or equipment that cause excessive pollution (e.g., visible smoke).	Contractor	CSC
	Disturbance of adjacent settlements due to elevated noise and vibration levels	Restrict speed limit to 30 km/hr within 500m of any settlements. Restrict work along the road close to any settlement between 7.00 as to 6.00 pm. Restrict work of large and noisy machinery in the vicinity of settlements to daytime and to agree the work schedule between the contractor and local communities. Compaction shall be made by certified machinery only which complies with all KR laws concerning noise and vibration at construction sites SN 2.2.4/2.1.8.562-96 “Noise at work sites, living premises, public buildings and within residence construction site”; SN 2.2.4/2.1.8.566-96 “Production vibration. Vibration in premises, residence and public buildings”.	Contractor	CSC, Ttraffic police service of the Ministry of home affairs
	Soil compaction due to operation of heavy equipment	Confine operation of heavy equipment within the corridor that is absolutely necessary for the road construction to avoid soil compaction and agricultural used land close to the road.	Contractor	CSC
Earth works and various construction activities (continuation)	Traffic impairment	Submit a traffic management plan to local traffic authorities prior to mobilization. Provide information to the public about the scope and schedule of construction activities and expected disruptions and access restrictions Allow for adequate traffic flow around construction areas. Provide adequate signalization, appropriate lighting, well - designed traffic safety signs, barriers and flag persons for traffic control.	Contractor	CSC
Blasting works	Air Quality, Water quality, noise, safety.	Blasting works will be conducted at the site from km 195 to km 235, the site is in mountainous area along the Kokomeren River. The main measures are hydro-dust suppression and conduct of blasting works for breaking of rocks in small volumes stratified (top to bottom) horizontal blasting hole charges in small diameter with a preliminary pre-splitting along the contour of the explosive volume. The Contractor for explosives works must have a valid license and a passport of blasting works. Blasting works are conducted based on the application and situational plan, in coordination with local authorities and with SIETS permission for works. For blasting activities it is also necessary to develop a Blasting Works Management Plan. A mitigation measure for power line protection is an obligatory installation of shields.	Contractor	CSC; IPIG of MoTR
Within settlements, encroachment into private and residential land	Dislocation or involuntary resettlement of people. Loss of businesses and income of people operating their business within the existing RoW	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure.	IPIG of MoTR, CSC	IPIG of MoTR
Within settlements,	Loss of businesses and income	Resettlement Specialist will issue LARP covering assessment of loss and	IPIG of MoTR,	IPIG of MoTR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
encroachment on business assets and / or Disturbance business, people, activities and socio-cultural resources due to construction work	of people operating their business within the existing RoW	compensation procedure. In addition the following mitigation measures shall be implemented: Inform all residents and businesses about the nature and duration of work well in advance so that they can make necessary preparations Limit dust by removing waste soil quickly; by covering and watering stockpiles, and covering soil with tarpaulins when carried on trucks Increasing workforce and use appropriate equipment to complete the work in minimum timein the important areas Avoid construction work in sensitive times like festivals near religious places	CSC	
Within settlements disproportionate encroachment on poor people's assets.	Loss of wealth and property of poor people. Poor and vulnerable households might be affected.	Resettlement Specialist will issue LARP covering assessment of loss and compensation procedure.	IPIG of MoTR, CSC	IPIG of MoTR
Construction activities in close vicinity to existing infrastructure such as water supply pipes and other facilities, waste water discharge facilities, electricity lines etc.	Damage to infrastructure, supply cuts of infrastructure services.	Measures will be ensured in engineering designing to avoid any disturbance to the existing infrastructure. Prior to construction start the respective service agencies shall be informed about the construction work. Coordinate with respective agencies and provide prior information to the public in case of any required disruption in services during construction	Contractor	CSC; IPIG of MoTR
Rehabilitation works within villages and along sensitive receptors such as schools and hospitals.	Noise exceeding applicable noise standards. Vibrations may result in damage to local infrastructure, including private property and local (haulage) roads	For sensitive receptors such as schools and hospitals applicable noise standards shall be complied with as far as technically feasible by means of noise measurements and in case of exceedence of standards, ascribe of time restrictions for construction activities between 6 am and 6 pm. For potential damages to local infrastructure, including private property and local (haulage) roads, compensation procedures will have to be established prior to the beginning of construction and approved by the engineer. In addition grievance redress procedures shall be put in place to facilitate communication betweenthe contractor and potentially affected people. In addition haul routes and construction site access roads should be discussed and jointly approved between the contractor and local officials to minimize the risk of conflicts.	Contractor	CSC; IPIG of MoTR
Rehabilitation works along sensitive receptors such as cultural sites.	Vibrations may result in damage to cultural structures. Phisical damage	For sensitive receptors such as cultural sites,prior construction works, the Contractor should apply in writing to the local authorities in defining the protection zones around these sites. Applicable vibration standards shall be complied with as far as technically feasible by means of vibration measurements and in case of exceedence of standards, contractor should strictly utilize equipment with less vibration impact. In addition grievance redress procedures shall be put in place to facilitate communication between the contractor and potentially affected people. In addition haul routes and construction site access roads should be discussed and jointly approved between the contractor and local officials to minimize the risk of conflicts.	Contractor	CSC; IPIG of MoTR

MITIGATION MEASURES DURING DESIGN, CONSTRUCTION AND OPERATION				
Activity	**Potential Impact**	**Mitigation measures**	**Institutional Responsibility**	
			Implement	**Monitor**
		Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing archaeological sites, especially near the following Cemeteries: • Burial Grounds near Kokomeren Bridge; • Burial ground Kyrchyn 1 • Kyrchyn 2 Burial Ground; • Burial Ground; and • Kojomkul Kumboz.		
Provide work conditions for the CSC environment specialist	Monitoring of compliance by the contractor with the EMP requirements during construction works	In order to implement monitoring of compliance with the EMP requirements, the CSC environment specialist shall be provided with transport when required and a work place in the office at the construction site	Contractor	CSC, IPIG of MoTR
Cultural and historical sites protection.	Potential Construction works impacts on cultural and historical sites and monuments finding chance.	In accordance with the Law of the Kyrgyz Republic on historical cultural heritage in the event of cultural monuments found, Contractor must stop all construction works and report the findings to the local executive authorities or any other competent organization (Institute of History and Cultural Heritage, National Academy of Sciences; Department of History, Kyrgyz National Universtiy after Balasagyn), MoTRTI KR. Also Contractor should employ techniques during construction works (vibration) with minimal or no impact to any cultural, historical or archeological structures along the road. Physical cordon around identified sites should be installed to minimize construction impact and alert workers/people from disturbing cultural/historical sites	Contractor	CSC, IPIG of MoTR, MoCIT KR
OPERATION PHASE				
Increased traffic flow	Elevated levels of gaseous and noise emissions due to increased traffic. In addition increased pedestrian vs. vehicle accidents due to traffic volume and higher speed as a result of improved road design	Integrate in the engineering design safety features such as speed control signs, proper road markings, streetlights, pedestrian crossing, livestock crossing and other visual means.	Design Consultant, Road police service	CSC
Increased traffic volumes and higher vehicle speeds	Increased risk of accidents with possible spills of harmful substances	Spill-contingency plan A contingency plan or emergency response plan is a set of procedures to be followed to minimize the effects of an abnormal event on the Project roads, such as a spill of oil, fuel or other substances that may harm drinking water resources or have adverse effects on the natural balance of sensitive areas. Additional measures to mitigate risk of accidents and spill of harmful substances are speed control and weight stations.	DEP-24 of MoTR	IPIG of MoTR
Damaged drainage or uncontrolled erosion.	Harmful environmental impacts resulting from damaged drainage or uncontrolled erosion.	Routine monitoring of drainage and erosion control at least twice a year.	DEP-24 of MoTR	IPIG of MoTR

255. Prior to construction works, the contractor shall provide a comprehensive SSEMP covering the following aspects:

- Cultural & historical sites Management Plan
- Dust management which shall include schedule for spraying on hauling and access roads to construction site and details of the equipment to be used. The contractor shall pay a special attention to water spraying in settlements and at repair and construction sites.
- Layout of the work camp and details of the proposed measures to address adverse environmental impacts resulting from its installation
- Sewage management including provision of sanitary latrines and proper sewage collection and disposal system to prevent pollution of watercourses
- Waste management covering provision of garbage bins, regular collection and disposal in a hygienic manner, as well as proposed disposal sites for various types of wastes (e.g., domestic waste, used tires, etc.) consistent with appropriate regulations
- Description and layout of equipment maintenance areas and lubricant and fuel storage facilities including distance from water sources and irrigation facilities. Storage facilities for fuels and chemicals will be located away from watercourses. Such facilities will be bounded and provided with impermeable lining to contain spillage and prevent soil and water contamination
- Soil Management Plan detailing measures to be undertaken to minimize effects of wind and water erosion on stockpiles of topsoil and excess materials, measures to minimize loss of fertility of top soil, timeframes, haul routes and disposal sites for excess materials.
- Emergency response plan (in case of spills, accidents, fires and the like) prior to operation of the asphalt plant
- Blasting works management plan.
- Method statement or plan for the execution of bridge construction works including measures that will be undertaken to address adverse environmental impacts such as erosion of river embankment and siltation of watercourses that may result from such activities

256. The SSEMP shall be submitted by the contractor for approval to the Construction Supervision Consultant.

2. Monitoring

2.1. Environmental Monitoring plan

257. Environmental monitoring is an important aspect of environmental management during construction and operation stages of the project to safeguard the protection of environment. During construction, environmental monitoring will ensure the protection of embankment from potential soil erosion; borrow pits restoration, quarry activities, location of work sites, material storages, asphalt plants, community relations, and safety provisions. During operation, air, noise, and surface water quality monitoring will be important parameter of the monitoring program.

Table 73: The Environmental Monitoring Plan

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to be monitored?	When is the parameter to be monitored? Frequency	Institutional responsibility
Construction stage					
Water quality in surface waters (rivers)	pH, dissolved oxygen, oil products, turbidity, total suspended solids, conductivity, temeperature, lead	Upstream and downstream where the Project road crosses the rivers Kokomeren, Tuura-Kayin, Kashka-Suu, Kobuk-Suu, Chon-Suu, Suhoy-Say, Chon-Boobek, Kichi-Boobek, Sary-Bogu, Zhoo-Zhurok, Western Karakol	Measurement either directly in river water with a suitable measurement device or sample taking and measurement in a certified laboratory	Second round of baseline monitoring measurements to be conducted before construction start. Than on a monthly basis during construction stage	CSC
Noise/ vibration Rehabilitation works within settlements at locations where the Project road runs close to sensitive receptors such as schools, hospitals, mosques, bazars cultural sitesor other sensitive socioeconomic infrastructure.	Prior to construction and during construction activities within identified sensitive hotspots and sensitive receptots close vicinity of sensitive receptors regular control of noise level by portable measure instrument. In case noise standards are exceeded implementation of time restrictions for construction activities	At sensitive receptors within settlements Kyzyl-Oi village school (km 220+200) – located at the right hand side near the CBT office Kojomkol village school (km 245+200) – located at the right hand side of the road Suusamyr village (km 258+500) – alongside police station at the left hand side Tunuk village school (km 260+000) – located at the left hand side of the road Cuitural sites (cemeteries)	By means of portable noise / vibration measurement device	Second round of baseline monitoring measurements to be conducted before construction start. Than a monthly basis during construction stage.	CSC
Phisical damage of the Cuitural sites (cemeteries)	Cuitural sites (cemeteries)	Cuitural and historical sites: • Burial ground (197 km) – LHS, 15 – 100 m to the west from the road. • Kyrchyn 1 Burial Ground (198 + 500 km) - 3 – 45 м, on both dised of the road. • Kyrchyn 2 Burial Ground (201 km) - 10 – 100 m, on both sides of the road. • Burial Ground (209 km) – RHS, 25 – 50 m, to the north from road. They are unique and rare mounds on the territory of Kyrgyzstan. • Kojomkul Kumboz (243 km) – LHS, 15-20 м from the road.	Visual observation	Second round of baseline monitoring measurements to be conducted before construction start. Visual observation in construction period where the cemeteries are indicated (in the km). Document the condition of the cemeteries and mausoleums before constructions works.	CSC

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to be monitored?	When is the parameter to be monitored? Frequency	Institutional responsibility
Air quality deterioration	Dust, noise, SO2, NOx, CO	Whithin settlements where the Project road comes close to sensitive receptors such as schools, hospitals, mosques, bazars or other sensitive socioeconomic infrastructure. At asphalt plant and at aggregate crusher. Kyzyl-Oi village school (km 220+200) – located at the right hand side near the CBT office Kojomkol village school (km 245+200) – located at the right hand side of the road Suusamyr village (km 258+500) – alongside police station at the left hand side Tunuk village school (km 260+000) – located at the left hand side of the road	By means of suitable portable measurement device.	Second round of baseline monitoring measurements to be conducted before construction start. Than on a monthly basis during construction stage.	CSC
Potential tree losses because tree item area is subject to embankment filling.	Trees located within the newly designed embankment.	At respective tree locations.	Inspections; observation. An embankment fill of up to 30 cm at the bottom of the tree stem area can be accepted. A filling up of more than 30 cm will damage the tree and cutting will be necessary. Decision is to be made by the construction supervision engineer.	During construction phase.	CSC control by IPIG of MoTR
Top soil preservation	Stockpiling and means of protection	Job site	Inspections; observation	Upon preparation of the construction site, after stockpiling and after completion of works on shoulders	CSC control by IPIG of MoTR
Equipment servicing and fuelling	Prevention of spilling of oil and fuel	Contractor's yard	Inspections; observations	Unannounced inspections during construction	CSC control by IPIG ofMoTR
Worker's safety and health	Official approval for worker's camp; Availability of appropriate personal protective equipment; Organization of traffic on the construction site Provision of safety training to the staff according to the requirements of the individual work place	Job site and worker's camp	Inspection; interviews; comparisons with the Contractor's method statement	Weekly site visits by the hired Health and safety expert. Unannounced inspections during construction and upon complaint.	CSC
Worker's education on AIDS and STD	Has relevant education been provided?	To be determined by assigned Construction Supervision	To be determined by assigned Construction Supervision	After beginning of works and at appropriate intervals throughout construction	CSC, local health units of the Ministry of health

Issue	What parameter is to be monitored?	Where is the parameter to be monitored	How Is the parameter to be monitored?	When is the parameter to be monitored? Frequency	Institutional responsibility
Material supply Asphalt plant	Possession of official approval or valid operation license	Asphalt plant	Inspection	Before work begins	CSC
Borrow areas	Possession of official approval or valid operation license	Sand and gravel borrow pit and / or quarry	Inspection	Before work begins	CSC control by IPIG of MoTR
Material transport Asphalt	Are the truck loads covered or wetted?; Compliance with the Contractor's method statement (restricted working hours; haul routes) dust suppression methods where required	Job site / haul routes	Supervision	Unannounced inspections during work	CSC
Stone		Job site / haul routes	Supervision spot checks	Unannounced inspections during work	CSC
Sand and gravel		Job site / haul routes	Supervision	Unannounced inspections during work	CSC
Surface water protection	Contractor's compliance with his approved method statement	Bridges and Culverts	Inspection	Unannounced inspections during bridge and culvert works	CSC, SAEPF
Air pollution from improper maintenance equipment Asphalt plant and Machinery	Exhaust fumes, dust	At site	Measurement at asphalt and crushing plants. Regular check certificate of vehicles and equipment.	Unannounced inspections during construction works	CSC
Planting of new road side trees	Regular monitoring and control of successful growth of new planted trees	At locations of new planted trees	Replanting of trees that have died	Monitoring to be conducted in autumn so as to allow for replacement of failures	CSC, control by IPIG of MoTR
Operational stage					
Increased road kills of domestic animals due to higher traffic loads and vehicle speeds	Road kills of animals	Along the new road	Keep records of accidents. In the case that accident hot spots with large mammals are identified, appropriate protective measures shall be elaborated (e.g. reflectors / local fencing, warning signs, speed reductions etc.)	Throughout the Year	Regional Departments of State Road Administration (UAD, LUAD, and GDAD BO)
Increased traffic volumes may increase possible spills of harmful substances	Accidents that cause spills of harmful substances	Along the new road	Counting of accidents	Throughout the Year	MoTR jointly with Road police service of the KR Ministry of home affairs and KR Ministry of emergency situations
Damaged drainage or uncontrolled erosion	Leakages in drainage system and damages due to erosion	Culverts and drainage acilities	Documentation	Throughout the Year	Local MoTR departments
Tree maintenance along the road	Maintenance of newly planted trees	In locations of newly planted trees		Throughout the Year	Local MoTR departments joint with local authorities

2.2. Budget on Mitigation Measures

258. Most of the mitigation measures require the contractors to adopt good site practice, which should be part of their normal construction contract, so there will be no additional costs to be included in the EMP. Costs of design-related mitigation measures are included in the budgets for the civil works.

259. The primary impact that needs to be mitigated in the overall implementation of the project will be on the affected trees which were due to widening of the carriage way. These trees are mainly common trees such elm, poplar and black locust. The RAP has identified individual trees to be cut. However in the vegetated areas, an estimate is presented based on accepted convention.

260. In order to have a higher degree of success for replacement of affected trees in the section, 2 saplings of the same or similar species is proposed to be planted. Accordingly, the estimated number of trees and cost for the affected trees to be to be substituted is shown below.

Table 74: Number and Cost for Mitigation of Affected Trees

#	Item	unit	QTY	Remarks
1	Affected trees due to widening	each	2,570	Indicated in field inspection for Cutting
2	For 1:2 Ratio of Replacement	each	5,140	Estimated Trees to be Planted
3	Average cost of Replacement	Som	750	Cost of Sapling & Planting
	Total Cost	**Som**	**3,855000**	**Budgetary Estimate**
	69 Som/ 1 USD	USD	$55,870	Budgetary Estimate

2.3. Budget on Monitoring Activities

261. The estimated cost for the environmental management and monitoring on the consultancy for the entire project construction period of three (3) years is shown in the Table 25 below. This will include fees and other associated cost for management and monitoring of the construction sites and affected areas in the project road. In addition, the main Contractor shall undertake periodic parametric measurements as basis for action to improve their performance on the implementation of measures. Hence, a budget for periodic parametric measurements is hereby included in the Table 26 below.

Table 75: Budgetary Cost for Environmental Monitoring Specialists

Item	Quantity	Unit Cost	Total Cost
Implementation of EMP		US $	US $
International Environmental Specialist (IES)	6 months / 3 years, 1 month	14,000	84,000
National Environmental Specialist (NES)	21 months/ 3 years, 1 month	2,500	52,500
Others (travel, per diem, surveys/interviews, reporting, etc.)	LS	20,000	20,000
Total			**$ 156,500.00**

Table 76: Budgetary Cost for Environmental Monitoring Requirements

Item	Quantity	Unit Cost	Total Cost
Implementation of EMP		US $	US $
6 month a year x 4* point (air) x 3 (years) 1** month	73	150***	10,950
6 month a year x 13* point (water) x 3 (years) 1** month	499	100***	49,900
6 month a year x 4* point (noise - vibration) x 3 (years) 1** month	73	150***	10,950
Total			**$ 71,800.00**

* - the number of points and measurements may vary
** - 2 years a physical work and 1 year a technical survey (measurements 1 month a year)
** *- the cost of laboratory services may vary

3. Mechanisms for implementation

3.1. Institutional Framework

262. The relevant institutional entities for the project include the KR's Ministry of Finance (MOF), Ministry of Transport and Communication (the EA), Investment Projects Implementation Group (IPIG) under MOTR, the State Agency of Environment Protection and Forestry (SAEPF), the State Inspection on Ecological and Technical Safety under the Government of the Kyrgyz Republic (SIETS), the Department for Disease Prevention and State Sanitation and Epidemic Control of the Ministry of Health Protection of the Kyrgyz Republic.

263. MOTR is responsible for transport sector development and is the EA for the project. IPIG is working under MOTR and will carry out the responsibilities assigned to MOTR.MOF is the responsible government body for coordination with donors for foreign assistance.

264. SAEPF is a leading state environmental agency responsible for the environmental policy of the country and coordination of environmental activities of other state bodies. Its functions include:

- Development of environmental policy and its implementation;
- Carrying out a state environmental expertise;
- Issuance of environmental licenses;
- Environmental monitoring;
- Delivery of environment information services.

265. SIETS carries out its activity in accordance with the Law "On Procedure for inspection of business entities". SIETS exercises control over compliance in established order of:

- environmental legislation, set rules, limits and standards of environmental management, standards for emissions and discharges of pollutants and waste disposal in the environment;
- requirements of industrial safety in the construction, expansion, reconstruction, modernization, operation, conservation and liquidation of hazardous production facilities;
- requirements of land legislation;
- requirements for safe operation of equipment and facilities for storage and distribution of petrochemicals and gas, cranes;
- requirements of safe use rules in the construction, assembling and commissioning of electrical networks and electrical equipment.

266. The Department for Disease Prevention and State Sanitation and Epidemic Center (DDPSSEC) of the Ministry of Health supervises sanitary and epidemiological welfare of the population, safety of goods and products, environmental compartments and conditions, prevention of harmful impacts of environmental factors on human health. DDPSSEC establishes MPC of chemicals in the environment with regard to the human health safety.

267. The following measures will be taken by the Consultant and by IPIG to perform environmental compliance with the EMP and Monitoring Plan during Project implementation:

- The tender and contract documents will clearly set out the contractor's obligations to undertake environmental mitigation measures set out in the Environmental Management Plan.
- The recommended environmental mitigation costs are included as separate items in the Bills of Quantities. This will ensure that there is specific environmental mitigation budget which will be implemented as required. During the procurement, contractors will be encouraged to include these costs in their rates and present the mitigation cost as a line item in the Bill of Quantities. There will be an identified extra payment in the contract to ensure measures are costed and carried out.
- The contractor will recruit an environmental, health and safety manager, who will be responsible for implementing the contractors' environmental responsibilities. The manager will also be responsible for health and safety aspects of work sites. Before commencing physical construction, Contractor will prepare site-specific EMPs (SEMPs), submit to Construction supervision Consultant (CSC) for endorsement and IPIG for approval.

- CSC will conduct environmental monitoring and assist IPIG in implementing EMP and supervising the implementation of mitigation measures by the contractors.

3.2. Reporting Requirements

268. MOTR will monitor and measure the progress of implementation of the EMP. In this regard semiannual monitoring reports during construction stage will be prepared by the Construction Supervision Consultant and submitted to MoTR within 1 month after the reporting period and then disclosed at EDB and MoTR websites. Contractor submits to CSC monthly reports and reports on compliance with mitigation measures and other corrective actions. CSC submits to IPIG quarterly reports containing a section on safeguard performance.

J. Conclusion and Recommendation

1. Conclusions

269. The better road design and condition of the pavement will decrease operating costs for all vehicle owners, helping to make vehicles last longer. Road safety measures will also be improved by providing new traffic signs, safety railings, pedestrian and livestock crossings for the road.

270. Overall the project has significant advantages to the local people and companies operating in the country by providing better access to national and regional markets.

271. At the same time, this project has many work components that can potentially lead to long term, even chronic environmental impacts. These are associated with erosion, tree removal, damage to intersections and roadside access, unaddressed chronic and rising air pollution and noise conditions which are already excessive, inadequate management of large volumes of old asphalt pavement to be removed and inadequate repair and replacement of the more than 103 culverts and 13 bridges along the route. The IEE and its EMP have provided the steps necessary to avoid many of the construction period impacts, by developing good protocols and work programs for managing potential impacts, and will be implemented.

The following tasks, all discussed in detail in the IEE and the EMP material are considered the most important impacts which, if the EMP is followed, could be adequately mitigated.

1. ***During the preconstruction period the eight key tasks to be implemented by MOTR, IPIG and CSC will be***:

   (i) Insertion of EMP mitigation and monitoring measures into contract specifications.
   (ii) Preparation of a list of sections where topsoil conservation works will be required when rehabilitating the road.
   (iii) Earthworks Haul Route framework, defining at least was vehicles cannot go.
   (iv) Construction period access management and restoration steps, as a basis for use by the contractor, working with the traffic police.
   (v) Tree Inventory, identification of special groves, protection where possible, and cutting a replanting plan.
   (vi) Inclusion in road design of public safety and public services features, namely:
      - Pedestrian crossings and traffic lights
      - Lighting signage and sidewalks
      - Bus stops
      - Livestock passes.
   (vii) Provision of technical capacity building.

2. ***During the construction period CSC and the contractor(s) will need to:***

   (i) Undertake Air Quality and noise measurement field-testing for the full three years and one operating year.
   (ii) Contractor to manage all petroleum products and prevent spills, proper disposal.
   (iii) Contractor to manage sewage and garbage at work sites at all time.
   (iv) Provision of basic occupational health and safety items at work sites, including first aid, water, shade and proper gear including hats, shoes and face masks.
   (v) Maximize the reuse or redistribution of the old asphalt.

(vi) Undertake the tree planting and maintenance task as each construction area is vacated; i.e. do not wait until the end of the construction period.
(vii) Implement dust suppression program on all haul roads and at construction sites.
(viii) Understand and implement all regulations standards and obtain licenses for all borrow site operations and rehabilitation.
(ix) Enforce occupational health and safety as prescribed by law.
(x) Inspect all culverts to be sure the re-installation does not lead to chronic downstream scour, and that any diversion and debris have been cleared.

3. During year 1 of the operating period the CSC and Contractor with input from the RMU will:

(i) Make certain that all replanted trees are healthy and properly maintained and protected for the winter—this may require strengthen the RMU as there will be up to1000 trees to manage.
(ii) Prepare a photo record of all culverts, confirming proper placement and debris removal.
(iii) Continue the air quality and noise monitoring for the year.
(iv) Examine noise data collected and plan noise attenuation measures such as berms and barriers at sensitive sites.
(v) Inspect decommissioned borrow areas to confirm rehabilitation and proper closure.
(vi) Monitor value of pedestrian and livestock crossing features, with a view to adjustments/improvement as needed.
(vii) At the end of each period the EMP specifies the completion of progress reports, which will be used to monitor compliance and shape the next stage.

2. Recommendations

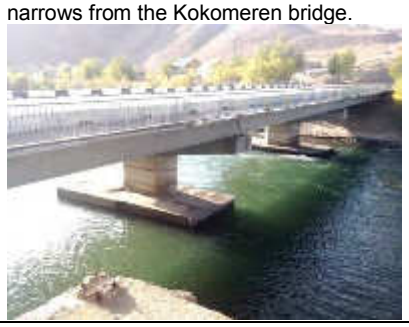
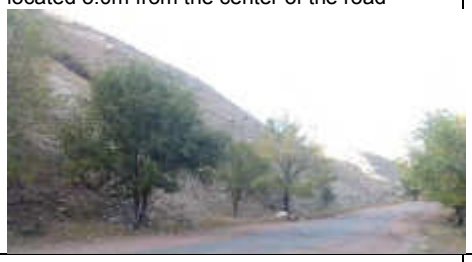
(i) The EMP will be followed carefully and required reporting completed in a timely fashion. MOTR recommends that, based on the noise testing during construction and the first operating year, noise suppression measures be implemented.
(ii) The tree management and maintenance function should be passed to local communities or RMD, until trees have reached 8+ years and do not need careful maintenance.
(iii) CSC and IPIG will deliver the training to all active project participants and concentrate giving sound advice to the contractor, especially on the preparation and implementation of the CEWP.
(iv) Shortly after the operating period starts, the CSC and contractor will conduct safeguards compliance check to be sure that all measures required of the contractor have been met.
(v) This IEE is “living” document and if required, it will be updated taking into account all environmental requirements, and any significant changes will be discussed and agreed to with EDB.

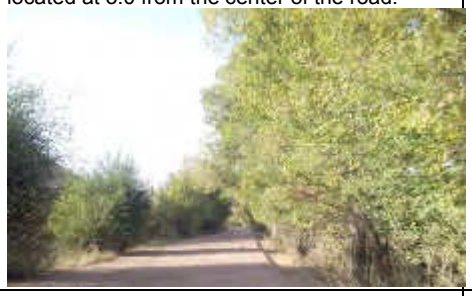
ANNEXES:

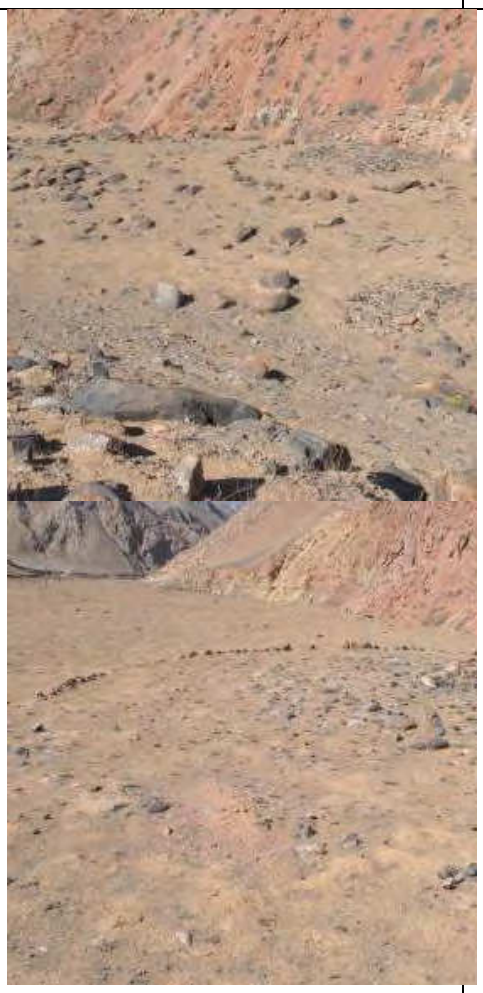
Annex A: Alignment Sheet

The result of the site visits by the international and local environmental specialists are summarized in an Alignment Sheet. This shows relevant environmental features which can be of concern during the implementation of the road. For the section “Aral (Km 195) to Too-Ashuu pass (Km 286)”, the Alignment Sheet is shown below.

Alignment Sheet

№	Section	Description	Parameter	Comments
Section: Bridge after Aral village (195 km) – Suusamyr valley, Too-Ashuu, till junction to the Bishkek-Osh road (286 km)				
1	195 km + 400	Kokomeren River Bridge. The road sort of narrows from the Kokomeren bridge. 	Analysis of the quality of water in the oil, turbidity	Physical and chemical analysis.
	195 km + 800	Two (2) trees may be cut down at LHS located 4.7m from the center of the road		To be verified with the design
	196 km + 100	Around 30 trees may be cut down at LHS located 5.0m from the center of the road 		
	196 km + 300	One (1) tree may be cut down at LHS located 5.0m from the center of the road		
	196 km + 600 to 196 km +700	Around 3 trees may be cut down at LHS located 5.0m from the center of the road		
	196 km -197 km	One (1) tree may be cut down at RHS located 5.0m from the center of the road		
2	197 km	 Burial ground - LHS, 15 – 100 m from the road. Detected by archaeological investigation.		Visual
3	197 km + 500 – 197 km + 700	Around 27 trees may be cut down at LHS located 5.1m from the center of the road		To be verified with the design
	197 km + 800	Two clusters of trees may be cut: around 18 trees at RHS and 19 trees at LHS both located at 5.0 from the center of the road.		

№	Section	Description	Parameter	Comments
4	198 km + 100	Two clusters of trees may be cut: around 31 trees at RHS and 17 trees at LHS located both located at 5.0 from the center of the road. 		To be verified with the design
	198 km + 200	Two clusters of trees may be cut: around 5 trees at RHS and 1 tree at LHS located at both located at 5.0 from the center of the road.		To be verified with the design
		LHS: cemetery on the left side of 50 m. and the site is expanding.		
5	198 km + 500	 Kyrchyn 1 Burial ground - 3 – 45 m, on both side of the road. Detected by archaeological investigation.		Visual
6	201-202 km	Mountainous area; the road is narrow. It is necessary to widen the road by drilling, jackhammering and perhaps blasting. The road section runs along Kokomeren River. There are (fishes) marinkas (Schizothorax), osmans (Oreoleuciscus angusticephalus potanini) and trouts in the river. The area of the planned road construction is between Suusamyr and Karakol mountain ranges.		Necessary measures to protect water quality and endemic fishery resources
		There is a possible borrow pit with gravel-cobble ground (LHS) 30-50 m away from the road.		Potential Material source to be verified
7	201 km	 Kyrchyn 2 Burial ground - 10 – 100 m, on both sides of the road. Detected by archaeological investigation.		Visual
8	203 km	Mountainous area, excavation of block-cobble rock materials for crushed stones.		Potential Material source to be verified
9	205 km	Mountainous area, spring water location, the road narrows due to mountain on the left side and by river on the right side. The Datka-		Measures to protect water quality and power infrastructure

№	Section	Description	Parameter	Comments
		Kemin power transmission tower from the other.		(may be relocated)
10	207 km	Mountainous area, blasting works shall be performed.		Slope hazard; measures to protect water quality
11	209 km	 Burial ground - RHS, 25 – 50 m, from the road. Detected by archaeological investigation.		Visual
12	210km	Bridge site; there is a monument called Kara-Teke 10 meters away from the bridge. 	Sampling water on oil, turbidity. Point selection - the bridge	Ascertain historical significance of monument
13	210 km + 400	Five (5) trees may be cut down at LHS		To be verified with the design
	210 – 212 km	Mountainous area; road development may entail jack-hammering and blasting		Slope hazard; measures to protect water quality
14	212 km	LHS: Cave found (20m). The odour inside likely indicates that this could be habitats of wild birds and bats.		Limited geologic investigation may be necessary to determine its geologic and ecological importance

№	Section	Description	Parameter	Comments
				
15	213 km	Mountainous area, excavation of block-cobble ground for crushed stone.		Potential Material source to be verified
	213 km + 600	Transmission tower of Datka-Kemin is very close (5m) to the road, which may have to be relocated during road reconstruction (about 9 electric towers may likewise be affected). One (1) tree may be cut down at LHS 		To be verified with the design
16	214 km	Road bridge site, width of 8 meters. 	Sampling water on oil, turbidity. Point selection - the bridge	Measures to protect water quality will be needed
		Mountain slope rock cutting by jackhammer, drilling and possibly blasting		Slope hazard; measures to protect water quality
17	215 km	The road might be widened to the river's side (RHS) where there are a lot of trees, mostly poplars and willows that can be affected.		To be verified with the design
18	216 km	Road width expansion on both sides; 100 trees may have to be cut down (6-7m).		To be verified with the design
19	217 km	Cemetery of Kyzyl-Oy village is 50 m away from the road, but which can extend to the road.		Special measures should be in place to protect structures
20	218 km	Bridge site. In the river there are materials for asphalt plant. 	Sampling water on oil, turbidity. Point selection - the bridge	Measures to protect water quality will be needed Potential Material source to be verified

№	Section	Description	Parameter	Comments
21	218 km +700 , Kyzyl-Oy village	Kyzyl-Oy has FAP, a school, a mosque. Classes 1 to 11, the total number of 160 students, 20 teachers. Water is supplied from the Kokomeren River. 	Air sampling, measurement of noise and vibration at 220 km + 100	Possible extra measures for social impacts/concerns
	219+138	Chon-Suu, replacement bridge	Sampling water on oil, turbidity. Point selection - the bridge	Measures to protect water quality
	220 km + 100	The village has CBT-tourist company that accepts/services tourists in the summer.		Possible extra measures for social impacts/concerns
	220 km + 400	Around 8 trees may be cut down near the road		To be verified with the design
		School and Sport ground area 		Possible extra measures for social impacts/concerns
22	221 km	Kyzyl-Oy village's end. Replacement bridge. 		Special measures should be in place to protect structures
23	222 km	Possible Blasting site		Slope hazard; measures to protect water quality
		Five (5) trees may be cut down near the road		To be verified with the design
24	222+276	Chon-Boobek, replacement bridge.	Sampling water on oil, turbidity. Point selection - the bridge	Measures to protect water quality
25	223 km	Mountainous area, rock deposit		Slope hazard; measures to protect water quality
		Ten (10) trees may be cut down		To be verified with the design
26	225 km + 300	Ten (10) trees may be cut down at LHS located at 5.0 m from the center of the road		To be verified with the design
		Twelve (12) trees may be cut down		

№	Section	Description	Parameter	Comments
	225 km + 500 m	Road section passes through foothills of the mountain, which may require rock-blasting. The road also passes through the mining area, where the rocks are periodically transferred from the talus area (a slope formed by an accumulation of broken rock debris). The debris field is necessary to periodically clean road from gravel and stones.		Slope hazard; measures to protect water quality
27	227 km	5 trees to cut down. Five (5) trees may be cut down		To be verified with the design
28	229 km + 300	LHS: Old borrow pit with coarse sand. One tree may be affected 		Potential Material source to be verified
		Five (5) trees may be cut down		To be verified with the design
29	229 km +500 m	Possible Blasting site		Slope hazard; measures to protect water quality
		Two (2) trees may have to be cut down.		To be verified with the design
30	230 km +700	LHS: Thirty-four (34) trees may be cut down at		To be verified with the design
	230 km + 800	LHS: One (1) tree may be cut down		
	230 km	By cutting it found about 55 trees (5-6m from road)		To be verified with the design
		Road bridge site; also found a spring along the road, on the left side.	Sampling water on oil, turbidity. Point selection - the bridge	Measures to protect water quality will be needed
31	232 km + 600	LHS: One (1) tree may be cut down at RHS		To be verified with the design
	231 -232 km	Thirty-six (36) trees may be cut down in the area		
32	233 km + 200	(LHS) Possible cutting of 6 trees		To be verified with the design
	233 km + 500	(LHS) Possible cutting of 2 tree		
	233 km + 900	(LHS) Possible cutting of 1 tree		
		Approximately 63 trees may be cut. 		
		Possible site for mountain-blasting		Slope hazard; measures to protect water quality
33	234 km	200 trees to cut down. (5-6m from the road)		
34	235 km + 400 –	By cutting (LHS) 21 trees.		
	235 km + 600	By cutting it found about 20 trees. On the left found reserve stone material.		
35	236-237 km	40 trees to cut down. (5-6m)		
36	236+748	Sary-Bogu, replacement bridge	Sampling water on oil, turbidity. Point	Measures to protect water quality

№	Section	Description	Parameter	Comments
			selection - the bridge	
37	237 km	Minor repairs of the road bridge. InformationsignKokomerenriver. 	Sampling water on oil, turbidity. Point selection - the bridge.	Measures to protect water quality
38	238 km + 800	Tree may be cut (RHS) 1 tree (5-6m)		
	238 km + 900	Tree may be cut (RHS) 1 tree (5-6m)		
	239 km + 100	3 Trees may be cut (RHS) (5-6m)		
	239 km + 500	Both sides about 120 trees may be cut. The road comes close to the river, about 3-4 m.		
39	242 km	A possible source of river gravel, floodplain of Djoo-Djurok river.		
40	243 km	Kojomkul village. Historical monument – Kojomkul's house -– LHS, 15-20 m, from the road 		Visual
		New bridge construction. The water intake should be done adrift Djoo-Djurok River. 	Sampling water on oil, turbidity. Point selection - the bridge	Measures to protect water quality
41	244 km, Kojomkul village	Kojomkul village has a health post (4 nurses), school with 11 grades and 162 students, mosque, museum, club and post office.	Air sampling, measurement of noise and vibration 245 km +300	Possible extra measures for social impacts/concerns
	244 km + 500	RHS: Shop (8m from the road)		
	245 km	LHS: Local health clinic, Mosque (7-8m from the road) 		
	245 km + 300	RHS: School (school yard is 5m from the road)m		

№	Section	Description	Parameter	Comments
				
	245 km + 700	RHS: Shop (7m from the road)		
42	249 km	Twenty (20) trees may be cut down in the area (6-7m from the road)		To be verified with the design
43	250 km	Mountainous area, earthworks may entail jackhammer, drilling and blasting		Slope hazard; measures to protect water quality
44	251 km	Possible minor repairs of the road bridge over Karakol river. The surrounding area consists of piedmont grassland with scrubs. 	Sampling water on oil, turbidity. Point selection - the bridge.	Measures to protect water quality
45	256 km	Beer production factory (LHS; 40 meters from the road)		Possible extra measures for social impacts/concerns
46	257 km	LHS: old borrow pit with loamy ground; (10 m from the road)		Potential Material source to be verified
47	257 km, Suusamyr village	Suusamyr village has a hospital, school (up to 11th grade and with 500 students), mosque, club, park-veteran museum, police station and shops. Water is supplied from ground sources and springs. Main agricultural direction is stock breeding. (interior		Possible extra measures for social impacts/concerns
	258 km + 500	Thereiscemetery 500 mawayfromtheroad.		Special measures should be in place to protect structures
	259 km + 100	Center of Susamyr: LHS: The police, the post RHS: 3 shops	Air sampling, measurement of noise and vibration 259 km +200	Possible extra measures for social impacts/concerns
	259 km + 200			
	259 km + 300	RHS: The mosque, a shop		
	259 km + 700	LHS: Shop		
	259 km + 800	RHS: Shop		
	259 km + 900	LHS: Shop RHS: Electricity service office		
48	260 km, Tunuk village	Tunuk village has a health post, school with 250 students, mosque. Water is supplied from ground sources and springs. Irrigational network takes water from Charuya river. Some people grow potatoes, barley carrots and etc.		Possible extra measures for social impacts/concerns
	261 km +200	Mosque (RHS) and the shop (LHS).		
	261 km + 800	School (LHS).	Air sampling, measurement of noise and vibration	

№	Section	Description	Parameter	Comments
			261 km + 800	
49	262 km	There is a culvert and a spring		Special measures should be in place to protect structures
50	263+019	Suhoy-Say, bridge replacement		Measures to protect water quality
51	266 km	Old borrow pit (LHS) with sandy-gravel ground, 50 m away from the road;piedmontplain in the surroundings.		Potential Material source to be verified
52	271 km	Old borrow pit (RHS) with sandy-gravel ground, 100 m away from the road.		Potential Material source to be verified
		Existence of culvert for reconstruction.		Measures to protect water quality
53	272 km	Old borrow pit (RHS) with sandy-gravel ground, about 200 m away from the road.		Potential Material source to be verified
54	281 km	The end of the road section: existence of a river in the area. Within km 266 -281 are swamplands.		Measures to protect water quality will be needed

Annex B - List of Attendees in the Public Consultation in Suusamyr

18 Mar. 2016

Attendance sheet:

No.	Full name	Position	Place of residence / Telephone	Signature
1	Ustabaev J.K.	Resident	Kyzyl-Oi village / 0557 909073	/signed/
2	Duishonkan uulu	Resident	Kozhomkul village /0770 306589	/signed/
3	Otunchiev U.Sh.	Head of Suusamyr village authority	Suusamyr village /0551 156263	/signed/
4	Ashyr uulu Chyngyzbek	Electrician, SUES	Tunuk village, 0770 186788	/signed/
5	Takyrbasheva E.	Head of FEO, village authority	Suusamyr village /0773 439648	/signed/
6	Alymkulova R.	Cashier of village authority	Suusamyr village /0770 269951	/signed/
7	Asanaliev T.	Head of club of Suusamyr v/a	Suusamyr village /0773 201972	/signed/
8	Akylbekov T.	Farmer	Kyzyl-Oi village / 0552 109920	/signed/
9	Ismailov M.	Municipal property specialist	Suusamyr village /0772 678554	/signed/
10	Tazhybekov N.	Resident	Kyzyl-Oi village /0555 556637	/signed/
11	Ryspaev M.	Elder	Kyzyl-Oi village /0559 251257	/signed/
12	Kochorov Satybaldy	Inspector of MOS	Suusamyr village /0777 329499	/signed/
13	Kulserekov M.	Land specialist	Suusamyr village /0777 326824	/signed/
14	Murataliev B.	Resident	Kozhomkul village /0550 797918	/signed/

ок присутствующих

ФИО	Должность	Место проживания	Телефон	Подпись
Устабаев М. К		с. Кызыл-Ой	0557 909073	
Дуйшомкан уулу		с. Ломоцкое	0770306581	
Отукмаев У. М.	глава Суусамырского а/о	с. Суусамыр	0551151213	
Амир уулу Чингизбек	зв. монтер СУЭС	с. Тушуп	0770 15 67 - 28	
Такирбашева Э	Нач. ФЭО. а/о.	с. Суусамыр	0773 43 96 48.	
Алтимкулова Т	кассир а/о	с. Суусамыр	070026-99-57	
Аканомев. Т.	зав. клуб Суусамыр а.о.	с. Суусамыр.	0773201972	
Нюлбеков А.	Фермер	с. Кызыл-Ой	0552109920	
М. Исмаилов	сант. инж. а/о.	с. Суусамыр	0772678654	
Тажибеков Ж		с. Кызыл-Ой	0555556637	
Джепаев М	сторож	с. Кызыл-Ой	0559451257	
Жоторов Сооронбай	инженер ВЕС	с. Суусамыр	070567-15-13 0777 32-94-99.	
Бумедреков. Л	пост. арсеи	с. Суусамыр	0777-326824	
Муратмаев Б.		с. Ломоцкое	0550739194	

Annex C – Written Comments, Recommendations and Questions

Name: Rysbaev Moldobek
Residential address: 14 Yntymak Street, Kyzyl-Oi village, 0559 25 12 57
Proposals concerning the road rehabilitation project:
Please provide for arrangement of six concrete pipe culverts to bring water across the Zhibek road. Install a traffic light in front of the school.
Arrange embankment on the side of Zhibek road and ditch along it.
Questions related the road rehabilitation project:

Name: N. Tashybekov
Residential address: 34 Zhibek-Zholu Street, Kyzyl-Oi village
Proposals concerning the road rehabilitation project:
Install lighting inside the village.
Questions related the road rehabilitation project:
How far should structures be away from the road?

Name: M. Ismailov
Residential address: Suusamyr village
Proposals concerning the road rehabilitation project:
Please arrange ditches on both sides of the Zhibek-Zholu Street in Suusamyr village. Install electric lighting inside the village
Questions related the road rehabilitation project:

Name: U.Ch. Otukchiev
Residential address: 33 Kyrgyndy-Koo Street, Suusamyr village
Proposals concerning the road rehabilitation project:
Please arrange for embankment on the bank of the Kokomeren River and solve the matter related to installation of electricity lighting
Questions related the road rehabilitation project:

Name: J. Ustabaev
Residential address: Zhibek-Zholu Street, Kyzyl-Oi village
Proposals concerning the road rehabilitation project:
Please provide for electric lighting inside the village
Questions related the road rehabilitation project:

Name: J. Ustabaev
Residential address: Zhibek-Zholu Street, Kyzyl-Oi village
Proposals concerning the road rehabilitation project:
It would be good if the Contractor arranged a drainage system along the road from the beginning till the end of the village, because there is underground water there.
Questions related the road rehabilitation project:
Is it possible to build ditches along the road?

Name: Ch. Ashyr uulu
Residential address: Tunuk village
Proposals concerning the road rehabilitation project:
Please make sure that any construction does not cause any damage to nature and population.
It would be good if electric lighting were installed along the road
Questions related the road rehabilitation project:
Who guarantees that rehabilitated road will be of high quality?

Name: Alymkulova
Residential address: Suusamyr village
Proposals concerning the road rehabilitation project:
Please make sure that the Contractor hires local people, build sidewalks along the road.
Besides, make sure that the Contractor does not cause damage to the environment and population health.
Questions related the road rehabilitation project:

Name: E. Tashyrbasheva
Residential address: Suusamyr village
Proposals concerning the road rehabilitation project:
Please pay a great attention to the quality of the road. Build sidewalks along the rehabilitated road.
We ask the Contractor to install lighting along the road.
Questions related the road rehabilitation project:
How long will the rehabilitated road service in good quality?

Name: T.K. Asanaliev

Residential address: 40 Zhibek-Zholu Street, Suusamyr village
Proposals concerning the road rehabilitation project:
It would be great if the Contractor conducted explanation operation in good cooperation with the management of local authority so that people understood everything.
Please make sure that the Contractor strictly complies with laws.
Questions related the road rehabilitation project:
Will the Contractor meet local people before he starts construction work?
Name: Marat Kushrekov
Residential address: 36 Zhibek-Zholu Street, Suusamyr village
Proposals concerning the road rehabilitation project:
It would be great if the Contractor arranged for concrete ditches along the road. Please make sure that the Contractor builds sidewalks for people to walk. We wish that electric lighting matter were solved.
Questions related the road rehabilitation project:
Will the Contractor hire local people?
Name: Satybaldy Kochorov
Residential address: 3 Boronbai Street, Suusamyr village, telephone: 0777 32-94-99, 0705 67-15-13, 0551 67-15-13
Proposals concerning the road rehabilitation project:
Please install a traffic light on the place where the Zhibek-Zholu Street turns to the Tynshtek Street. Install electric lighting along the Zhibek-Zholu Street.
Questions related the road rehabilitation project:
Will the Contractor hire local people?
How many jobs will be created for local people?

Annex D – Transcript of the video recording in Suusamyr

Mr. Ruslan, IPIG/MoTR:
I would like to inform you that the Government adopted a Resolution, under which no land plot will be leased, sold or occupied by any structure within 32 m area away from the center of the road until the road has been completely reconstructed.
Local resident:
When was that Resolution adopted?
Mr. Ruslan, IPIG/MoTR:
In August 2014. Therefore, no construction is allowed within 32 m area. Beyond it, anyone can perform construction.
Village authority representative:
Our area belongs to the section 5 and our road will be 3rd category road.
Mr. Ruslan, IPIG/MoTR:
It does not depend on the category of road. The Resolution covers all the roads. The Government adopted that Resolution to stop road related issues.
Local resident:
When will the construction begin?
Mr. Ruslan, IPIG/MoTR:
Currently feasibility study is being done. It shall determine the cost of every section. Then there will be compiled a document stating the cost of each section in detail. When donors choose sections, they send a Contractor.
Kyzyl-Oi village resident:
I am from Kyzyl-Oi village, which is located at the foot of mountain. Underground water is about 1 m below the ground surface. You can notice water seepage, especially in autumn. The road also passes at the mountain foot. Is there any possibility to arrange the road on the hill or somewhere?
Mr. Ruslan, IPIG/MoTR:
State everything in your proposal. I think Contractor will provide for a channel/drainage system on the roadside to divert water from the road.
Kyzyl-Oi village resident:
There is a clean water pipe on the roadside. If you build a road, I think the pipe will be damaged.
Mr. Ruslan, IPIG/MoTR:
The width of the asphalt-coated part of the road will be 3.75 m in the section 4. If that is under the asphalt-coated part of the road, it will be shifted. If it is under the shoulder, it will stay on the place where it is now. The Section 4 covers Aral (195 km) – Too-Ashuu pass (286 km).
Suusamyr village resident:
It seems 3.75 m width is too narrow.
Mr. Ruslan, IPIG/MoTR:
The width of asphalt coated part of the road will be 3.75 m. Width of shoulder will be 2.5 m. Carriageway's width will be 7 m. Total road width will be 12 meters. The road category will be identified according to number of vehicles moving on it.
There will be weight limit. When the road is reconstructed, I think overloaded vehicles will be inspected. If drivers drive those vehicles exceeding the weight limit in violation of requirements, they cause great damage to the road.
Kyzyl-Oi village resident:
It means that you are visiting every village and explaining such kind of things.
Mr. Ruslan, IPIG/MoTR:
We are now considering environmental issues. The presentation was devoted to that subject. Resettlement issues considering procedure will take place very soon. The special group of resettlement specialists shall visit every village, meet owners of structures to be removed/shifted, identify their cost.
You have been handed out sheets, where you can write down your proposals/requests concerning may be installation of traffic lights, laying water pipes etc.
A dam/embankment will be built on places where the river is "eating away" the roadside. Consequently, the road might be expanded to the opposite side.
Contractor will build a concrete wall at the foot of mountains, where stone fall might happen.

Local resident:
Will the Contractor install concrete culverts on places where water cross the street?
Mr. Ruslan, IPIG/MoTR:
The Contractor shall install pipes by having determined water stream and volume. The Contractor shall install either two pipes of 50 cm diameter or one pipe of 1 m diameter. I think the Contractor will turn over old pipes to the balance of the village authority.
Head of Suusamyr v/a:
What about electric lighting, will the Contractor arrange it?
Mr. Ruslan, IPIG/MoTR:
The road crosses your village. Therefore, electric lighting will be installed in your village.
Head of Suusamyr v/a:
I know that Kara-Balta and Bishkek highway is to be reconstructed. How many km of that road will be covered with electric lighting?
Mr. Ruslan, IPIG/MoTR:
About 7.5 km
Head of Suusamyr v/a:
Only 7.5 km whereas the total length of the highway is about 60.5 km?
Mr. Ruslan, IPIG/MoTR:
Yes, about 7.5 km
Mr. Asylbek, IPIG/MoTR:
7.5 km electric lighting will be arranged besides already existing lighting. Do not forget that there is already electric lighting on many places of the Kara-Balta - Bishkek highway. 7.5 km electric lighting will be arranged in addition to existing one.
Mr. Ruslan, IPIG/MoTR:
There is no electric lighting in the street in your village. Therefore, you should include it into your proposals/requests so that we could include it into the project.
Please specify on what places you need additional pipes, clean water pipes, traffic lights, electric lighting in written as soon as possible. In our turn we shall take measures to include them into the project and Contractor will be aware of your needs and will meet your requirements.

Annex E – Results of laboratory analysis

B. Air quality

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик-Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПРОТОКОЛ
АНАЛИЗА ПРОБ АТМОСФЕРНОГО ВОЗДУХА

№ 220-235

1. Наименование предприятия, организации (заявитель):
Иссык-Кульская, Нарынская, Чуйская области
Автодорога «Балыкчы – Кочкор – Жумгал - Суусамыр»

2. Место отбора проб:

220-Кольцевая г.Балыкчы(нач.уч.)	*228-с.Дыйкан(школа)*
221-с.Таш-Сарай (жил.дом)	*229-с.Байзак(маг.Адилет)*
222-с.Кок-Жар(маг.Рахат)	*230-с.Чаек (дом ветеранов)*
223-с.Чекилдек (маг.Ак-Жол)	*231-с.Кызыл-Жылдыз(спорт.компл.)*
224-с.Ак-Учук (мечеть)	*232-с.Кызыл-Ой (школа)*
225-с.Жумгал (школа)	*233-с.Кожомкул (школа)*
226- с.Куйручук(маг.Азамат)	*234-с.Суусамыр(мил.пункт)*
227-с.Туголсай (маг.Кутман)	*235-с.Тунук (школа)*

3. Цель отбора проб: *Определение концентрации загрязняющих веществ в атмосферном воздухе*

4. Кем отобраны пробы: *гл.спец. Райкеевой Р.Н., спец. Жаманаковой А.Н.*

5. Дата и время отбора проб: *30.11.- 02.12.2015г., с 10ч.00мин.-17ч.00мин.*

6. Характер отобранных проб: *разовый*

7. Метод анализа: *1. Руководство по контролю загрязнения атмосферы РД 52.04. 186-89*

8. Даты проведения испытаний: *04.12.- 10.12.2015г.*

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПАСПОРТ НА ПРОБУ

1. **Наименование, адрес объекта:** Иссык-Кульская, Нарынская Чуйская области автодорога „Балыкчы - Кочкор - Жумгал - Сусамыр"
2. **Место отбора проб:** 1 Кольцевая г. Балыкчы, 2 с. Тюп-Сарай (напр. нов. домов), 3 с. Кок-Жар (маг. „Рахат"), 4 с. Семиродск (маг. „Ак-Кол"), 5 с. Ак-Чук (мечеть), 6 с. Жумгал (школа), 7 с. Кыйчык (маг. „Арман"), 8 с. Тюлсай (маг. „Кутмон"), 9 с. Дыйкан (школа), 10. с. Байгак (маг. „Арман"), 11. с. Чаек (дом бегр.), 12. с. Кызыл-Жылкы (спорт. площ.), 13. с. Сонгол-Ой (школа), 14. с. Конгур (школа), 15. с. Сусамыр (маг. „Нурс"), 16. с. Бурдук (школа)
3. **Цель отбора:** Определение концентрацию загряз. в веществ в атмосф. воздухе
4. **Характер отобранных проб:** разовый
5. **Условия окружающей среды:** ясно, солнечно
6. **Условие отбора проб:**
7. **Дата отбора проб:** 30.11 - 02.12.2015г, с 10⁰⁰ - 14⁰⁰
8. **Метод отбора проб:** *1.РД 52.04.186-89 "Руководство по контролю загрязнения атмосферы". 2.ГОСТ Р 50820-95 Оборудование газоочистное и пылеулавливающее. Методы определения запыленности газопылевых потоков.*

Представитель УЭМ (должность, фамилия) Гл.в. спец. Райсеева Р.Н.

Госинспектор (должность, фамилия) спец. Талсмакова А.Н.

Представитель предприятия (должность, фамилия) эксп. компании КОСКЯ Асанкулова Н.

Наимен-е загряз-в	Ед. изм.	Данные анализа по точкам												
		220	Прев. ПДК макс. раз.	221	Прев. ПДК макс. раз.	222	Преп. ПДК макс. раз.	223	Прев. ПДК макс. раз.	224	Прев. ПДК макс. раз.	225	Прев. ПДК макс. раз.	ПДК макс. раз.
Диоксид серы	мг/м³	0,05± 0,006	-	<0,05		<0,05	-	<0,05	-	<0,05	-	<0,05	-	0,5
Диоксид азота	мг/м³	0,022± 0,004	-	0,027± 0,005	-	<0,02	-	0,023± 0,004	-	0,017± 0,003	-	0,018± 0,003	-	0,085
Взв.вещ-ва (пыль)	мг/м³	0,29± 0,07	-	<0,26	-	<0,26	-	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,5
Наимен-е загряз-в	**Ед. изм.**	**226**	**Прев. ПДК макс. раз.**	**227**	**Преп. ПДК макс. раз.**	**228**	**Прев. ПДК макс. раз.**	**229**	**Прев. ПДК макс. раз.**	**230**	**Прев. ПДК макс. раз.**	**231**	**Прев. ПДК макс. раз.**	**ПДК макс. раз.**
Диоксид серы	мг/м³	<0,05		<0,05	-	<0,05	-	0,05± 0,006	-	<0,05	-	<0,05	-	0,5
Диоксид азота	мг/м³	<0,02	-	0,017± 0,003	-	0,029± 0,005	-	0,025± 0,005	-	0,015± 0,003	-	0,011± 0,002	-	0,085
Взв.вещ-ва (пыль)	мг/м³	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,28± 0,07	-	0,28± 0,07	-	<0,26	-	0,5

Наимен-е загряз-в	Ед. изм.	Данные анализа по точкам										
		232	Прев. ПДК макс. раз.	233	Прев. ПДК макс. раз.	234	Преп. ПДК макс. раз.	235	Прев. ПДК макс. раз.			ПДК макс. раз.
Диоксид серы	мг/м³	0,03± 0,004	-	0,043± 0,005	-	0,04± 0,005	-	0,057± 0,007	-			0,5
Диоксид азота	мг/м³	0,021± 0,004	-	0,027± 0,005	-	0,031± 0,006	-	0,035± 0,006	-			0,085
Взв.вещ-ва (пыль)	мг/м³	<0,26	-	0,28± 0,07	-	<0,26	-	<0,26	-			0,5

Главный специалист **Т. Садыкбеков**

Исполнитель не несет ответственности, если пробы отобрано самим заказчиком
Перепечатка протокола без разрешения испытательной лаборатории запрещена
Протокол испытаний касается только образцов, подвергнутых испытаниям

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ
КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА
ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик- Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

05/178 от 03.12.2015г

Директору
KOCKS CONSULT GMBH
Карстен Гризе

Управление экологического мониторинга ГАООС и ЛХ при ПКР не может выдать результаты по окиси углерода (СО) в атмосферном воздухе по причине непригодности газоанализатора ПГА-200.

Справка о непригодности прибора ПГА-200 прилагается на 1 л.

Начальник **Б.Маматаиров**

C. Water quality

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ОКМӨТҮНӨ КАРАШТУУ
КУРЧАП ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА
МАМЛЕКЕТТИК АГЕНТТИКТИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА
ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И
ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик- Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

Аттестат аккредитации
№ KG 417/КЦА.ИЛ.049
от 05. 04. 2013 г.
***-метод не аккредитован**

ПРОТОКОЛ
АНАЛИЗА ПРОБ ВОДЫ

№ 513-519

1. **Наименование предприятия, организации (заявитель);** *Иссык-кульская, Нарынская, Чуйская обл., автодорога Балыкчи-Кочкор-Жумгал- Суусамыр.*

2. **Место отбора проб;**
513- р.Чу, с. Таш-Сарай (мост)
514-р.Чу, гидропост
515-р. Джоон-Арык, с.Кок-Жар(мост)
516-р.Жумгал, с. Чаек (мост)
517- р. Кокомерен, с. Арал (мост)
518- р. Кокамерен, с.Кызыл-Ой (мост)
519-р.Каракол, с. Кожомкул (мост)

3. **Цель отбора проб;** *Определение прозрачности, нефтепродуктов*

4. **Кем отобраны пробы;** *Спец.УЭМ Жаманаковой, Райкеевой*

5. **Дата и время отбора проб;** *30.11-02.12.2015 г., 10.00-17.00*

6. **Дата(ы) проведения испытаний;** *02.12.2015 г.*

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН ӨКМӨТҮНӨ КАРАШТУУ КУРЧАН ТУРГАН ЧӨЙРӨНҮ КОРГОО ЖАНА ТОКОЙ ЧАРБАСЫ БОЮНЧА МАМЛЕКЕТТИК АГЕНТТИГИНИН ЭКОЛОГИЯЛЫК МОНИТОРИНГ БАШКАРМАЛЫГЫ

УПРАВЛЕНИЕ ЭКОЛОГИЧЕСКОГО МОНИТОРИНГА ГОСУДАРСТВЕННОГО АГЕНТСТВА ОХРАНЫ ОКРУЖАЮЩЕЙ СРЕДЫ И ЛЕСНОГО ХОЗЯЙСТВА ПРИ ПРАВИТЕЛЬСТВЕ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720005, г. Бишкек, ул. Байтик Баатыра, 34 тел. (996-312) 54-07-65, факс: 54-07-66

ПАСПОРТ НА ПРОБУ
(ВОДА)

1. **Наименование, адрес объекта:** Иссык-Кульская, Тянь-Шаньская, Чуйская области
автодорога „Балыкчы - Кочкор - Нарын - Сарыбулак

2. **Место отбора проб:** 1 р. Чу с Таш-Сарай (мост), 2 р. Чу, гидропост, 3 р. Джон-Арык, с Кок-Жар (мост), 4 р. Нарын, с Таш (мост), 5 р. Кокомерен, с Арал (мост), 6 р. Кокомерен, за с Кызыл-Ой (мост), 7 р. Каракол, за с Комсомол (мост)

3. **Цель отбора:**

4. **Характер отобранных проб:** розовый
5. **Условия окружающей среды** ясно, солнечно
6. **Дата отбора проб:** 30.11 - 02.12.2015г, с 10⁰⁰ - 14⁰⁰
7. **Метод отбора проб:** *ГОСТ Р 51592-2000 «Вода. Общие требования к отбору проб»; НВН 33-5.3.01-85 Инструкция по отбору проб для анализа сточных вод*

Представитель УЭМ специалист Жаманкулова А.Н.
(должность, фамилия)

Госинспектор
(должность, фамилия) Аскалиева Н.

Представитель предприятия эколог компании KOCKS
(должность, фамилия)

Наименование ингредиентов	Ед. изм.	Данные анализа по точкам							ПДК		НД
		513	514	515	516	517	518	519	+	++	
Прозрачность*	См.	41	37	43	36	40	37	32			СЭВ ч.1 М. 1977
Нефтепродукты	мг/л	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	<0,05	0,05	0,3	ПНД Ф 14.1:2:4.128-98

Главный специалист **С.В.Янова**

+Перечень рыбохозяйственных нормативов ПДК и ОБУВ вредных веществ для воды водных объектов, имеющих рыбохозяйственное значение. Контроль качества поверхностных вод, Госкомитет России по рыболовству, Москва 1999 г

++1 Н 2.1.5.1315-03. ПДК химических веществ в воде водных объектов хозяйственного и культбытового водопользования, Минздрав России, Москва, 2003 г.

Исполнитель не несет ответственности, если проба отобрана самим заказчиком.
Перепечатка протокола без разрешения испытательной лаборатории запрещена.
Протокол испытаний является только образцов, подвергнутых испытаниям.

D. Noise

Аттестат аккредитации Кыргызского центра аккредитации
№KG 41/КЦА .ИЛ.097 от 06.10.2010г.

Группа по контролю физических факторов Департамента госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики

ПРОТОКОЛ ИЗМЕРЕНИЕ ШУМА
№ 81 от « 03 » декабря 2015 г.

Юридическое лицо, индивидуальный предприниматель или физическое лицо, где производятся измерения **KOCKS проект АБР ТА 48401-002**

(наименование и юридический адрес)

Объект, где производятся измерения. **Альтернативная автодорога Север-Юг**
(наименование, фактический адрес)
Балыкчы-Кочкор-Чаек-Суусамыр ч-з суусамыр

Наименование средств измерений и сведения о государственной поверке:

Наименование средства измерения	Номер	Свидетельство о поверке		Поверено до
		номер	дата	
Октава 101А	№ 04А445	№592	16.03.2015г.	16.03.2016г.

1. Нормативная документация, в соответствии с которой проводились измерения

СН 2.2.4/2.1.8.562-96 «Шум на рабочих местах, в помещениях жилых, общественных зданий и на территории жилой застройки»

Источники физических факторов и их характеристики:
автомашины

общее количество страниц 3 страница 1

Результаты измерений:

№	Место измерений	Характер шума: По спектру: Широкополосный	Тональный	По временным: постоянный	Колеб.	прерывистый	импульсный	Уровни звукового давления в дБ в октавных полосах со среднегеометрическими частотами в Гц: 31,5	63	125	250	500	1000	2000	4000	8000	Уровень звука (ДБ А)	
1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	20	
1	Г. Балыкчы	+				+											43,1	Факт
																	70	ПДУ
																		прев
2	С. Тап-Сарай	+				+											40,2	факт
																	70	ПДУ
																		прев
3	С.Кок-Жар	+				+											57	факт
																	70	ПДУ
																		прев
4	С.Чекилдек	+				+											68,1	Факт.
																	70	ПДУ
																		прев
5	С.Ак-Учук	+				+											67,3	Факт.
																	70	ПДУ
																		прев
6	С.Жумгал	+				+											69	факт
																	70	ПДУ
																		прев
7	С.Куйручук	+				+											58	факт
																	70	ПДУ
																		прев
8	С.Туголсай	+				+											51	факт
																	70	ПДУ
																		прев
9	С.Дыйкан	+				+											42,7	Факт.
																	70	ПДУ
																		прев
10	С.Байзак	+				+											63,2	факт
																	70	ПДУ
																		прев
11	С.Чаек.	+				+											53	факт
																	70	ПДУ
																		прев
12	Конец с. Кызыл Жылдыз	+				+											55	факт
																	70	ПДУ
																		прев
13	с.Кызыл-Ой	+				+											52	факт
																	70	ПДУ
																		прев

общее количество страниц _3_ : страница _2_

Результаты измерений:

№	Место измерений	Характер шума						Уровни звукового давления в дБ в октавных полосах со среднеметрическими частотами в Гц											
		По спектру		По временным															
		Широкопол	Тональный	постоянный	Колеб.	прерывистый	импульсный	31,5	63	125	250	500	1000	2000	4000	8000	Уровень шума (ДБ А)	
1	2	3	4		6	7	8	9	10	11	12	13	14	15	16	17	20	
14		+				+												
	С.Кожомкул																42	Факт
																	70	ПДУ
15		+				+												прев
	С.Суусамыр																55	факт
																	70	ПДУ
16		+				+												прев
	С.Тунук																54	Факт.
																	70	ПДУ
		+				–												прев
		+				+												
		+				+												
		+				+												

Уполномоченный представитель объекта, присутствующий при проведении измерений: фамилия, имя, отчество, должность Асаналиева Н. Эколог проекта

подпись _____

	Должность	ФИО	Подпись
Измерения проводил(и)	Санитарный врач	Арзыкулов Ж.Т.	
Руководитель лаборатории:			

Протокол составляется в двух экземплярах. 1-й экземпляр выдается по месту требования, 2-й экземпляр остается в лаборатории.

Заключение По результатам измерений уровень шума вдоль дороги не превышает предельно-допустимого необнаружены.

Основание: СН 2.2.4/2.1.8.562-96 «Шум на рабочих местах, в помещениях жилых, общественных зданий и на территории жилой застройки»

Санитарный врач _____ **Арзыкулов Ж.Т.**

общее количество страниц _3_ : страница _3

E. Vibration

Аттестат аккредитации Кыргызского центра аккредитации
№KG 41/КЦА .И.1.097 от 06.10.2010г.

Группа по контролю физических факторов Департамента госсанэпиднадзора
Министерства здравоохранения Кыргызской Республики

ПРОТОКОЛ ИЗМЕРЕНИЕ ВИБРАЦИИ
№__82__ от «03 » декабря 2015 г.

Юридическое лицо, индивидуальный предприниматель или физическое лицо, где производятся измерения **KOCKS проект АБР TA 48401-002**
(наименование и юридический адрес)

Объект, где производятся измерения **Альтернативная автодорога Север-Юг**
(наименование, фактический адрес)
Балыкчы-Кочкор-Чаек-Суусамыр ч-з суусамыр

Наименование средств измерений и сведения о государственной поверке:

Наименование средства измерения	Номер	Свидетельство о поверке		Поверено до
		номер	дата	
Октава 101в	№ 04А445	№ВА-06-05 7551	02.12.2014г.	02.12.2015г.

1. Нормативная документация, в соответствии с которой проводились измерения
СН 2.2.4/2.1.8.566-96 "Производственная вибрация, вибрация в помещениях жилых и общественных зданий

Источники физических факторов и их характеристики:
Грузовые автотранспортные средства и производственные оборудования завода

общее количество страниц __3__: страница 1

Результаты измерений:

№	Место измерений	Характер шума						Уровни звукового давления в дБ в октавных полосах со среднеметрическими частотами в Гц									Уровень звука (ДБА)	
		По спектру		По временным														
		Широкополосный	Тональный	Постоянный	Колебл.	прерывистый	импульсный			1,0	2,0	4,0	8,0	16,0	31,5	63		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20	
1	Г. Балыкчы																92,4	Факт
																	108	ПДУ
																	-	прев
2	С. Таш-Сарай																91,7	Факт
																	108	ПДУ
																	-	прев
3	С.Кок-Жар																90	Факт
																	108	ПДУ
																	-	прев
4	С.Чекилдек																91,1	Факт
																	108	ПДУ
																	-	прев
5	С.Ак-Учук																91,2	Факт
																	108	ПДУ
																	-	прев
6	С.Жумгал																92	Факт
																	108	ПДУ
																	-	прев
7	С.Куйручук																91	Факт
																	108	ПДУ
																	-	прев
8	С.Туголсай																92,3	Факт
																	108	ПДУ
																	-	прев
9	С.Дыйкан																95	Факт
																	108	ПДУ
																	-	прев
10	С.Байзак																88	Факт
																	108	ПДУ
																	-	прев
11	С.Чаек.																90	Факт
																	108	ПДУ
																		прев
12	Конец с. Кызыл Жылдыз																87	Факт
																	108	ПДУ
																		прев
13	с.Кызыл-Ой																88	Факт
																	108	ПДУ
																		прев
14	С.Кожомкул																86	Факт
																	108	ПДУ
																		прев

Результаты измерений:

№		Характер шума						Уровни звукового давления в дБ в октавных полосах со среднеметрическими частотами в Гц									Уровень звука (ДБА)	
		По спектру		По временным														
		Широкопо-л	Тональный	Постоянный	Колеба	прерывист ый	импульсный			1,0	2,0	4,0	8,0	16,0	31,5	63		
1		3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	20	
15	С.Суусамыр																92	Факт
																	108	ПДУ
																	-	прев
16	С.Тунук																91	Факт
																	108	ПДУ
																	-	прев

уполномоченный представитель объекта, присутствующий при проведении измерений:
фамилия, имя, отчество _____ должность эколог Кенешбаева И.А.
подпись _____

	Должность	ФИО	Подпись
Измерения проводил(и)	Санитарный врач	Арзыкулов Ж.Т.	

Заключение: Согласно инструментальным замерам вибрация непостоянное, уровень вибрации по виброскорости на измеренных точках не превышает предельно-допустимого уровня.

Основание: Санитарные нормы СН 2.2.4/2.1.8.566-96 "Производственная вибрация, вибрация в помещениях жилых и общественных зданий

Санитарный врач _____ **Арзыкулов Ж.Т.**

общее количество страниц _3_ : страница _3_

Annex F: **Conclusion of the Ministry of Culture, Informationa and Tourism, KR**

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН МАДАНИЯТ, МААЛЫМАТ ЖАНА ТУРИЗМ МИНИСТРЛИГИ

МИНИСТЕРСТВО КУЛЬТУРЫ, ИНФОРМАЦИИ И ТУРИЗМА КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720000, Кыргыз Республикасы
Бишкек ш., Пушкин көч. 78
ААК ЭСК Бишкек шаары, Бишкек филиалы
Эсеп № 1290522/818 1048
и- коды 20220121
ИНН 00972200410076 ОКПО 23549641
тел. +996(312) 62-64-82, факс 62-35-89

720000, Кыргызская Республика
г. Бишкек, ул. Пушкина, 78
Бишкекский филиал ОАО РСК
расчет № 1290522/818 1048
и-код 20220121
ИНН 00972200410076 ОКПО 23549641
тел. +996(312) 62-64-82, факс 62-35-89

№ 24 - 04 / 2016 г.
На исх. № 04-3/1565
На входящий № _____

Компании
KOCKS Consult GMBH

Koblenz
Stegemannstr, 32/38
тел.: +49 261 1302-0

Министерство рассмотрев отчет «Археологического обследования на территории соединительных дорог – Альтернативная дорога Север-Юг, коридоры ЦАРЭС 1 и 3, общей протяженности 260 км на территориях Тонского района Иссык-Кульской области, Кочкорского и Жумгальского районов Нарынской области, Жайылского района Чуйской области Кыргызской Республики» выполненный Чаргыновым Т. – доцентом Кыргызского национального университета имени Ж. Баласагына, согласно Открытого листа формы № 3 и заключения комиссии от 25 апреля 2016 года образованного приказом Министерства культуры, информации и туризма Кыргызской Республики № 164 от 21 апреля 2016 года, сообщает следующее:

Заказчику согласно законодательства Кыргызской Республики в сфере историко-культурного наследия необходимо провести археологические раскопки и документирование «на спас» с привлечением специалистов-археологов на нижеследующих недвижимых объектах историко-культурного наследия, расположенных в зоне проектируемого строительства автодороги:

– могильник Куйручук 1 (**N41°58'41.0" E074°51'56.0"**) (79-ый км. по обе стороны автодороги от Кочкора к Чаеку);

– могильник Кыргыз 1 (**N41°52'24.2" E074°19'45.3"**) (3,5 км. от поворота на право, мост через реку Кокомерен);

- могильник Кырчын 2 **(N41°52'59.4" E074°19'20.3")** (в 6-ти км. от поворота на право, мост через реку Кокомерен);

- могильник между селами Кырчын и Кызыл-Ой **(N41°54'46.8" E074°15'15.5")** (в 14-ти км. от поворота на право, мост через реку Кокомерен).

Также Заказчику обеспечить сохранность нижеследующих недвижимых объектов историко-культурного наследия с изменением маршрута проектируемого строительства автодороги в радиусе не менее 50 метров от могильника и организацией работ по разработке их охранных зон и представить на согласование. При не возможности исполнения вышеуказанных требований необходимо провести археологические раскопки и документирование «на снос» с привлечением специалистов-археологов, расположенных в зоне проектируемого строительства автодороги:

- объекты каменно-земляной насыпью **(N42.18314 E75.45456)** (27-ой км. автодороги от Кочкора к Чаеку);

- могильник **(N42°06'21.9" E075°12'00.5")** (44-ый км. автодороги от Кочкора к Чаеку (перевал Кызарт));

- могильник Кызарт **(N42°05'39.7" E 075°08'13.4")** (50-ый км. автодороги от Кочкора к Чаеку);

- могильник Куйручук **(N41.98436 E74.79124)** (86-ом км. автодороги от Кочкора к Чаеку);

- могильник **(N41°51'39.5" E074°20'00.4")** (в 2-х км. от поворота на право, мост через реку Кокомерен).

Заказчику разработать проект дороги в обход на тех территориях, где расположены и находятся под риском разрушения нижеследующие недвижимые объекты историко-культурного наследия (оседлого населения средневековья и этнографические погребально-поминальные сооружения) с привлечением представителей органов местного самоуправления и специалистов-археологов:

- Сары-Булунский караван-сарай **(N42.400664 E76.099044)** (8-ой км. от г. Балыкчы по направлению Кочкор);

- комплекс мавзолеев **(N41.97764 E74.91014)** (75-ый км. автодороги от Кочкора к Чаеку);

- комплекс мавзолеев **(N41.99129 E74.64144)** (100-м км. автодороги от Кочкора к Чаеку между селами Байбак и Дыйкан);

- **Кумбез Кожомкула** у въезда в село Кожомкул со стороны села Кызыл-Ой.

Кроме того, Заказчику организовать повторное археологическое обследование на наличие или отсутствие объектов историко-культурного наследия на отрезке автодороги от села Кожомкул до автодороги Бишкек-Ош.

В связи, с вышеизложенным с учетом выполнения вышеуказанных мероприятий будет рассмотрен вопрос проектируемого строительства «Соединительных дорог – Альтернативная дорога Север-Юг, коридора

ЦАРЭС 1 и 3, общей протяженности 260 км на территориях Тонского района Иссык-Кульской области, Кочкорского и Жумгальского районов Нарынской области, Жайылского района Чуйской области Кыргызской Республики».

Статс-секретарь. **Б. Секимов**

Ч. Дуйшеев, 66-40-24

Annex G. Information letter from MoTR

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН
ТРАНСПОРТ ЖАНА ЖОЛДОР
МИНИСТРЛИГИ

720017, Бишкек ш., Исанов коч., 42
тел. +996 (312) 31-43-85, 31-43-13,
факс: +996 (312) 31-28-11
E-mail: mtk@mtk.gov.kg
http://www.mtk.kg

МИНИСТЕРСТВО ТРАНСПОРТА
И ДОРОГ
КЫРГЫЗСКОЙ РЕСПУБЛИКИ

720017, г. Бишкек, ул. Исанова, 42
тел. +996 (312) 31-43-85, 31-43-13,
факс: +996 (312) 31-28-11
E-mail: mtk@mtk.gov.kg
http://www.mtk.kg

№ 14-8/5879 «20» 08 2016 ж. (г.)

На №

КР Өкмөтүнүн Чүй облусундагы ыйгарым укуктуу өкүлчүлүгү

КР Өкмөтүнүн Нарын облусундагы ыйгарым укуктуу өкүлчүлүгү

КР Өкмөтүнүн Ысык-Көл облусундагы ыйгарым укуктуу өкүлчүлүгү

Жайыл районунун мамлекеттик райондук администрациясы

Кочкор районунун мамлекеттик райондук администрациясы

Жумгал районунун мамлекеттик райондук администрациясы

Балыкчы ш. мэриясы

Бишкек – Ош автожолун Бишкек-Нарын-Торугарт автожолу (Балыкчы ш. – Кочкор а. – Арал а. – Суусамыр а.) менен коридор аралык бириктируучу жолду реабилитациялоо долбооруна карата Техникалык-экономикалык негиздемени даярдоо үчүн Азия Өнүктүрүү Банкы тарабынан бөлүнгөн техникалык жардамды ишке ашыруунун алкагында, бул иштер үчүн Азия Өнүктүрүү Банкы тарабынан «KOCKS» консультациялык компаниясы тандалган.

Сунушталып жаткан долбоор Кыргыз Республикасынын региондорунун төмөндөгү социалдык-экономикалык көрсөткүчтөрүн жакшыртат:

- Түштүк региондордон Нарын жана Ысык-Көл облустарына адамдардын жана товарлардын жылуусунда жолго кеткен убакыттын кыскарышы;
- каттамды кыскартууга жана жакшы жол шарттарына байланыштуу транспорт чыгымдарын азайтуу;
- жергиликтүү жана эле аралык ташууларды жана кыймылдарды көбөйтүү;
- жергиликтүү жашоочулар үчүн кошумча киреше алып келүүчү мүмкүнчүлүктөрдүн пайда болушу.
- жаңы жумушчу орундарын түзүү;

- транспорт каражаттарынын (ТК) оң абалы/ пайдалануу чыгымдарын кыскартуу.

Техникалык-экономикалык негиздемени даярдоонун алкагында «KOCKS» консультациялык компаниясынын адистери тарабынан КР ТжКМ Инвестициялык долбоорлорду ишке ашыруу тобунун өкүлдөрү менен биргеликте "Курчап турган чөйрөгө таасирлерин баалоо отчетун" жана "Көчүрүү жана жерлерди алуу планын" даярдоо боюнча иштер аяктады.

Бул документтер менчик ээлеринин укуктарын коргоого, курчап турган чөйрөнү коргоого багытталган КР ченемдик-укуктук актыларына ылайык жана АӨБ Коргоо чаралары боюнча саясатынын талаптарын эске алуу менен даярдалды.

Азыркы убакта Техникалык-экономикалык негиздемени даярдоо боюнча иштер аяктап калды жана пландалган долбоордун таасирин тийиши мүмкүн, реабилитациялануучу автожол участогунун жээгинде жашаган, жергиликтүү калктын арасында пландалган долбоорго байланыштуу маалыматты жайылтууга тиешелүү Азия Өнүктүрүү Банкынын талабын аткаруу керек.

Жогоруда берилгендердин негизинде, КР "КР мамлекеттик органдарынын жана жергиликтүү өз алдынча башкаруу органдарынын жүргүзүүсүндө турган маалыматтарга жетүү мүмкүндүгү жөнүндө" мыйзамынын талаптарын аткаруу, ошондой эле Азия Өнүктүрү Банкынын Коргоо чаралары боюнча саясатынын талаптарын сактоо максатында, Сиздерден долбоордун мүмкүн болуучу таасири жөнүндө маалымдуулукту жогорулатуу максатында жергиликтүү калк арасында түшүндүрүү иштерин жүргүзүүнү өтүнөбүз. Бишкек – Ош автожолун Бишкек-Нарын-Торугарт автожолу менен коридор аралык бириктирүүчү жолду реабилитациялоо долбоору төмөндөгү калктуу пунктттарды камтыйт:

Чүй облусунун Жайыл району:
- Кызыл-Ой а.,Кожомкул а., Суусамыр а., Тунук а., Суусамыр айыл аймагы.

Нарын облусунун Кочкор району:
-Көк-Жар а., Көк-Жар айыл аймагы;
- Чекилдек а., Семиз-Бел айыл аймагыа;
- Эпкин/Ак-Учук а., Чолпон айыл аймагы.

Нарын облусунун Жумгал району:
- Жумгал а., Жумгал айыл аймагы;
- Куйручук а., Куйручук айыл аймагы;
- Түгөл-Сай а., Түгөл-Сай айыл аймагы;
- Баш-Кууганды а., Кырчын а., Баш-Кууганды айыл аймагы;
- Байзак а., Байзак айыл аймагы;
- Чаек а., Чаек айыл аймагы;
- Кызыл-Жылдыз а., Кызыл-Жылдыз айыл аймагы.

Балыкчы ш., Ысык-Көл облусу:

Тиркеме: Долбоор жана долбоордун мүмкүн болуучу таасири жөнүндө маалымат - 5 бараакта.

Урматтоо менен,

Министр **З.Айдаров**

Аткар. Абдыгулов А. Тел. 31-43-56

1-тиркеме

Долбоор жана долбоордун мүмкүн болуучу таасири жөнүндө маалымат
(экологиялык жана социалдык маселелер).

Балыкчы ш., Таш-Сарай жана Орто-Токой айылдары.

Кочкор району:

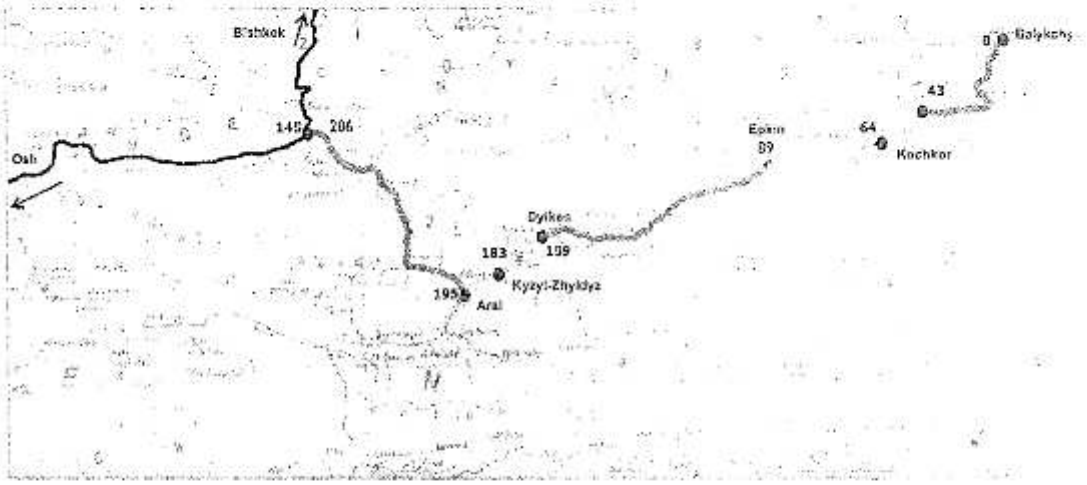
1. Көк-Жар а/а – Көк-Жар айылы
2. Семиз-Бел а/а – Чекилдек айылы
3. Чолпон а/а – Эпкин/Ак-Учук айылы

Жумгал району:

1. Жумгал а/а – Жумгал айылы
2. Куйручук а/а – Куйручук айылы
3. Түгөл-Сай а/а – Түгөл-Сай айылы
4. Баш-Кууганды а/а – Баш-Кууганды, Кырчын айылдары
5. Байзак а/а – Байзак айылы
6. Чаек а/а – Чаек, Ак-Татыр айылы
7. Кызыл-Жылдыз а/а – Кызыл-Жылдыз айылы

Жайыл району:

Суусамыр а/а – Кызыл-Ой, Кожомкул, Суусамыр, Тунук айылдары



Кыргыз Республикасынын Өкмөтү Азия өнүктүрүү банкына (АӨБ) БАРЭК алкагында 1 жана 3-коридорлорду бириктирүүчү жолду жакшыртуу боюнча долбоорго кайтаруу кредитти жана/же грантты аныктоо, иштеп чыгуу жана даярдоо өтүнүчү менен кайрылган. ТППП негизги жыйынтыгы донорлордун каржылоосу үчүн ылайыктуу техникалык-экономикалык негиздемени даярдоо болуп саналат.

ТППП 5 участокту камтыйт:

- Балыкчыдан (км) 43 километр белгисине чейин (км 0 - км 43), болжол менен 43 километр (км);
- Кочкордой Эпкин айылына чейин (км 64 - км 89), болжол менен 25 км;
- Эпкинден (89 км) Баш-Кууганды чейин [мурдагы Дыйкан] (159 км), болжол менен 70 км;

- Дыйкан айылынан тартып (159 км) Кызыл-Жылдыз айылына чейин (183 км), болжол менен 24 км, мында Чаек айылын жана Кызыл-Жылдыз айылынын бир бөлүгүн айланып өтүү үчүн айланма жолду куруу каралууда; жана
- Аралдан тартып (195 км) Төө-Ашуу ашуусуна чейин (286 км), болжол менен 91 км.

Долбоордун алкагында корголбогон компоненттердин гармактык койгойлөрү лагы чечилет. Өкмөт менен айрым деталдарда макулдашууга жетишүү талап кылынат, аларга төмөндөгүлөр кирет: (i) Кыргыз Республикасында жол активдерин башкаруунун натыйжалуулугун жогорулатуу, (ii) өкмөттү транспорт секторундагы институционалдык реформалар менен колдоо, (iii) натыйжалуулукка негизделген тейлөөгө контракттарды жүргүзүү жана (iv) Кыргыз Республикасында жол коопсуздугун жогорулатуу.

Транспорт жана коммуникация министрлигине (ТжКМ) карштуу Инвестициялык долбоорлорду ишке ашыруу тобу (ИДИТ) курулуш баскычында ушул долбоор боюнча Аткаруучу орган (АО) катары чыгат. Мүмкүн болуучу финансылык жардамдын баштапкы бөлүгү катары, АӨБ бүтүндөй долбоор үчүн техникалык-экономикалык негиздемени жана болжолдуу долбоорду даярдоо үчүн «Кокс Консульт Гмбх», Германия, жалдады. Консультациялык кызмат көрсөтүүлөрдүн көлөмү баштапкы экологиялык изилдөөнү (БЭИ); жана социалдык талдоону жана жакырчылыкты талдоону жана 2009-жылдагы АОБ Кепилдиктер саясаты жөнүндө билдирүүгө (КСБ) ылайык кеспеттерин баалоону камтыйт.

Сунушталып жаткан долбоор Кыргыз Республикасынын региондорунун төмөндөгү социалдык-экономикалык көрсөткүчтөрүн жакшыртат:

- Түштүк региондордон Нарын жана Ысык-Көл облустарына адамдардын жана товарлардын жылуусунда жолго кеткен убакыттын кыскарышы.
- Каттамды кыскартууга жана жакшы жол шарттарына байланыштуу транспорт чыгымдарын азайтуу.
- Жергиликтүү жана эле аралык ташууларды жана кыймылдарды көбөйтүү.
- Жергиликтүү жашоочулар үчүн кошумча киреше алып келүүчү мүмкүнчүлүктөрдүн пайда болушу.
- Жаңы жумушчу орундарын түзүү.
- Транспорт каражаттарынын (ТК) оң абалы/ Пайдалануу чыгымдарын кыскартуу.

Кыргыз Республикасынын мыйзамдарына ылайык курчап турган чөйрөгө таасирине баалоо жүргүзүү керек. ТЭН баскычында курчап турган чойрого таасирин баалоону изилдөө Техникалык-экономикалык негиздемеге (ТЭН) карата Курчап турган чойрого таасирин алдын ала баалоо (КЧТАБ) катары каралат жана КЧТБ отчету менен тарилделет.

АОБ Коргоо Саясаты боюнча Жобосунун жиктемесине ылайык (2009) долбоор В [би] категориясына кирет жана курчап турган чөйрөгө таасирин толук баалоону (КЧТБ) талап кылбайт. АӨБ «В» категориясындагы долбоорлор үчүн саясатынын алкагында Баштапкы экологиялык баалоону (БЭБ) даярдоо керек.

Кыргыз Республикасынын мыйзамдарына ылайык долбоорду категориялаштыруу өткөрүлбөйт, бирок БЭБ жана КЧТАБ документтерин бирдей мамиледе катары карооого болот.

Экологиялык жана Социалдык Баалоонун максаттары

- Ар кандай түз жана кыйыр экологиялык тобокелдиктердин деңгээлдерин аныктоо жана баалоо жана алар менен байланыштуу кеспеттерди жумшартуу боюнча сунуштар
- Долбоордун БЭБ/КЧТАБ даярдоо
- Жарыгынышты коргоо ий-чараларынын планын (ЖКП) даярдоо.

Ушул БЭБ/КЧТАБ максаты сунушталып жаткан долбоордун курчап турган чойрого, дей соолукка, коопсуздукка потенциалдуу таасирин баалоо жана социалдык таасирин баалоо болуп саналат. Экологиялык баалоо процессинде, курулуш иштеринин кутулуп жаткан

көлөмүнө байланыштуу курчап турган чөйрөгө эч кандай олуттуу жагымсыз жана кайтарымсыз таасирлер белгиленген жок. БЭБ/КЧТАБ боюнча ушул документ өзүнө бүтүндөй долбоордук цикл аралыгында жүргүзүлө турган минималдаштыруу, кыскартууга жана жумшартууга (же жабыркаган тараптарга компенсация голо берүүгө) багытталган, кесепеттерди жумшартуу боюнча тийиштүү чаралар менен аныкталган потенциалдуу таасирлердин, алардын мүнөздөмөлөрүнүн, чөлдүгүнүн, жайылуусунун жана узактыгынын, сезгич рецепторлордун жана көзгөлгөн топтордун негизинде Курчап турган чөйрөнү башкаруу планын (КЧБП) камтыйт.

Бардык участоктор үчүн БЭБ/КЧТАБ изилдөө болгон булактардын катарынан экинчи маалыматтын негизинде өткөрүлөт. Ошондой эле суунун, абанын сынамдарын алуу, ызы-чууну жана вибрацияны өлчөө өткөрүлдү.

Долбоорду сүрөттөө

Төмөндө көрсөтүлгөн жол участоктору жолдун II техникалык категориясына чейин реконструкцияланат:

- Балыкчыдан (км) 43 километр белгисине чейин (км 0 - км 43), болжол менен 43 километр (км);
- Кочкордон Эпкин айылына чейин (км 64 – км 89), болжол менен 25 км;
- Эпкинден (89 км) Баш-Куугандыга чейин [мурдагы Дыйкан] (159 км), болжол менен 70 км;
- Дыйкан айылынан тартып (159 км) Кызыл-Жылдыз айылына чейин (183 км), болжол менен 24 км, мында Чаек айылын жана Кызыл-Жылдыз айылынын бир бөлүгүн айланып өтүү үчүн айланма жолду куруу каралууда.

Аралдан тартып (195 км) Төө-Ашуу ашуусуна чейинки (286 км), болжол менен 91 км, жол участогу жолдун III техникалык категориясына чейин реконструкцияланат.

Долбоорлорго жолдун участогу тууралуу кененирээк төмөндө берилген:

- Кыргызстандын мамлекеттик стандартына ылайык, долбоорлонгон жол участокторун II, III техникалык категорияга чейин реконструкциялоо.
- Көпүрөлөрдү жана суу өткөрүүчү түтүктөрдү калыбына келтирүү, өндөө жана/же алмаштыруу
- Каптал арыктарды жана башка дренаждык курулмаларды куруу.
- Тирегич дубалдарды жана зарыл болгондо дарыяларды коргоо боюнча чараларды камсыздоо
- Талаптагыдай жол белгилерин жана белги салууларды камсыздоо
- Коргоочу тосмолорду камсыздоо.

Жол Кыргызстандын геометрикалык долбоордук ченемдерине ылайык иштелип чыгышы керек жана ал болжолдонгон кызмат өтөө мөөнөтү аралыгында жол кыймылынан болгон жүктөмдү натыйжалуу көтөрүү үчүн туруктуу болушу керек. Жол өтмө бөлүктүн кендигинен (тилкелердин туурасынын суммасы) жана жол жээгинин кендигинен турган, кыймылдын эки тилкеси менен жол болот. Төмөндө кесилиш боюнча конструктивдүү элементтер берилген:

- <u>II долбоордук жолу үчүн:</u>
- Тилкелердин саны: 2
- Тилкенин кендиги: 3,5-3,75 м
- Өтмө бөлүктүн кендиги: 7,00-7,50 м
- Жолдун четинин кендиги: 3,25-3,75 м (анын ичинде 0,50-0,75 м салынган).

- Жолдун жалпы узундугу: 15.00 м

➢ <u>III долбоордук жолу үчүн</u>:
- Тилкелердин саны: 2
- Тилкенин кендиги: 3.5 м
- Өтмө бөлүктүн кендиги: 7.00 м
- Жолдун четинин кендиги: 2.5 м (анын ичинде 0.50 м салынган)
- Жолдун жалпы узундугу: 12.00 м

Курчап турган чөйрөгө күтүлгөн таасирлери жана жумшартуу боюнча чаралар

Таасирлери.

Жол долбоорунун таасиринин олуттуу бөлүгү түздөн-түз курулуш иштеринен келип чыгаары болжолдонууда, ал эми айрым таасирлер пайдалануу убагында пайда болот. Бул таасир кыймылдын интенсивдүүлүгүнүн жана транспорт каражаттарынын кыймылынын ылдамдыгынын жогорулашы менен шартталган жана газдардын чыгындыларынын деңгээлинин жогорулашына жана ызы-чуу таасирине, ошондой эле жөө жүрүүчүлөрдүн жана транспорт каражаттарынын катышуусу менен ЖТК потенциалдуу өсүшүнө кирет. Мындан тышкары зыяндуу заттардын төгүлүшү менен байланыштуу өзгөчө кырдаалдардын жогорку тобокелдиги болот.

<u>Таасирлердин төмөндөгүдөй түрлөрү аныкталган</u>:

(i) ызы-чуу таасири, булгоочу заттардын абага чыгындылары, ошондой эле вибрация, бул Долбоордун жолго жакын калктуу пункттардын чегинде жана мектеп, оорукана, мечит ж.б. (мисалы: жолго жакын жайгашкан үй чарбалары; карьерлер, базарлар, маданий жана тарыхый баалуулуктар, чөп кесилиштер) сыныктуу, таасир этүүнүн сезгич рецепиенттери жайгашкан жерлерде өзгөчө маанаге ээ;

(ii) сууларга жана дарыяларга таасири;

(iii) карьерлерде толуктагычтардын булактарын издөөнүн жыйынтыгындагы таасир;

(iv) топуракка жана өсүмдүктөргө таасири, анын ичинде участокторду тазалоо боюнча иштерден улам долбоордук жолдун жанындагы дарак көчөтторгө таасири;

(v) көпүрөлөрдү жана дренаждык курулмаларды реабилитациялоонун жыйынтыгындагы таасир;

(vi) асфальт өндүрүү (асфальт заводдору) жана толуктагычтарды майдалоо үчүн орнотмолордон болгон таасир;

(vii) подрядчынын жумушчу лагерлери тарабынан таасир. Мындан тышкары, таасирлер төмөндөгү топторго бөлүнгөн: долбоорлоо этабындагы таасир, куруу этабындагы таасир жана жумушчу этабындагы таасир.

Иш-чаралар.

Алдын ала долбоорлоонун жүрүшүндө жана долбоорлоо баскычында талаптагыдай пландоо/даярдоо аркылуу таасирлерден алыс болууга болот.

Таасирлерди жумшартуу боюнча чаралар төмөндөгүлөрдү камтыйт:

(i) эрозияга каршы иш-чараларды пайдалануу;

(ii) даректарды кыюудан алыс болуу үчүн, асимметрикалуу кенейтүү;

(iii) жумушчулар үчүн катуу пускамаларды берүү менен маданий жана тарыхый объекттерге кол салуунун алдын алуу