

Initial Environmental Examination

Project No.: 50176-002
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KGZ: Issyk-Kul Wastewater Management Project: Procurement of Construction of receiving tank (50m³), discharge pipeline (0,2 km) and rehabilitation of the main collector's manholes to WWTP

Prepared by Temelsu International Engineering Services Inc. for Department of Drinking Water Supply and Sewerage Development (DWSSD) under the State Agency for Architecture, Construction and Public Utilities under the Government of Kyrgyz Republic (Gosstroy) for the Asian Development Bank.

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ABBREVIATIONS

A2/O	Anaerobic-anoxic method
ACM	Asbestos Containing Materials
ADB	Asian Development Bank
A/O	Anaerobic / oxic process
ASP	Activated Sludge Process
DDWSSD	Department of Drinking Water Supply and Sewerage Development under SAACHCS
DD	Detailed Design
DPMDCH	Dep't on Preservation, Monitoring and Development of Cultural Heritage
d/s	Downstream
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMoP	Environmental Monitoring Program
GDP	Gross Domestic Product
GKR	Government of Kyrgyz Republic
State Committee for Construction	State Agency for Architecture, Construction, Housing and Communal Services
GRG	Grievance Redress Group
GRM	Grievance Redress Mechanism
GW	Global Works International (Consultant of this PPTA)
IBA	Important Bird Area
IBR	Issyk-Kul Biosphere Reserve
GDIBR	General Directorate of Issyk-Kul Biosphere Reserve
IDAL	Intermittently Decanted Aeration Lagoon
IDEAL	Intermittently decanted extended aeration reactor
IEE	Initial Environmental Examination
IFAS	Integrated fixed-film activated sludge
ISDP	Issyk-Kul Sustainable Development Project
ITA of MNRETS	Issyk-Kul Territorial Administration of MNRETS
KR	Kyrgyz Republic
LAS	Land Allocation Statement
LFP	Local Focal Point
MAC	Maximum Allowable Concentration
MASL	Meters above sea level
MoES	Ministry of Emergency Situations
MNRETS	Ministry of Natural Resources, Environment and Technical Supervision
MoA	Ministry of Agriculture
ME	Ministry of Energy
MoH	Ministry of Health
MLSSM	Ministry of Labor, Social Security and Migration
MPC	Maximum permissible concentration
NGO	Non-Governmental Organization
NSC	National Statistics Committee
NSD	National Strategy for Development for the Period 2018- 2040
OECD	Организация экономического сотрудничества и развития
LSG	Local Self-Government
OOS Section	Russian acronym for EIA Section in the detailed designs
OVOS	Russian acronym for EIA Report
PC	Public Consultation
PCRs	Physical Cultural Resources
SEE	State Ecological Expertise
PIU	Project Implementation Unit (Karakol)
PMO	Project Management Office
REA	Rapid Environmental Assessment
DSA	Rayon State Administrations
Cadastre	State organization under the Ministry of Agriculture
SSEMP	Site Specific Environmental Management Plan
SETS	Service of Ecological and Technical Safety of MNRETS

IWMP	Issyk-Kul Wastewater Management Project
SPS 2009	ADB Safeguard Policy Statement 2009
u/s	Upstream
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNDP	United Nations Development Programme
WSS	Water supply and sanitation
WWTP	Wastewater Treatment Plants

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EXECUTIVE SUMMARY

1. **Introduction** The Initial Environmental Examination (IEE) has been prepared in accordance with ADB's Safeguard Policy Statement of June 2009 (SPS 2009), the Kyrgyz Republic's Law on Environmental Protection, 1999, and other relevant laws, regulations and requirements. The objective of the IEE is to (i) identify and assess potential impacts and risks on the physical, biological, physical cultural and socio-economic environment of the project area from the modernization of sewerage system in Pristan-Przhevalsk and reconstruction of 28 manholes and 200 m of pressure pipeline, and (ii) recommend measures to avoid, mitigate and provide compensation for adverse impacts, while enhancing positive impacts.

2. **Background and rationale.** The Issyk-Kul Lake and surrounding region is a nationally valuable environmental, economic and cultural asset.¹ Being 180-km long, 60-km wide, and with a surface area of 6,200-km², the lenticular-shaped lake is the world's second largest high-altitude lake. Over 40 rivers and streams feed into it, including hot springs and snow melt. The wider region is designated as Ramsar conservation area (wetland)² globally important biodiversity and is part of the Issyk-Kul Biosphere Reserve (IKBR), stretching over 43,000 km², recognized by UNESCO. With ecological, archaeological and cultural resources. As per the Issyk-Kul Biosphere Reserve (IKBR) classification, this additional works (Capital repair of 28 manholes, replacement of the pipeline under the Karakol River) comes under IKBR Transition Zone³, where sustainable economic development is allowed.

3. Being of outstanding natural beauty, the lake, shoreline and surroundings are one of the nation's most popular tourist destinations: Tourism has become an important economic driver for the region, and particularly for lakeshore areas. About 3 million people came from Uzbekistan for vacation at Issyk-Kul and for seeing other attractions of the Kyrgyz Republic⁴. A significant part of tourism services was provided in the Issyk-Kul region, where 1,434 recreation and tourism entities, including guest houses, received the tourists and provided services in 2022. The number of tourists in 2022 was about 1.3 million, which is 1.2 times more than in 2021 rested in the organized tourism sector in the Issyk-Kul region. Also, 0.8 million people, or 1.2 times more than in 2021 rested in the unorganized sector of the resort area of Issyk-Kul region (guest houses and households) in 2022. While the growth in tourism is destined to continue, its impact on the pristine and fragile environments and ecosystems of the lake and vicinity are however of increasing concern. Being both oligotrophic (nutrient-poor) and endorheic (lacking conventional outflows), the lake is highly sensitive to elevated nutrient and contaminant inflows. Unchecked, the lake and surrounding areas are therefore increasingly vulnerable to pollution from expanding human activity. These impacts are of concern in relation to wastewater pollution, notably in the primary lakeshore cities that include the city of Karakol.

4. Recognizing the significant environmental value of the lake and its region, the government is currently implementing Water supply and sanitation (WSS) sector reforms, which have included the National Development Strategy of the Kyrgyz Republic for 2018-2040 and the Program for Drinking Water Supply and Sewerage Development in settlements of the Kyrgyz Republic until 2026⁵. Currently, the ADB is assisting to improve environmental management and urban services in the region through the implementation of Issyk-Kul Wastewater Management Project (IWMP)⁶ and other

¹ The lake's rich environmental, archeological and cultural resources are renowned internationally

² The Ramsar Convention is an international treaty relating to wetlands sustainable use and conservation

³ The transition zone focuses on sustainable economic development. Economic activities are permitted, but are regulated so as to ensure sustainable use of ecosystems.

⁴ <https://e-cis.info/news/566/106432/#:> (A. Zhaparov, the Cabinet Chairman in the business-forum Kyrgyzstan-Uzbekistan on January 26)

⁵ Resolution No. 330 dated June 12, 2020 of the Government of the Kyrgyz Republic

⁶ ADB. 2009. Report and Recommendation of the President to the Board of Directors for the Proposed Loan and Asian Development Fund Grant Kyrgyz Republic: Issyk-Kul Sustainable Development Project Manila. The project is improving water supply, wastewater collection and conveyance, solid waste management, and community upgrading, as well as enhancing service delivery through improved enterprise resource management

external assistance continues to be provided

5. **Issyk-Kul Wastewater Management Project.** The project complements these initiatives by further improving wastewater systems in the Karakol city, namely in Pristan-Przhevalsk village, greatly enhancing health, hygiene, and sanitation standards. The project will achieve these objectives by modernization of wastewater collection with consideration to future population development (Phase 1 and 2) as well as rehabilitation of 28 manholes of the collector conveying wastewater to Karakol WWTP and 200 m of pressure line between Karakol WWTP and the irrigation pond.

6. **Existing status.** In addition to the non-pressure sewerage system in Karakol, the village of Pristan (Municipal Territory Administration MTA No. 8) is served by a gravity-pressure combined system. This system includes 4 pump stations, 3 of which were rehabilitated under the first phase of Issyk-Kul Sustainable Development Project (IKSDP). The fourth sewage pump station (SPS #4) is located in close proximity to Issyk-Kul Lake and is in a semi-ruined non-operating status. In this connection, a construction of a new sewage pump station No. 4 at a new location is required.

7. 28 manholes on the collector conveying wastewater to Karakol WWTP are in poor condition, the main problem is the ingress of surface water, which unnecessarily overloads the treatment capacity of Karakol WWTP.

8. At the moment, treated water in Karakol WWTP is cumulated in a pond (lagoon) and from the pond transmitted to irrigation pond with existing gravity line. Transmission capacity of the pipe crossing under the river is decreased since it is utilized for a long period of time due to deposition inside of pipe. Moreover, in the existing situation there is only one pipe crossing the river and there are 2 manholes at both side of river which connects the pipe. There is no any standby pipe in parallel for emergency case.

9. **Environmental setting of the project.** The project region is topographically, climatically and ecologically diverse, and also vulnerable to anthropogenic hazards, including resource extraction, solid and liquid waste discharge, and climate change. Pressure on the local environment, especially in the Karakol River, was identified. The existing site of SPS #4 in Pristan-Przhevalsk has quite low biodiversity values, and generally there are no known Physical Cultural Resources (PCR) in the immediate vicinity and it is not located in the densely populated area.

10. 28 manholes are in operation now, similar to SPS#4, the manhole locations have quite low biodiversity values, and generally there are no known Physical Cultural Resources (PCR) in the immediate vicinity of the collector.

11. The pipeline running under Karakol River may have a certain impact on the biodiversity of Karakol River, as well as on the chemical composition of river water. Depending on hydrological character of Karakol River, riverbed at crossing may need to be widened in order to decrease the speed of flow to prevent erosion at bottom to keep stable the pipeline under the river. There is also a possibility to cover the pipeline with concrete and lay riprap at the section of pipeline crossing. Depending on the hydrological character of river and depth of pipeline under river the designer will propose a solution.

12. **Policy, legal and institutional framework.** The supreme legislative instrument in the Kyrgyz Republic is the Constitution of the Kyrgyz Republic, 1993 (latest revision 2021), which establishes the principles of natural resource and environmental management, and through its legal framework, regulates between natural resource users and the state. The most relevant environmental legislation includes the Law on Environmental Protection, 1999, the Law on Ecological Expertise, 1999, the Law on Sustainable Development of Environmental-Economic System of Issyk-Kul, 2004, and the Law on Water, 2009.⁷ In addition, the Kyrgyz national legal framework includes laws, over

⁷ Elaborated as follows: (i) Law on Environmental Protection, 1999, providing state policy and the legal framework for natural resource utilization and environmental protection, (ii) Law on Ecological Expertise, 1999, empowering the state environmental authority (currently it is MNRETS) to undertake State Environmental Reviews (SERs) of projects, (iii) Law on Sustainable Development of Environmental-Economic System of Issyk-Kul, 2004, providing a framework to regulate the preservation, use and sustainable development of Issyk-Kul Lake, and (iv) Law on

20 regulations are in place to support wildlife protection, and various standards are enforced.⁸ The environmental study therefore conforms to the national legal framework of Kyrgyzstan, which also includes international treaties.

13. **Project categorization** Given that works are generally confined to rehabilitation on existing (disturbed) sites (site specific impacts), and SPS #4 site, rehabilitation of 28 manholes and replacement of 200 m of pipeline have the limited impact confined by the construction site, there are no irreversible impacts; in most cases, mitigation measures in most cases mitigation measures minimize impacts to acceptable levels, Category B status is appropriate. Regarding IKBR classification, the designed sites are located in the IKBR Transition Zone, where sustainable economic development is allowed.

14. **Implementation arrangements.** The Department of Drinking Water Supply and Sewerage Development (Department) is the Executing Agency (EA) for the project. A Project Management Office (PMO) is established and report directly to the EA. PMO responsibility includes, overall management of the implementation of this project, oversee the application of safeguard measures for the project as a whole. The Office of Plenipotentiary Representative of the President in Issyk-Kul Region is the Implementing Agency (IA), and Project Implementing Unit (PIU) located in the Vodokanal of Karakol Municipality are responsible for day-to-day project activities. They are the local level entity with direct oversight of project including the EMP implementation, The IA will be assisted by the Design Supervision Consultants (DSC), who undertakes the technical oversight for the delivery of all safeguard measures

15. **Environmental Management.** An EMP is incorporated in this IEE, which includes (i) mitigation measures for environmental impacts during design and implementation phases; (ii) an environmental monitoring program; (iii) responsible entities for mitigation, monitoring, and reporting; (iv) public consultation and information disclosure; and (v) a grievance redress mechanism.

16. During the construction phase, anticipated impacts on the physical and biological environment are temporary, localized and can be avoided or minimized with the implementation of mitigation and monitoring measures which are detailed in the EMP. The following are the anticipated impacts and corresponding mitigation measures during the construction phase for SPS #4 located in Pristan Przhevalsk and rehabilitation of 28 manholes and 200 m pipeline.

- a. Air pollution from dust emissions during on-site excavations, movement of earth materials and emission from movement of heavy equipment and construction vehicles. This will be mitigated by good construction practices such as water spraying on road surface and work areas, covering all materials during transportation, and proper maintenance of construction vehicles and equipment;
- b. Water pollution from run-off or soil erosion from stockpiled construction materials, wastewater from domestic sewage of construction workers, and accidental spillage of oil and other lubricants from the washing of construction equipment. This will be mitigated by covering exposed soils, constructing temporary silt traps, and providing adequate and on-site sanitation facilities;
- c. Noise pollution from construction activities that causes a nuisance to local communities will be mitigated through consultation with communities regarding the schedule and time of noise- generating construction activities, and the use of noise suppression on construction equipment;
- d. The generation of construction wastes, will be disposed at the sites identified by the local municipality. The municipal solid waste generated in the construction and labour camp will be mitigated by the provision of waste bins and the proper segregation, collection and disposal to the local available MSW facility;

Surface Water Protection, 2009, providing a framework for the protection of water bodies.

⁸ These relate to noise, air quality, hygiene, potable water safety, surface waters protection, effluent discharges and other standards. One notable standard that directly relates to the project is an extremely stringent discharge standard for ammonia of 0.1 mg/L.

- e. Occupational health and safety in construction sites, potentially causing harm and danger to the lives and welfare of workers. This will be mitigated through the implementation of an occupational and health safety plan, trainings and including the provision of personal protective equipment to all workers; and
 - f. Community health and safety, such as the disruption of normal traffic patterns, and risks from unauthorized entry to the construction areas resulting in accidents. This will be mitigated through implementation of a community health and safety plan, which will include the provision of fences to enclose areas of civil works, and the posting of warning signs and information in construction areas.
17. During the operation stage, the SPS#4, shall be provided with appropriate operation and maintenance, which should not affect the environment. The available facilities will be repaired from time to time (as and when needed), due to this the anticipated environmental impacts will be much less than those of the construction period.
18. The following impact is expected during the operation of SPS #4:
- I. The first phase of construction (construction of inlet reservoir).
 - The impact on atmospheric air is characterized by emissions of exhaust gases of the vacuum trucks (the purchase of two vehicles is planned) transporting wastewater from the reservoir of SPS #4 to the receiving well of SPS #2.
 - Impact on water bodies (Karakol River) is possible only in case of accidents when the vacuum vehicles move across the river.
 - II. The second phase (construction of SPS and pressure line).
 - There is no environmental impact during the operation of SPS, the main source of possible negative impact is the rising main.
 - The main impact during the operation of the pressure line can happen during elimination of accidents in the pipeline.
 - During maintenance of the pressure line, waste may be generated (due to cleaning clogs). Waste refers to the 3rd class of hazard.⁹
 - III. 28 manholes and the pipe under the river are existing and their operation will not differ from the existing system of operation of these facilities.

19. **Consultation, participation and disclosure of information.** The stakeholder consultation and involvement process undertaken during project preparations and implementation have provided the public an opportunity to become aware of the details of construction of SPS #4 in Pristan-Przhevalsk. The means of engaging with the public, through information disclosure, discussion, and soliciting feedback have been identified, and details of public meetings provided. Public reception to the project has been positive, with a majority of participants expressing a strong interest in benefitting from the renewed infrastructure in the settlement. During the implementation of the project two public participation meetings have been conducted at Karakol (city administration) on 29th October, 2020 and 25th July, 2022. Public reception to the project has been positive and supportive in the meeting. The suggestions of residents are considered in the design.

20. Grievance Redress Mechanism (GRM). The Grievance Redress Mechanism (GRM) was established for timely and proper handling of appeals, complaints and inquiries from AEs regarding land acquisition, compensation and resettlement, environmental and gender issues. GRM was established on June 21, 2018 by the Order No. 219 of the State Agency for Architecture, Construction and Housing and Communal Services under the Government of the Kyrgyz Republic. It was updated at the project implementation stage according to Order No. 153 dated July 2, 2019 and Order No.

⁹ Class 3 waste means non-hazardous commercial and industrial wastes that are permitted by the Department to be disposed of in a Class 3 landfill

145 dated July 29, 2020 issued by former State Agency for Water Resources. For the current period, the Complaints and Appeals Commission for GRM was updated based on Order No. 140 dated December 31, 2020 of the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic. The mechanism consists of a grievance redress process at two levels: local and central. A Grievance Redress Group (GRG) has been established at each level. To assist the complainant (s) in the formal submission of their appeals and complaints, GRG has appointed Local Focal Points (LFPs) who are readily available to persons affected. LFPs are located in Karakol.

21. **Major Findings** of the IEE are summarized as follows:

- a. Based on the existing conditions of the project sites, the impacts and threats that these conditions pose to public health, environmental quality, and the development prospects of the Issyk-Kul Lake basin's population, there is a demonstrated and crucial need for modernization of SPS #4 in Pristan-Przhevalsk, accordingly the detailed design has been prepared and the IEE has been conducted.
- b. Public responsiveness, as documented in the public consultation meeting, has been strongly positive.
- c. During the feasibility stage, the most appropriate project alternative was decided as the construction of the inlet reservoir. Sewage accumulated in the storage tank will be transported by vacuum trucks to the pump well of SPS# 2. The design is developed with consideration of climate conditions and future growth of population. Based on loads resulted from wastewater volume, the technical solutions for SPS# 4 in Karakol City are adopted as 2 phases of construction.
- d. Based on the detailed design, the impacts anticipated to arise from project activities are strongly positive, since the negative impacts that are expected to arise are mostly short-term in nature, and all impacts are readily manageable using available, well-tested mitigation measures.
- e. The unsatisfactory condition of the collection system from Karakol to WWTP and the pipeline under the river from WWTP to the irrigation pond, which have a negative impact on the environment and public health, shows the need for rehabilitation work of them.

22. **Summary and recommendations** In view of the above, it can be concluded from this IEE that construction of SPS # 4, rehabilitation of 28 manholes and 200 m pipeline under the karakul River has a well-proven rationale, strong public support, an insignificant negative impact and the possibility of a positive impact on the environmental quality of the Issyk-Kul basin and on the health and prospects of socio-economic development of the people who live in Pristan-Przhevalsk village. It is therefore recommended that the Project, based on the Preferred Alternative identified in this report and including the EMP, is provided for implementation.

1 INTRODUCTION

23. Issyk-Kul Lake is the second largest high-altitude lake in the world. It is cradled by the Kungei-Alatau mountain chain to the north and the Teskei-Alatau mountain chain to the south. Although fed by over 40 rivers and streams, it is an endorheic lake (without drainage) and its waters are slightly saline. Issyk-Kul Oblast was designated a biosphere reserve by the government in 1998, and by the United Nations Educational, Scientific and Cultural Organization (UNESCO) in 2001. In 2002, the lake was also designated as a Ramsar site. The project area, where the construction of SPS # 4, rehabilitation of 28 manholes and 200 m pipeline under the Karakol River is located, belongs to the transition zone of the Issyk-Kul Biosphere Reserve. Various types of business activities are allowed in the transition zone.

24. Although municipal water supply and sanitation company, known as vodokanal, provide basic services in Karakol and in Pristan-Przhevalsky village, they face considerable service delivery difficulties due primarily to limited institutional capacity, financial constraints and obsolete Soviet-era assets.

25. Recognizing the significant environmental value of the lake and its region, the government is currently implementing WSS sector reforms, which have included the National Development Strategy of the Kyrgyz Republic for 2018-2040 and the Program for Drinking Water Supply and Sewerage Development in settlements of the Kyrgyz Republic until 2026. Issyk-Kul Wastewater Management Project (project) improves wastewater systems in Karakol, greatly enhancing health, hygiene, and sanitation standards. Being implemented by the Government of the Kyrgyz Republic (government) and the ADB, the project will achieve this in Karakol city including Pristan-Przhevasky village by modernization the existing SPS #4, rehabilitation of 28 manholes and the pipeline under the river and strengthening institutional capacity.

Figure 1-1: Location of Pristan-Przhevalsk village and Karakol



1.1 Objectives of the Report

26. This IEE for Pristan-Przhevalsk, sewer collector and the pipe under the Karakol River for discharge of effluents to the irrigation pond of Karakol has been prepared in accordance with ADB's Safeguard Policy Statement (SPS 2009), and the Kyrgyz Republic's Law on Environmental

Protection, 1999 and other relevant laws, regulations and requirements. The objective of the IEE is to (i) identify and assess potential impacts and risks from project implementation on the physical, biological, cultural and socio-economic environments of the project area, and (ii) recommend measures to avoid, mitigate and provide compensation for adverse impacts, while enhancing positive impacts. Relevant references, desk assessments, site reconnaissance, community consultations, and discussions with government agencies and other stakeholders as well as the detailed designs for SPS#4 in Pristan-Przhevalsk and conceptual design for the additional works (rehabilitation of 28 manholes, pipeline under the river for discharge of effluents from WWTP to the irrigation pond).

27. The Project has been screened and classified by the ADB as Environment Category B, and accordingly requires an IEE, including an EMP. This IEE has been prepared to comply with the ADB's requirements as stipulated in SPS 2009.

1.2 Methodology

28. Environmental impact is defined as any change (both positive or negative) in physical, biological, and socio-economic conditions, and physical cultural resources (PCRs) resulting from the activities for modernization of SPS#4 in Pristan-Przhevalsk, reconstruction of 28 manholes and 200 m of pressure line. The methodology for identifying potential project impacts and associated mitigation measures includes the following steps:

- a. Collection of information on pre-construction, construction and operational stage activities, to identify those with the highest potential for environmental impacts.
- b. Collection of information on the environmental setting, including available data from secondary sources, primary surveys and site visits undertaken by national and international specialists in environment, biodiversity, archaeology, sociology and engineering.
- c. Identification of sensitive receptors and the characterization of potential environmental impacts based on parallel consideration of information on the proposed project and the environmental setting.
- d. Specification of appropriate mitigation and monitoring measures based on good international practice, experiences in similar projects of the region, and the expertise of the national and international specialists.

29. Potential impacts of a project are assessed with reference to the following typology:

Direction	<u>Positive impact:</u>	Results in a positive effect on physical, biological, and socio-economic conditions, and PCRs.
	<u>Negative impact:</u>	Results in a negative effect on physical, biological, and socio-economic conditions, and PCRs.
Type	<u>Direct</u>	Impacts which occur through direct interaction of activity with physical, biological, and socio-economic conditions, and PCRs.
	<u>Indirect</u>	Environmental impacts that cannot be immediately traced to activity but can be causally linked.
Duration	<u>Short term</u>	Impact does not result in a permanent alteration in conditions. In general, the impact is short-lived (less than a year).
	<u>Long term</u>	Impact results in a permanent alteration, or duration of impact is more than one year.
Accumulation	<u>Simple</u>	Impacts that if occurring over a prolonged time period do not lead to worsening consequences.
	<u>Accumulative</u>	Impacts that if prolonged over time increase in severity.

30. Based on an assessment of the above, the magnitude of project impacts on physical, biological, and socio-economic conditions and PCRs can be classified as follows:

- **No Impact:** no adverse consequences.
- **Low Impact:** a minor impact from which recovery is immediate or short-term, and which requires limited and typical mitigation measures, or none at all.
- **Moderate Impact:** a moderate impact from which recovery to initial conditions will occur over time, and which requires typical mitigation measures.
- **High Impact:** a significant impact from which recovery requires significant mitigation measures over a long period, and/or where there will likely be a failure to re-establish initial conditions.

2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 ADB Safeguard Policy Statement (2009)

31. ADB requires the consideration of environmental issues in all aspects of ADB's operations, and the requirements for environmental assessment are described in ADB SPS, 2009. This states that ADB requires an environmental assessment of all ADB investments.

32. **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; the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts and are assigned to one of the following four categories.

- (i) **Category A.** a proposed project is classified as category 'A' if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An Environmental Impact Assessment (EIA) is required.
- (ii) **Category B.** a proposed project is classified as category 'B' if its potentially adverse environmental impacts are less adverse than those of category 'A' projects. These impacts are site-specific, few of them are irreversible, and in most cases, mitigation measures can be designed more readily than for category 'A' projects. An Initial Environmental Examination (IEE) is required.
- (iii) **Category C.** a proposed project is classified as category 'C' if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications needs to be reviewed.
- (iv) **Category FI.** a proposed project is classified as category 'FI' if it involves an investment of ADB funds to or through a Financial Intermediary (FI). An Environmental and Social Management System (ESMS) is required.

33. **Analysis of Alternatives.** The best fit option should be identified for the implementation of the project in terms of location, design, technology and/or components that would avoid, and, if avoidance is not possible, minimize adverse environmental impacts and risks.

34. **Anticipated Adverse Impact Mitigation and Management.** When the potentially significant adverse impacts and risks cannot be avoided or prevented, appropriate mitigation measures and management actions have to be identified so that the project / subprojects are designed, constructed, and operated in compliance with ADB SPS 2009.

35. **Environmental Management Plan (EMP):** An 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.

36. **Public Consultation.** Carry out meaningful consultation with affected persons and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected persons and concerned NGOs, early in the project preparation process and ensure that their views and concerns are made known and understood by decision makers and taken into account.

37. **Grievance Redress Mechanism (GRM).** Establish a grievance redress mechanism (GRM) to receive and facilitate resolution of the affected person's concerns and grievances regarding the project's environmental performance.

38. **Public Disclosure:** ADB will post the safeguard documents on its website as well as disclose relevant information in an accessible manner in local communities:

- (i) Final or updated IEE upon receipt; and
- (ii) Environmental monitoring reports submitted by the implementing agency during project implementation upon receipt.

39. The ADB guidelines, stipulate addressing environmental concerns, if any, of a proposed activity in the initial stages of project preparation. For this, the ADB Guidelines categorizes the

proposed components into categories (A, B or C) to determine the level of environmental assessment required to address the potential impacts. This project on the construction of SPS # 4, rehabilitation of 28 manholes and 200 m pipeline under the Karakol River is categorized as “B” and accordingly this IEE has been prepared to address the potential impacts.

40. **ADB’s Accountability Mechanism Policy 2012.** If the established GRM is not in a position to resolve the issue, the project affected person also can use the ADB Accountability Mechanism through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB Kyrgyzstan Resident Mission. The complaint can be submitted in any of the official languages of ADB’s developing member countries. Before submitting a complaint to the Accountability Mechanism, it is recommended that affected people make a good faith effort to resolve their problems by working with the concerned ADB operations department (in this case, the resident mission). Only after doing that, and if they are still dissatisfied, they could approach the Accountability Mechanism.

41. **Access to Information Policy 2018.** ADB recognizes the right of people to seek and receive information about its operations. Requests should be made in writing and be specific to enable ADB to locate the information within a reasonable period. Requests may be submitted to ADB in English or in any of the official or national languages of ADB members. English is the standard language for ADB responses. Requests for information may be sent to ADB through (i) the online request form, (ii) e-mail contact forms of staff, (iii) staff e-mail addresses, and (iv) mail or fax. Requests may be directed to ADB headquarters, a resident mission, a representative office, or any ADB department or office. ADB acknowledges requests within 7 calendar days of receipt and responds within 30 calendar days of receipt. It either provides the requested information or the reason(s) why the request has been denied, indicating the exception(s) to disclosure in the Access to Information Policy (AIP). The requester has the right to appeal denied requests in accordance with the appeals process.

2.2 Constitution

42. The supreme legislative instrument in the Kyrgyz Republic is the Constitution of the Kyrgyz Republic, 1993 (latest revision 2021), hereafter referred to as ‘the Constitution’. All laws must comply with the Constitution, and amendments to the Constitution are made by Nationwide Referendum on April 11, 2021 change or pass laws or ratify international agreements. Under the Constitution, the Kyrgyz Republic (Kyrgyzstan) is an independent, sovereign, democratic, unitary, legal, secular, and social state.

2.3 Natural Resources and Environment Legislation

43. The Constitution establishes the basic principles of natural resource and environmental management, including the right of KR citizens to access the primary sources of life while the main resources (land, water and subsoil) are the common property of the people and belong to the state. Based on these principles, a legal framework has been developed to regulate relations between natural resource users and the state (UNDP 2007). The most significant relevant legislation includes:

- a. *Law on Ecological Expertise, 1999 (latest revision 2015), which empowers the MNRETS to undertake State Environmental Reviews (SERs) of proposed projects;*
- b. *Law on Sustainable Development of Environmental-Economic System of Issyk-Kul, 2004, which provides a framework to regulate the preservation, use and sustainable development of Issyk-Kul Lake;*
- c. *Law of KR "On Water" (latest revision of April 05, 2019 No. 44) The purpose and objectives of the water legislation of the Kyrgyz Republic are regulation of relations in use and protection of water resources (waters), prevention of environmental effects on water bodies and water management facilities from economic and other activities and improvement of their condition, strengthening the rule of law in the water relations.*

44. In addition to legislation that pertains directly to environment and natural resources, the Kyrgyz national legal framework includes laws in other substantive areas. Chief among these are laws concerning labor and occupational health and safety, and cultural heritage protection.

45. The Constitution and legal framework of Kyrgyzstan offers protections for workers, stipulating that they are entitled to labor conditions in which basic requirements for safety and hygiene in the workplace are met. The Ministry of Labor, Social Welfare and Migration of KR has primary responsibility for overseeing occupational health and safety. Key relevant legislation includes the Law of the Kyrgyz Republic on Occupational Safety, 2003, the Labor Code of the Kyrgyz Republic, 2004, and individual regulatory norms. The KR joined the International Labor Organization on March 31, 1992. A review by that organization in 2008 concluded that the *Law of the Kyrgyz Republic on Occupational Safety* met international norms and standards, though it also identified a lack of trained state inspectors to ensure enforcement (ILO 2008).

46. The Constitution and legal framework of Kyrgyzstan also guarantees state protection to historical monuments. *The Law on Protection and Use of Historic-Cultural Heritage, 1999* (last revised 2014) establishes a system for the protection of objects of local, state and international historical or cultural importance, with the Ministry of Culture, Sports, Information and Youth Policy having custodial authority. The Ministry maintains the official state cultural heritage register, which lists over 5,000 items of local, state and international importance. Legislation most relevant to the Project is summarized in Table 2.1.

Table 2-1: Legislation of the Kyrgyz Republic “On Environmental Protection”

Legislation	Year Passed (Amended)	Purpose / Content
Constitution of the Kyrgyz Republic	2010 (2012, 2013, 2014, 2016, 2021)	The land, its resources, airspace, waters, forests, flora and fauna, as well as other natural resources shall be the exclusive property of the Kyrgyz Republic; these shall be used for preserving a unified environmental system as the basis of life and activity of the people of Kyrgyzstan and shall enjoy special protection from the State.
Law on Environmental Protection	1999 (2002, 2003, 2004, 2005, 2009, 2013, 2014, 2015, 2016, 2020)	Establishes the basic principles of environmental protection and provides the legal authority to create environmental quality, establish an environmental monitoring and control system among the environmental quality standards and norms authorized under this law, the following are relevant to the project: <ul style="list-style-type: none"> - norms of the maximum safe concentration of hazardous substances in air, water. - standards for the use of natural resources; - Norms of the maximum safe levels of noise, vibration and other hazardous physical impacts. This law establishes the requirements for environmental assessment in order to prevent possible harmful environmental impacts. It prohibits the financing or implementation of projects related to the use of natural resources without obtaining a positive conclusion from the State Environmental Expertise.
Law of KR “General Technical Regulation for Ensuring Environmental Safety in the Kyrgyz Republic”	2009 (2012, 2019)	It is used for environmental protection, defines the main provisions of technical regulation of environmental safety and establishes general requirements for environmental safety during design and implementation of operations at the facilities of economic and other activities for all legal entities and individuals.
Law on Specially Protected Natural Territories	2011 (2012, 2015, 2018)	Regulates the organization, protection and use of biosphere reserves; national parks; other protected areas with unique natural areas, flora or fauna or cultural heritage values; and protected areas for recreational use
Law on Biosphere Territories in the Kyrgyz Republic	1999 (2018, 2020)	Sets out legal standards for biosphere reserves, with the goal of preservation, restoration and use of areas rich in natural and cultural heritage, and supporting long-term sustainable economic and social development, including recreation,

Legislation	Year Passed (Amended)	Purpose / Content
		restoration of natural resources, long-term ecological control, monitoring and education.
Resolution on Sanitary and Epidemiological Rules and Standards "Sanitary Protection Zones and Sanitary Classification of Enterprises, Structures and Other Facilities 2016	(2016). (2020)	It has been applied to the placement, design, construction and operation of newly built, reconstructed and operating industrial facilities and industries, transport, communications, agriculture, energy, experimental production facilities, utility facilities, sports, trade, public catering, etc., which are sources of impact on the environment and human health. Sources of impact on the environment and human health are objects for which the levels of generated pollution outside the industrial site exceed 0.1 maximum permissible concentrations and / or maximum permissible levels.
Rules on Protection of Surface Waters of the Kyrgyz Republic	(2016). (2017)	Provides the legislative framework for defining, specifying standards for the quality of water bodies used for fisheries and irrigation and enforcing regulations regarding discharges to water bodies, among other things.
Law on the Protection of Ambient Air	1999 (2003, 2005, 2013, 2015, 2016)	Ambient air standard and air quality management
Law on state regulation and policy in the field of emission and absorption of greenhouse gases	2007 (2016)	This Law defines the foundations of state regulation, the procedure for activities, rights, obligations and responsibilities of state bodies, local authorities, individuals and legal entities in the field of emission and absorption of greenhouse gases in the territory of the Kyrgyz Republic.
Water Code of KR	2005 (2012, 2013, 2016 2017, 2019, 2021)	Establishes a unified legal base regulating the use, protection and development of water resources to ensure sufficient and safe supply and environmental preservation.
Forest Code	1999 (2003, 2005, 2007, 2012, 2013, 2014, 2015, 2016, 2017, 2019, 2021, 2022)	This Code establishes the legal basis for the rational use, protection, protection and reproduction of forests, increasing their ecological and resource potential, and their rational use.
Law on Ecological Expertise	1999 (2003, 2007, 2015)	It is the main legislation relating to environmental assessment. Its tasks include preventing negative impacts on human health and the environment that occur as a result of economic or other activities and ensuring that such activities comply with environmental requirements of the country.
Regulation on Procedure for environmental impact assessment in the Kyrgyz Republic	2015	Establishes the procedure for evaluation of environmental impact of the proposed activity (hereinafter - OVOS). The purpose of OVOS is to prevent and/or mitigate the impact of the proposed activity on the environment and related social, economic and other consequences.
Law on the Protection and Use of the Flora	2001 (2003, 2007, 2009, 2010, 2016)	Regulates the use, protection, and reproduction of flora. Regulates the use, protection, and reproduction of flora. Regulates the use, protection, and reproduction of flora. Key tenets include preservation of biodiversity and growth of wild plants and ecosystems; restoration and preservation of rare, endangered, and endemic species; and use and restoration of natural vegetation resources based on scientific principles.
Law on Fisheries	1997 (1998, 2008, 2013)	Determines the preservation of fish resources and their habitats, regulation of fishing, organization and management of fishing and capture of aquatic invertebrates in water bodies
Law on Mountain Areas in Kyrgyz Republic	2002 (2003, 2012, 2016)	About sustainable development of mountain areas, conservation and management of natural resources, historical, cultural and architectural heritage
Law on Waste of Production and Consumption	2001 (2019)	This Law regulates relations arising in the process of formation, collection, storage, use, disposal, transportation and disposal of production and consumption waste

Legislation	Year Passed (Amended)	Purpose / Content
		(hereinafter referred to as waste), as well as government administration, supervision and control in the field of waste management.
Resolution on Sanitary Rules and Regulations "Noise at Workplaces, in Premises of Residential, Public Buildings and on the Territory of Residential Development	(2016). (2020)	It establishes sanitary - epidemiological requirements, standardized parameters and maximum permissible noise levels at workplaces, noise classification, permissible noise levels in the premises of designed, built, reconstructed and operated residential, public buildings and on the territory of residential development.
Resolution on Approval of Rates of Payment for Environmental Pollution in the KR	2015 (2018,2019)	Law fixes the rates of payment for environmental pollution: - for air emissions in the amount of 3.24 (Som) KGS per ton of pollutants. - for the discharge of pollutants with wastewater into the environment in the amount of 10.5 KGS per ton of pollutants. - for the placement of waste and mining dumps in the environment in the amount of 3.24 KGS per ton of waste and dumps.
KR Land Code	1999 (2000-2016)	The Code regulates land relationships in KR; grounds to emerge, exercise and terminate right to land and their registration, and aimed at introduction of land market relations for state, municipal and private property and rational land use and its protection.
Drinking Water Safety Law of the KR	2011 (2012)	Regulates drinking water availability and its quality.
KR Law on Industrial safety of hazardous production facilities	(2016).	This Law defines the legal, economic and social foundations for ensuring the safe operation of hazardous production facilities and is aimed at preventing accidents at hazardous production facilities and ensuring the readiness of legal entities and individual entrepreneurs operating hazardous production facilities to localize and eliminate the consequences of these accidents.
KR Law on access to information held by state bodies and local self-government bodies of the Kyrgyz Republic	2006 (2013, 2014, 2016)	The objectives of this Law are to ensure the implementation and protection of the right to access information held by state bodies and local self-government bodies, and to achieve maximum information openness, publicity and transparency in the activities of state bodies and local self-government bodies.
Law of KR on the protection of soil fertility of agricultural lands	2012 (2016)	This Law regulates relations in the field of soil protection, fertility, quality preservation and protection from degradation and other negative phenomena associated with the ownership, use, disposal of agricultural land.
KR Law on Protection of Population and Territories from Natural and Technogenic Disasters	2000 (2020)	Objectives of this Law: 1) emergencies prevention; 2) reduce the size of loss and damage; 3) emergencies liquidation. The term "emergency" defines "hazardous natural or technogenic event, disaster or catastrophe which may result in casualties, damage to public health or environment, gross material loss and disruption of functions".
Law on Protection and Use of Historic Cultural Heritage	1999 (2014, 2015, 2017)	Establishes a system for protecting items of local, state and international historical or cultural importance. Includes definitions of key terms and types of protected objects.

2.4 Regulations

47. There are over 20 regulations in place to support the above-mentioned laws with respect to the protection of wildlife and natural resources. The most relevant of these are the Rules on Protection of Surface Waters of the Kyrgyz Republic, 2016, Regulation on Protection and Use of Fish Resources and Aquatic Organisms, 1994 and Regulation on Protection of Fish Resources and their Habitats, 2008, which prescribe measures to ensure the conservation of fish resources and their habitats during economic activities, establishment of sanitary and protective zones along shorelines, and the prohibition of pollution of shoreline areas by municipal and other wastes.

Another relevant regulatory instrument is the List of Rare and Threatened Animal and Plant Species included in the Red Data Book of Kyrgyzstan, 2005 (amended 2009), known locally as the 'Red Book'.¹⁰ Species included in the Red Book – and their habitats – are protected by law, and proposed development projects must incorporate measures to avoid negative impacts, as well as mitigation measures designed to prevent habitat destruction and species extirpation or extinction. *Regulations on Procedure of Environmental Impact Assessment in the Kyrgyz Republic, 2015*. The Regulation establishes the procedure of environmental impact assessment of proposed activities. The purpose of OVOS is to prevent and/or mitigate the impact of proposed activities on the environment and related social, economic and other consequences.

48. A series of instructions and decrees support the cultural heritage law. These include the following:

- a. Decree of the President on Measures to Promote the Studies of Historic and Cultural Heritage of the Peoples of Kyrgyzstan, dated January 27, 2012 №18;
- b. State List of Monuments of History and Culture in Kyrgyz Republic of National Status, approved by the government on August 20, 2002 № 568;
- c. Instruction on Registration, Protection, Restoration, and Use of Historic and Cultural Monuments of Kyrgyz Republic, approved by the government on August 20, 2002;
- d. Local 'Lists of Monuments of Regional Importance' approved by local authorities in compliance with the Law on Protection and Use of Historic-Cultural Heritage (Article 10).

49. The key legislation governing occupational health and safety, including at construction sites (the Law of the Kyrgyz Republic on Occupational Safety, 2003) is supported by the Labor Code of the Kyrgyz Republic of 2004, as well as other regulatory norms.

2.5 Standards

50. Environmental standards corresponding to the modernization of the WWTP modernization of SPS in Pristan-Przhevalsk and the reconstruction of 28 manholes and 200 meters of pressure pipeline are defined as follows: The relevant standards include:

- a. Technical Regulation for Potable Water Safety (2011), which establishes microbiological, parasitological and chemical maximum allowable concentrations (MACs) for potable water from centralized urban water supply systems and non-centralized sources (e.g., community wells).
- b. Rules for Protection of Surface Waters (2016, No. 128), which establishes ambient standards for surface water used for potable water, recreation, fisheries and irrigation. The rules regulate the discharge into water bodies of all wastewaters, including domestic, industrial, rainfall and snow-melt waters, road washings, runoff from built-up areas, discharge waters of ameliorative systems, drain waters and mine waters. The rules also regulate economic activities, such as water engineering, that may cause adverse impacts on surface waters. The rules apply to all water bodies, including rivers, streams, lakes and reservoirs.
- c. *Law on Portable Water of Kyrgyz Republic* which establishes standards for the quality of water bodies used for domestic and potable water supply and recreational purposes. (№33 March 25, 1999)
- d. *Sanitary protection zones and sanitary classification of facilities, buildings and other plants Appendix 3 to the Decree of the Government of the Kyrgyz Republic of 11.04.2016 № 201 plants'* SanPin 2.2.1/2.11.006-03 (2004). Requires sanitary protection zones (SPZs) around WWTPs and pump stations in order to protect surrounding human receptors primarily from atmospheric impacts. The extent of the SPZ varies depending on the type and size of

¹⁰ The Red List categorization provides taxonomic, conservation status and distribution information on plants and animals which have been globally evaluated using the IUCN Red List Categories and Criteria. This system is designed to determine the relative risk of extinction, and the main purpose of the IUCN Red List is to catalogue and highlight flora and fauna which are facing a high risk of global extinction (i.e. those listed as Critically Endangered or Endangered). The former Soviet Union originally provided a Red List of species known as the Red Data Book for its territories, and this name is still used in the KR.

- facilities.
- e. *Methodology for establishment of standards for maximum permissible discharges of pollutants into water bodies is regulated by the Decree of the Government of the Kyrgyz Republic of 13.02.2017, № 102.* It defines the procedure for establishing, calculating and revising standards of maximum permissible discharges (hereinafter - MPD) of pollutants into water bodies.
 - f. *SNIP 2.04.03-85-Sewerage (External Networks and Facilities)*, which establishes criteria for hydraulic capacity calculations for sewerage networks and wastewater system design, and specifies standards for components of wastewater management systems, including sewerage and treatment plants.
 - g. *SNIP 3.05.04-85 (External networks, water supply and sewerage facilities)*, which identifies specifications for pipes, water supply and wastewater plants, tanks, pressure mains and gravitational pipelines.
 - h. *Kyrgyz Republic Noise Standards, Appendix 14 to Resolution of the Government of the Kyrgyz Republic On Approval of Public Health Acts of April 11, 2016 No. 201*
 - i. *KR Law on Sanitary, Epidemiological Well Being of the Population No. 60, July 26, 2001*, which aims to ensure sanitary- epidemiological wellbeing of the people of the Kyrgyz Republic and is used to enforce guarantees given by the state to the people to exercise their right to their health protection and to the healthy environment.
 - j. *According to Appendixes 14 and 15 to Resolution of the Government of the Kyrgyz Republic On Approval of Public Health Acts of April 11, 2016 No. 201 Standards for air quality and noise levels are shown un the following tables.*

Table 2-2: Ambient Outdoor Noise Standards in Kyrgyzstan

Activities / category ¹¹	Leq ¹²		Lmax ¹³	
	Day	Night	Day	Night
Areas in immediate vicinity of hospitals and health centers	35	25	50	40
Areas in immediate vicinity of residential buildings, clinics, medical centers, care centers, recreation centers, libraries, schools, etc.	40	30	55	45
Areas in immediate vicinity of hospitals and dormitories	45	35	60	50
Recreation zones in hospitals and health centers	45	35	60	50
Recreation zones in the territory of micro-districts and groups of residential houses, holiday homes, resorts, schools, care centers, etc.	45		65	

Table 2-3: Ambient Air Quality Standards in Kyrgyzstan

Pollutants	Maximum Permissible concentration	Average Daily Concentration (mg/m ³)
Particulate Material: With silica content > 70%	0.15	0.05
Particulate Material: 70 - 20% (cement, coal, clay,	0.3	0.1
Particulate Material: < 20 % (dolomite, etc.)	0.5	0.15
Cement dust (Calcium oxide > 60% and silica	0.5	0.05
Sulfur dioxide SO ₂	0.5	0.05
Carbon Oxide CO	5	3
Nitrogen dioxide NO ₂	0.085	0.04
Nitrogen Oxide NO	0.40	0.06
Lead (Pb) and compounds (except tetra ethyl)	-	0.0003
Lead sulphurous (in terms of Pb)	-	0.0017

Table 2-4: Standards of Water Quality in Kyrgyzstan

11 Activity Categories 1 to 7 relate to indoor standards. The standards provide for allowable noise levels to be reduced in "green areas" or other designated sensitive areas.

12 L_{eq} = the sound level equivalent, the Leq represents the level of steady sound which, when averaged over the sampling period, is equivalent in energy to the fluctuating sound level over the same period.

13 L_{Max} = maximum sound level.

Pollutants	Quality standards for fisheries (mg/dm ³)	National standards irrigation water (mg/dm ³)
pH	6.5-8.6	6.5-8.4
Temperature	5-20°C	15-35 °C
Mineralization	192 - 468	1000
Hydrocarbons	-	300
Carbonates	-	6
Sulphates	100	500
Chlorides	300	250
Sodium	120	150
Calcium	180	300
Magnesium	40	150
Potassium	50	30
Nitrates	40	45
Nitrite	0.08	0.5
Ammonia	0.5	0.1
Iron total	0.1	2
Zinc	0.01	1
Copper	0.001	1
Phosphates	0.05-0.2	10

2.6 Comparison of National Legislation and International Standards

51. Comparison of National legislation with international standards are given at the **Ошибка!** **Источник ссылки не найден.** in order to state the most stringent standard which will be applied within the scope of the project implementation. and standard adopted in the project is given in Table 2.5

Table 2-5: Comparison of National Legislation and International Standards

Subject	National Standards / Requirements	IFC/World Bank Guidelines /International Standards	Adopted Project Standard	Notes
GHG emissions	Law on state regulation and policy in the field of emission and absorption of greenhouse gases No relevant numeric standard.	GHG will be quantified and reported annually if >25,000 tones CO ₂ equivalent per year are expected (as per IFC PS3, 2012)	Numeric standards do not apply. GHG will be quantified and reported annually if >25,000 tones CO ₂ equivalent per year are expected (as per IFC PS3, 2012)	IFC is more stringent since it includes it has numeric values.
Air Quality - Human population protection (at receptors)	mg/m ³ (24 hours) PM10 0.05 CO 3 NO ₂ 0.04 Tetraethyl lead 0,00004 SO ₂ 0.05	Where set, national air quality standards apply. If no national standards are set then apply WHO standards. WHO guidelines are given in, µg/m ³ converted into mg/m ³ for comparison PM10 0.05 (24 hours) NO ₂ 0.004 (1 year) NO ₂ 0.2 (1 hour) SO ₂ 0.02 (24 hours)	Air Quality - Human population protection (at receptors) mg/m ³ (24 hours) PM10 0.05 CO 3 NO ₂ 0.04 Tetraethyl lead 0,00004 SO ₂ 0,02	Kyrgyzstan, and supplemented by WHO where necessary to achieve most comprehensive suite
Exhaust gases emissions of motor vehicles	MPC (Maximum Permissible Concentration) for CO content N _{min} x.x 1.5 N _{incr} x.x 0.8N _{nom} x.x 2.0	US EPA CO 2,1 g/km	MPC for CO content N _{min} x.x 1.5 N _{incr} x.x 0.8N _{nom} x.x 2.0	Kyrgyzstan standard will be applied.
Surface Water Quality	Surface Water quality for most usual parameters pH 6-9 DO >4 mg/L Sulfate < 250 mg/L NH ₄ -NO ₃ < 3.3 mg/L Oil & Grease < 0.05 mg/L	FAO Water quality for freshwater fish (Environmental impact assessment of irrigation and drainage projects, FAO irrigation and drainage paper 53) Dissolved oxygen 50% of the time 7 mg/L O ₂ Non-ionized ammonia 0.025 mg/L NH ₃	pH 6-9 Dissolved oxygen 50% of the time 7 mg/L O ₂ Sulfate < 250 mg/L NH ₄ -NO ₃ < 3.3 mg/L Oil & Grease < 0.05 mg/L	A combination of FAO and Kyrgyz Standard will be supplemented.
Drinking Water Quality	MPC Values in Drinking Water Safety Law of the KR Chemical substances: Aluminum 0.5 mg/L Ammonia (nitrogen) 2 mg/l Benz(a)pyrene 0.01 µg/L Benzene 0.01 mg/L Beryllium 0.0002 mg/L Bicarbonate (HCO ₃) 400 mg/L	Where set, apply national drinking water quality standards or, in their absence, apply WHO Guidelines for Drinking Water Quality Chemical substances: Aluminum - mg/L Ammonia (nitrogen) - mg/L Benz(a)pyrene 0.7 µg/L Benzene 0.01 mg/L Beryllium - mg/l Bicarbonate (HCO ₃) - mg/l	Chemical substances: Aluminum 0.5 mg/L Ammonia (nitrogen) 2 mg/l Benz(a)pyrene 0.01 µg/L Benzene 0.01 mg/L Beryllium 0.0002 mg/L Bicarbonate (HCO ₃) 400 mg/L	Kyrgyz MPC as most stringent standard supplemented by IFC where needed for comprehensive suite

Subject	National Standards / Requirements	IFC/World Bank Guidelines /International Standards	Adopted Project Standard	Notes
	Boron 0.1 mg/L Vinyl chloride 0.0001 mg/L Iron 0.3 mg/L Hardness (1) 7.0 (10) degree, W (0) Cadmium (total) 0.0005 µg/L Cobalt 0.1 mg/L Lithium 0.03 mg/L Manganese 0.05 mg/L Arsenic 0.01 mg/L Медь 1 мг/л Molybdenum 0.25 mg/L Sodium 200 mg/L Oil products 0.1 mg/L Nickel (total) 0.02 mg/L Nitrate ion 45 mg/L Nitrate ion 45 mg/L Residual ozone 0.3 mg/L Surfactants 0.1 mg/L Mercury (total) 0.0005 mg/l Lead (total) 0.01 mg/L Selenium 0.01 mg/L Silver 0.05 mg/L Стронций 7 мг/л Styrene 0.1 mg/L Sulphates 250 mg/L Antimony 0.005 mg/L Trihalomethanes 0.1 mg/L Uranus 0.03 mg/L Phenolic index 0.25 mg/L Formaldehyde 0.05 mg/L Fluoride 1.2 mg/L Chlorides 250 mg/L Chloroform 0.2 mg/L Residual free chlorine 0.3-0.5 mg/L Chromium (Cr ⁽⁺³⁾) 0.05 mg/L Cyanide 0.035 mg/L Zinc 5 mg/L Pesticides: Gamma HCH (Lindane) 0.002 mg/L	Бор 2,4 мг/л Vinyl chloride 0.0003 mg/l Iron - mg/l Hardness ---- Cadmium (total) 0.003 µg/L Cobalt - mg/L Lithium - mg/L Manganese - mg/L Arsenic 0.01 mg/L Copper 2 mg/L Molybdenum - mg/L Sodium - mg/L Oil products - mg/L Nickel (total) 0.07 mg/L Nitrate ion 50 mg/L Nitrate ion 50 mg/L Residual ozone - mg/L Surfactants - mg/L Mercury (total) 0.006 mg/L Lead (total) 0.01 mg/L Selenium 0.04 mg/L Silver - mg/L Strontium - mg/L Styrene 0.02 mg/L Sulphates - mg/l Antimony 0.02 mg/l Trihalomethanes 0.56 mg/l Uranus - mg/L Phenolic index - mg/L Formaldehyde - mg/L Fluoride 1.5 mg/L Chlorides, mg/L Chloroform 0.3 mg/L Residual free chlorine 0.2-0.5 mg/L Chromium (Cr ⁽⁺³⁾) 0.05 mg/L Cyanide - mg/L Zinc - mg/L Pesticides: Gamma HCH (Lindane)	Boron 0.1 mg/L Vinyl chloride 0.0001 mg/L Iron 0.3 mg/L Hardness (1) 7.0 (10) degree, W (0) Cadmium (total) 0.0005 µg/L Cobalt 0.1 mg/L Lithium 0.03 mg/L Manganese 0.05 mg/L Arsenic 0.01 mg/L Медь 1 мг/л Molybdenum 0.25 mg/L Sodium 200 mg/L Oil products 0.1 mg/L Nickel (total) 0.02 mg/L Nitrate ion 45 mg/L Nitrate ion 45 mg/L Residual ozone 0.3 mg/L Surfactants 0.1 mg/L Mercury (total) 0.0005 mg/l Lead (total) 0.01 mg/L Selenium 0.01 mg/L Silver 0.05 mg/L Стронций 7 мг/л Styrene 0.1 mg/L Sulphates 250 mg/L Antimony 0.005 mg/L Trihalomethanes 0.1 mg/L Uranus 0.03 mg/L Phenolic index 0.25 mg/L Formaldehyde 0.05 mg/L Fluoride 1.2 mg/L Chlorides 250 mg/L Chloroform 0.2 mg/L Residual free chlorine 0.3-0.5 mg/L Chromium (Cr ⁽⁺³⁾) 0.05 mg/L Cyanide 0.035 mg/L Zinc 5 mg/L Pesticides: Gamma HCH (Lindane) 0.002 mg/L	

Subject	National Standards / Requirements	IFC/World Bank Guidelines /International Standards	Adopted Project Standard	Notes
	DDT (sum of isomers) 0.002 mg/L 2,4-D 0.03 mg/L Radiation safety indicators Gross alpha activity 0.5 Bq/L Gross alpha activity 1 Bq/L Microbiological and parasitological indicators Escherichia coli 0 #/100mL Enterococci 0 #/100mL Coliphages 0 #/100mL Giardia cysts 0 #/50L Cryptosporidium 0 #/50L	0.002 mg/L DDT (sum of isomers) 0.001 mg/L 2,4-D 0.1 mg/L Radiation safety indicators Gross alpha activity 0.1 Bq/L Gross alpha activity 1 Bq/L Microbiological and parasitological indicators Escherichia coli 0 #/100mL Enterococci 0 #/100mL Coliphages 0 #/100mL Giardia cysts 0 #/50L Cryptosporidium 0 #/50L	DDT (sum of isomers) 0.001 mg/L 2,4-D 0.03 mg/L Radiation safety indicators Gross alpha activity 0.1 Bq/L Gross alpha activity 1 Bq/L Microbiological and parasitological indicators Escherichia coli 0 #/100mL Enterococci 0 #/100mL Coliphages 0 #/100mL Giardia cysts 0 #/50L Cryptosporidium 0 #/50L	
Noise limits for human protection	Acceptable noise levels based on receptors in Kyrgyz National 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 Hospitals and health resorts Daytime: 45 L _{Aeq} Night-time: 35 L _{Aeq} Dwellings, polyclinics, dispensaries, rest homes, holiday hotels, schools Daytime: 55 L _{Aeq} Night-time: 45 L _{Aeq} Hotels and dormitories Daytime: 55 L _{Aeq} Night-time: 50 L _{Aeq} Recreational areas in hospitals and sanatorium: 35 L _{Aeq} Rest areas at the territories of micro-districts and building estates, rest houses, sanatoriums, schools, homes for the aged: 45 L _{Aeq}	IFC Environmental, Health, and Safety General Guidelines Noise Management Residential; institutional; educational Daytime: 55 L _{Aeq} Night-time: 45 L _{Aeq} Industrial; commercial Daytime: 70 L _{Aeq} Night-time: 70 L _{Aeq}	Hospitals and health resorts Daytime: 45 L _{Aeq} Night-time: 35 L _{Aeq} Dwellings, polyclinics, dispensaries, rest homes, holiday hotels, schools Daytime: 55 L _{Aeq} Night-time: 45 L _{Aeq} Hotels and dormitories Daytime: 55 L _{Aeq} Night-time: 50 L _{Aeq} Recreational areas in hospitals and sanatorium: 35 L _{Aeq} Rest areas at the territories of micro-districts and building estates, rest houses, sanatoriums, schools, homes for the aged: 45 L _{Aeq}	Kyrgyz noise level standards given at Kyrgyz National 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 are as most stringent standard.
Vibration due to construction	Acceptable vibration levels based on categories in KR Standards Maximum permissible values (Corrected and equivalent corrected values and their levels)	USA, Federal Transit Administration Vibration Limits Reinforced-concrete, steel, or timber (no plaster) 0.0127 m/s	Acceptable vibration levels based on categories in KR Standards Maximum permissible values (Corrected and equivalent corrected values and their levels)	Kyrgyz vibration level standards are as most stringent.

Subject	National Standards / Requirements	IFC/World Bank Guidelines /International Standards	Adopted Project Standard	Notes
	Residential premises, wards of hospitals, health resorts: Vibration acceleration: $4 \text{ m/s}^2 10^{-3}$ Vibration velocity: $0.11 \text{ m/s } 10^{-3}$ Administrative premises and in public buildings: Vibration acceleration: $10 \text{ m/s}^2 10^{-3}$ Vibration velocity: $0.28 \text{ m/s } 10^{-3}$		Residential premises, wards of hospitals, health resorts: Vibration acceleration: $4 \text{ m/s}^2 10^{-3}$ Vibration velocity: $0.11 \text{ m/s } 10^{-3}$ Administrative premises and in public buildings: Vibration acceleration: $10 \text{ m/s}^2 10^{-3}$ Vibration velocity: $0.28 \text{ m/s } 10^{-3}$	

2.7 International Treaties and Obligations

52. The Kyrgyz Republic is a party to a number of international treaties and conventions (Table 2.7). Fulfillment of the terms of these commitments contributes to environmental sustainability, attracts external funding for stabilization and prevention of degradation of natural resources and cultural heritage, and enhances the country's capacity to use its natural and cultural resources as a basis for poverty reduction and socio-economic development (IMF 2012). Ratified international obligations and associated laws take priority over national legislation, provided they do not contradict the Constitution. In addition to UNESCO's Biosphere Reserve Convention, the nation is also signatory to the Ramsar Convention for the preservation and protection of wetlands. Issyk-Kul wetlands have been designated as Ramsar site No. 1231. This is not a legally binding designation in the nation, but rather voluntary protection.

Table 2-6: Kyrgyz Republic participation in international conventions relevant to the Project

Convention	Adopted / in force	KR Signed	Main objectives	Remarks on the Relevance to the Project
United Nations Framework Convention on Climate Change	1992/1995	2000	Stabilizing greenhouse gas concentrations at a level that would prevent dangerous anthropogenic (human induced) interference with the climate system.	Construction machineries and equipment have to adopt emission norms to prevent GHGs which will have harmful impact on the climate system
Paris Agreement,	17.10.2019	2020	The objectives of this agreement are: - Containment of global temperature rise within 2°C, but with a gradual transition to 1.5°C; - increasing the ability to adapt to the adverse impacts of climate change; - directing financial flows towards low-emission sustainable development and adaptation to climate change	In addition to the earlier remarks, adopting management/mitigation measures for pollution prevention, minimization of natural resources (use of water for construction), and adopting monitoring standards as indicated in the EMP shall attain to the sustainable development, which shall directly contribute to reduction in the global warming.
UN Convention on Biological Diversity	1992/1993	1999	Conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits.	Conservation of Issyk-Kul lake and its biosphere through implementation of Issyk-Kul Wastewater Management Project.

Convention	Adopted / in force	KR Signed	Main objectives	Remarks on the Relevance to the Project
Convention on the Conservation of the World Cultural and Natural Habitats	1972/1975	1995	Protection of natural and cultural heritage.	Issyk-Kul Wastewater Management Project do not have protected natural and cultural heritage sites in the vicinity or in the project area surroundings.
Convention on the Conservation of Migratory Species	1979/1983	2014	Global platform for the conservation and sustainable use of migratory animals and their habitats.	The project area do not have migratory birds seasons or pattern, however considering worst case scenario, suitable mitigation measures are provided in the EMP which will be adopted by the contractor during the construction.
Ramsar Convention	1971	2002	Conservation and wise use of all wetlands through local and national actions and international cooperation to achieve sustainable development.	Issyk kul lake comes under the RAMSAR site, however the project area falls in the Transition Zone, which do not have any harmful impact/influence on the lake.
Stockholm Convention on Persistent Organic Pollutants	2001/2004	2003	Eliminate or restrict the production and use of persistent organic pollutants.	Does not envisage
Aarhus Convention	1998/2001	2001	Granting public rights regarding access to information, and participation and access to justice on matters concerning the local, national and transboundary environment.	Granting public rights regarding access to information, and participation and access to justice on matters concerning the local, national and transboundary environment.

Source: Adapted from Yessekin et. al. (2006) and ADB (2014f)

2.8 Ecological Expertise

53. State Ecological expertise is carried out in accordance with the Law No. 54 “On Ecological Expertise” of the Kyrgyz Republic dated June 16, 1999. Site-specific state ecological expertise is conducted by an expert commission formed by a specially authorized state body on ecological expertise (Issyk-Kul-Naryn Regional Department of the Ministry of Natural Resources, Ecology and Technical Supervision). A term of the state ecological examination is determined by the complexity of

a site but should not exceed three months from a date of receipt of the necessary materials in full. The project initiator is required to submit the following documentation for state ecological expertise:

- assessment of the environmental impact of economic and other activities;
- conclusions and/or approvals of the relevant specially authorized bodies of state control and local self-governance bodies;
- Conclusion of the public ecological expertise, if it was conducted.

54. Conclusion of the State Ecological Expertise is a document prepared by the expert commission, that contains reasonable findings about the admissibility of the environmental impact of the activity examined and the feasibility of implementation of a reviewed project. The State Ecological Expertise' conclusion may be either positive or negative. A positive conclusion of the State Ecological Expertise is one of the prerequisites for financing, lending, investing, and implementing the subject of examination. The positive conclusion of the State Ecological Expertise is legally valid for the period determined by the specially authorized governmental agency for ecological expertise. The legal consequence of negative conclusion of the State Ecological Expertise is the prohibition of implementation of a reviewed project.

2.9 Protected Areas

55. The Kyrgyz Republic legal framework provides for four classes of nationally designated protected areas, as follows:

- a. **State Nature Reserves** - nationally designated protected areas with the status of a nature conservation and scientific institution whose purpose is to preserve and study the natural course of natural processes and phenomena, flora and fauna, individual species and communities of plants and animals, typical and unique ecological systems and their restoration;
- b. **National natural parks** - nationally designated protected areas with the status of a nature conservation and scientific institution designed to preserve the biological and landscape diversity, use unique natural complexes and objects of the state nature reserve fund, which have special environmental, scientific, historical, cultural and recreational value for purposes of preservation, environmental education, scientific, tourist and recreational purposes;
- c. **Natural Monuments** - areas of territories and/or water areas of priority nature conservation, scientific, cultural, aesthetic and historical significance, which are national heritage, fully or partially, permanently or temporarily withdrawn from economic activity, for which a special regime of protection and use is established;
- d. **Biosphere areas** - nationally designated protected areas of terrestrial and aquatic ecological systems or combinations of them that secure a sustainable balance of biological and landscape diversity, economic development and protection of the relevant cultural values;
- e. **State nature sanctuaries (zakaznik)** - nationally designated protected areas with protection regime or regulated regime of economic activity, aimed to preserve and reproduce one or more objects of the state nature reserve fund;
- f. **State Botanic Garden** - nationally designated protected areas with the status of a nature conservation and scientific organization aimed at research and scientific development on the protection, reproduction and use of flora, including rare and endangered plant species;
- g. **State dendrological parks** - nationally designated protected areas with the status of

a nature conservation and scientific organization, with the types of protection regime established by zones, aimed at the protection, reproduction and use of tree and shrub species;

- h. **Micro-reserves** - relatively small areas, including those among agricultural lands, where economic activities are not allowed in order to create numerous pockets of conservation and reproduction of biodiversity and ecosystems;
- i. **Wetlands** - areas of terrain with natural and artificial water areas, including ponds, shallow waters, as well as excessively wet areas where the water surface is usually on the ground, which are places of mass occurrence, nesting, reproduction of birds, reptiles and other near-water animal species, including rare and endangered species;

56. The Issyk-Kul Oblast includes examples of most of the above-mentioned nationally designated protected area types, as well as two internationally designated protected areas, the Issyk-Kul Ramsar Site and Issyk Kul Biosphere Area (IBA). Protected areas of the Issyk-Kul Oblast are discussed in more detail in Chapter IV. The biosphere territory Ysyk-Kel is a specially protected natural area established by the Resolution of the Government of the Kyrgyz Republic No. 623 of September 25, 1998 "On Ysyk-Kel Biosphere Territory" aimed at:

- preserve, restore and use natural areas with rich natural and cultural heritage;
- support for long-term, sustainable economic and social development of territories, including their recreational use, taking into account the preservation and restoration of natural resources;
- Long-term environmental control, monitoring and environmental research; and environmental education and training.

57. The planned works will be carried out in the areas located in the transition/ development zone of the Issyk-Kul Biosphere Territory. There are no specially protected natural areas within a radius of 5-10 km from the project site. Various types of business activities are allowed in the transition zone. Economically interested groups and citizens, which live in this area, jointly participate in the production and long-term use of natural resources in compliance with environmental requirements that ensure the sustainability of environmental and economic development of the territory.

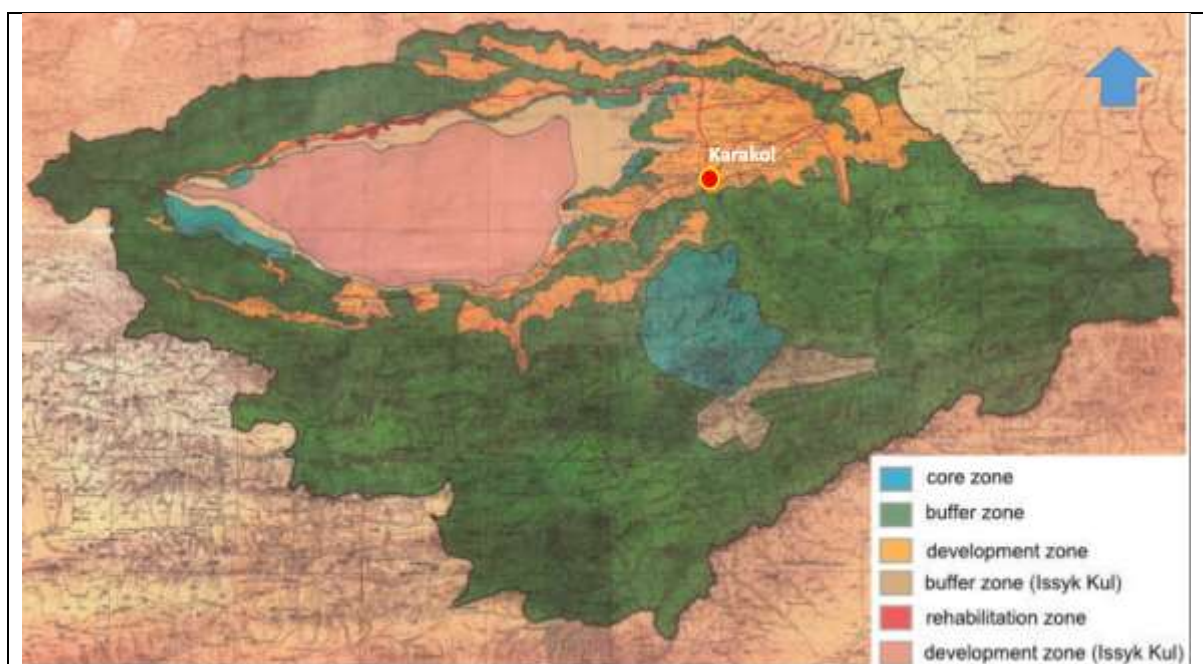


Figure 2-1: Biosphere Reserve Issyk-Kul zonation (revised by MSF 2013)**2.10 Sanitary Protection Zone**

58. Sanitary protection zone (SPZ) is the territory that separates enterprises, their buildings and facilities with processes, which are the sources of impact on the environment and human health, from residential area, landscape and recreational areas, rest areas, resorts. Sanitary protection zone is an obligatory element of any object that is a source of impact on the environment and human health. A SPZ extent is determined in the Kyrgyz Republic in accordance with Resolution on the approval of Acts for public health sectors issued by the Government of the Kyrgyz Republic, dated April 11, 2016 No. 201, annex 3. According to Table 1, the sanitary protection zone for sewage pump stations up to 0.2 thousand m³/day is 15 meters. The SPS capacity is 50 m³/ day.

**Figure 2-2: Distance between SPS#4 and the nearest Residential Area****2.11 Water protection zone.**

59. A water protection zone is an area adjacent to a water body where a special regime is established to prevent its pollution, littering, depletion and siltation. A water protection zone includes floodplains of rivers, floodplain terraces, banks and steep slopes of native banks, as well as gullies and ravines that directly border a water body.

60. The internal boundary of the water protection zone at the side of water body is:

The outer boundary of the water protection zone is set at the furthest boundary from the water body defined by:

- a zone of projected bank transformation in 50 years (the zone of restriction of new construction);
- a zone of erosive activity, including runoff troughs, ravines and gullies directly flowing into the water body, eroded lands adjacent to the water source by an erosion control area along the water body, ravines and gullies;
- a zone of temporary inundation of land at the highest water level in the water body;
- a zone of constant and elevated groundwater level by the maximum permissible depth of their occurrence:
 - 1 m - for agricultural lands;

- 2 m - for rural settlements;
- 3 m - for cities and urban-type settlements;
- the outer boundary of the state forest plantings for protection, remote by up to 3 km from the inner boundary of the water protection zone of a water body.

61. According to the Regulation on water protection zone and strips of water bodies in the Kyrgyz Republic (Government Decree No.271 dated 7 July 1995) the water protection zone of Karakol River is 100 meters¹⁴. The Karakol river length is 50 km.

¹⁴ <https://faolex.fao.org/docs/pdf/kyr90715.pdf> (refer section 17 page# 5)

3 PROJECT DESCRIPTION

3.1 Summary

62. The project will improve the existing wastewater management systems in Pristan-Przhevalsky village located on the southern shores of Issyk-Kul Lake (**Figure 1-1**). A new SPS #4 (first phase) will be constructed to improve the existing system of wastewater management taking into account the future growth the population (second phase). Mainly environmental impact of the project is considered to be positive, however the project also will address potential negative impacts through either avoidable design and construction planning, or with proven and established mitigation measures. This is the focus of this updated IEE.

3.2 Project Rationale

63. As stated earlier, the existing sewage infrastructure in Karakol is in poor condition. The sewerage systems only serve part of the urban populations, leaving most residents and businesses to rely on septic systems and open pit latrines, it is reported that many of the sewer lines leak. The wastewater treatment plant constructed in Karakol in the Soviet era, were never fully commissioned and have suffered from low levels of maintenance, discharging effluent that is virtually untreated (relying solely on coarse screens and the settlement characteristics of existing tanks). The lack of adequate wastewater treatment has the potential to adversely impact on the health, aesthetic and biodiversity values of the Issyk-Kul Oblast through adverse odor impact, visual impact of polluted watercourses and public health risk for tourists and residents. Ultimately, this could lead to declines in tourist numbers and socio-economic status of the region. Recognizing the significant environmental value of the lake and its region, under the ADB assistance, the Issyk-Kul Wastewater Management Project (IWMP) is being implemented, as a part of IWMP, the following works are proposed.

64. SPS #4 construction can be expected to result in tangible infrastructural and institutional improvements, which will in turn generate significant positive overall impacts in Pristan-Przhevalsk village. It is estimated to provide 315 household connections, from which 50.4 m³ of waste water will be generated. Specific planned outcomes of the Project include:

- a. Construction of SPS #4 will solve the problem of receiving wastewater in the village of Pristan-Przhevalsk in consideration of the future increasing of effluents and the construction of pressure line;
- b. Rehabilitation of 28 manholes and 200m pipeline crossing Karakol River.

65. The project impacts in the project cities and in the wider Issyk-Kul region will result as indicated above. Project impacts (positive) can be expected to include:

- a. Improved environmental quality;
- b. Reduced risks to public health;
- c. Increased supply of irrigation water for local agriculture;
- d. A demonstration effect, in which successful implementation establishes a new regional norm for public wastewater services; and
- e. Enhanced long-term potential for tourism growth and broader social and economic development.

3.3 Existing Situation

66. The following section describes the current state of the sewage system in the Pristan-Przhevalsk settlement, including the site of the existing SPS #4. The information provided below is based on site visits, meetings and conducted analysis.

3.3.1 Sewer System

67. In addition to the non-pressure sewerage system in Karakol, the village of Pristan (TSU No. 8) is served by a gravity-pressure system. This system includes 4 pump stations, 3 of which were rehabilitated under the first phase of ADB financed IKSDP (2017)¹⁵. The fourth sewage pump station is located in close proximity to Issyk-Kul Lake and is in a semi-ruined non-operating condition. In this connection, the construction of a new sewage pump station No. 4 at a new location is required.



Figure 3-1: Location of storage tank



Figure 3-2: Karakol River

3.3.2 Additional Works (Capital repair of 28 manholes, replacement of the pipeline under the Karakol River).

68. Currently, the collection system to Karakol WWTP, excessively overloads the treatment capacity, surface water flows to the last 28 manholes before the discharge of Karakol WWTP, connections of pipes and manholes are not waterproofed.

69. At the moment, treated water in Karakol WWTP is cumulated in one pond (lagoon) and from the pond transmitted to irrigation pond with existing gravity line. Transmission capacity of the pipe crossing under the river is decreased since it is utilized for a long period of time due to deposition inside of pipe. Moreover, in the existing situation there is only one pipe crossing the river and there are 2 manholes at both side of river which connects the pipe. There are no standby pipes in parallel for emergency case.

¹⁵ <https://www.adb.org/projects/41548-013/main>



Figure 3-3: Manholes of discharge pipeline



Figure 3-4: Karakol River Crossing

3.4 Operation and Management

70. The sewerage system in Pristan-Przhvalsky village is operated by Municipal Enterprise Karakol Vodokanal, which has operated the sewer system and treatment plant on an inadequate budget for many years, due to an almost complete reliance on user charges, which have tended to stay low because granting rate increases is politically unpopular. Staffing, training, and procedures have suffered accordingly, with the result that maintenance has been largely inadequate. There are no written procedures, instructions or register of tasks involved in the operation and maintenance of the treatment plant (ADB 2014b)¹⁶.

¹⁶ ADB (2014b): Field Survey of Industrial Discharges to the Sewerage Systems & Inventory of Existing Sewage Treatment Facilities. Issyk-Kul Sustainable Development Project Phase II Feasibility Study and Design Consultancy (FSDC), Working Paper 8/10.

3.5 Description of the project implementation in Karakol

71. Reflecting the poor state of the physical and operating conditions of the facilities, the draft detailed design concentrates on:

- a. designing of sewage pumping station # 4, in consideration of increasing the number of residents, the increase in industrial capacity, which entails an increase in wastewater.
- b. Provision of training and capacity building in technical, financial and managerial aspects of wastewater systems management;
- c. Support in the project management through technical assistance consultants.
- d. Capital repair of 28 manholes and replacement of pipeline crossing the Karakol River.

3.5.1 SPS #4 in Pristan-Przhevalsk

72. Based on loads resulted from wastewater volume, the technical solutions for SPS #4 in Karakol City are adopted as 2 phases of construction:

- 1 Phase - construction of inlet reservoir (this IEE report is prepared for Phase 1)
- 2 Phase - construction of SPS#4 and pressure line.

73. The following structures are considered for Phase no. 1 of construction.

- The receiving reservoir is a steel wastewater tank with a storage capacity of up to 50 m³.
- Site for placement of a reservoir with an area of 1350 m² with perimeter fencing along the guard zone and vehicle access.
- Procurement of 2 sewage trucks with a tank volume of 16 m³ to transport out sewage.

74. Wastewater comes to the designed storage tank via the existing gravity-flow Ø 300 mm sewer from Pristan-Przhevalsk settlement. According to the process flow, sewage from the existing sewer comes to the designed reservoir and taken by a sewage truck (when the reservoir is full) to the pump well of SPS#2 until the commencement of SPS#4 construction. As mentioned in Karakol Vodokanal's letter ref # 01-8/154 dated 15.06.2020, the calculations are done for 315 people. According to SNiP 2.04.01-85 "Internal water supply and sewerage of buildings", the daily discharge of wastewater from the settlement is:

$$Q_{\text{daily}} = 315 \times 160 \text{ m}^3/\text{day} = 50.4 \text{ m}^3/\text{day}.$$

75. An actual inflow of wastewater and a regime of storage tank filling should be determined by Karakol Vodokanal; and a schedule of wastewater transporting out to SPS # 2 should be prepared on this basis. The design provides a possibility to construct a pump station (SPS#4) in future when wastewater flowing to SPS#4 is increased. Design documentation for the sewerage pump station and pressure collector will be developed as a separate design.

76. Volume of the storage tank– 50 m³ was selected as an emergency reservoir, which is designed to receive wastewater in case of emergency situations at SPS#4 or power outages during the construction. Manholes have been designed for the area, where shut-off and control valves and a manhole with a screen to be installed. The wastewater will enter the storage reservoir through the grid installed in the manhole 4. The screen is to be manually cleaned of coarse suspended material as needed.

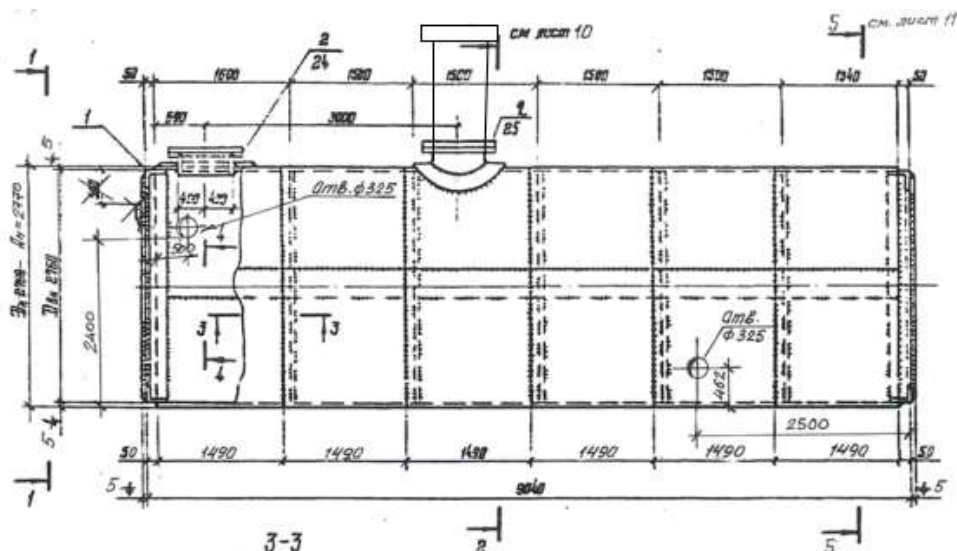


Figure 3-5: Layout of storage tank

77. To remove wastewater by a vacuum truck when the storage reservoir is filled it is necessary to connect the vacuum truck to the threaded end pipeline fitting $\text{Ø } 100 \text{ mm}$ and open the gate in manhole 6. The new site allocated for SPS#4 will include: a sanitary protection zone hedged with a reinforced concrete fence; access roads and gates for vehicles to reach the area. On-site gravity sewerage networks are laid with polyethylene pipes PE 80 (technical) $\text{Ø } 315 \text{ mm}$ in accordance with GOST 18599-2001 at a depth of between 0.83 m and 2.92 m. Sewer manholes have a diameter of 1.0 m and 1.5 m.

78. The structures of Phase No.2 are described in a separate section of the design. The following structures are considered for Phase no. 2 of construction:

Sewage Pump station with two submersible pumps (one – operating, one – standby). The capacity is $30 \text{ m}^3/\text{h}$, head is 35 m. The pumps will work in turns in the order determined by an automatic control system.

- Pump station is supplied as a package:

- Fiberglass receiving tank
- Submersible pumps
- Pump control panel

- Pavilion above the pump station with an approximate dimension of $2.5 \times 2.5 \text{ m}$.

- Emergency reservoir in metal structures with an effective volume of up to 50 m^3



Figure 3-6: Overview map-scheme.

Table 3-1: Technical indicators for the sewerage collector

No	Name of	Unit	Characteristics
1	Sewage collector from SPS#4 to SPS#2	km	2.90
2	Sewerage manholes	number	3
3	Crossing Karakol River	pcs/m	1/48
4	Steel case at road crossings	pcs/m	2/92

79. According to the process flow, wastewater will come to the designed sewerage pump station # 4, from this station wastewater will be pumped out to SPS # 2 through the designed pressure line collector $\varnothing 140$ mm.

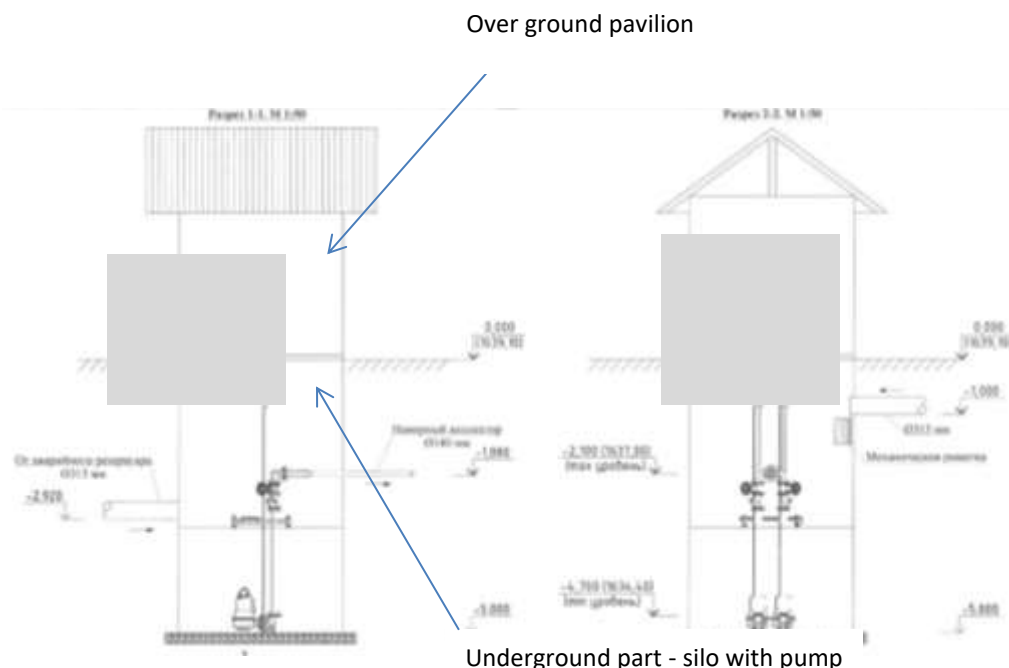
80. The designed pressure collector to be installed with polyethylene pipes PE 80 (technical) $\varnothing 140$ mm according to GOST 18599-2001 at the depth of 1.87 m – 2.64 m. Sewer manholes have a diameter 1.5 m. The rising main $D_u = 125$ mm ($D_{outer}=140$ mm), length is 2.9 km. The diameter of pipeline is selected based on the throughput capacity – 30 m³/hour and the permissible wastewater flow rate – 0.7 m/s. Installation method: underground

81. At intersection with Karakol river, the collector will be installed in a case with D_u+350 mm, which is placed inside one-span metal truss. The truss will be installed on underground reinforced concrete supports located on both river banks. The supports and truss are located outside the scouring zone and zone of washing out. A special manhole with discharge valve will be installed at the lower part of collector for dewatering of the collector lower part. This solution provides:

- Stable and reliable operation of the crossing during flood and maximum flow in Karakol River.
- The case prevents flow of wastewater into the river in emergency cases i.e. creates the safe operation for environmental considerations.

82. On-site power supply networks with the installation of own transformer 25 kVA. Power load is 22 kW.

83. Pump station site with an area of 1350 m² with vehicle access and fencing along the perimeter.

**Figure 3-7: Technological scheme of modular SPS**

3.5.2 28 Manholes rehabilitation Works:

84. In order to prevent surface ground water intrusion into the incoming collector of Karakol WWTP which overloads the treatment capacity unnecessarily, final 28 manholes before discharge of Karakol wastewater to WWTP, will be elevated to ground level to prevent surface water intrusion, pipe connections and manholes will be sealed at the sections where ground water level is higher than bottom elevations to prevent ground water intrusion.

85. The manhole height will be increased to ground surface to prevent surface water flowing inside. Pipe and manhole connections will be sealed in the sections where the water table is higher than the bottom elevation to prevent infiltration.

86. Topographical and geological surveys are completed and depending on ground level at manhole locations manholes will be elevated wherever necessary. Moreover, depending on ground water elevations manholes will be sealed wherever necessary. The work to be done there is just to excavate surroundings of manholes, elevate and seal them wherever necessary and to backfill the excavated material.

3.5.3 Karakol River Crossing

87. The designed pipeline will be connected to the existing manhole. The pipeline is one PE100SDR26 pipe Ø500mm, with the length of 14.1m and a slope of 0.4 ‰. Then, at downstream from this section, 2 interconnecting pipelines will be connected to the sewer collector. Connection will be made in the chamber No.1 constructed from in-situ concrete B22.5, reinforced with double A240 Ø8mm reinforcement mesh with a spacing of 20x20cm. Also, additionally there is chamber No. 2 constructed from in-situ concrete B22.5, reinforced with double reinforcement mesh A240 Ø8mm with a spacing of 20x20cm and shut-off valves for ease of installation and maintenance.

88. Sewerage pipelines with the length of 64.7m and 66.6m and slope of 0.4 ‰, respectively, will be installed under the Karakol River inside prefabricated reinforced concrete flumes L 7-8 intended for heating lines, with the dimensions of 5970x1060x680mm, in number of 12 pcs. The design provides concrete bedding $t=10\text{cm}$ to be poured under the flumes. The design provides sand and gravel bedding $t=5\text{cm}$ under the pipelines. To prevent deformation of pipes from external loads the installation of 24 canal slabs P8-8 with dimensions 2990x1160x100mm is provided. The total length of this section of PE100SDR26 pipes is 66.9m, respectively. At the end of the section, a general chamber with shut-off valves Ø500mm is provided for each pipeline. 2 pipes will be connected into one pipe in sewerage chamber No. 3 made of in-situ concrete B22.5, reinforced with double reinforcement mesh A240 Ø8mm with a spacing of 20x20cm with support ring KO6 and manhole type L. The design provides for a stepladder C1-07 for manhole maintenance.

89. All concrete structures will be insulated with 2 layers of a solution of bitumen in gasoline. To enable installation of pipes and prefabricated reinforced concrete structures under the river, temporary 1st-stage and 2nd stage dams will be formed from II gr. Soil taken from the pipe laying areas. Preferably the construction work will be started during the summer season (from May to July or August) The temporary primary dam is necessary to install pipes in flumes, secure the passage of machinery and installation of flumes and slabs. The river will continue to flow by the discharges outside the dam. When work on the 1st stage dam is completed, the dam is dismantled and the 2nd stage dam is formed for further works.

90. Upon completion of the works the soil is dried and transported for the backfill of the pipes to be installed, and the river slopes will be covered by 8 slabs P8-8, with dimensions 2990x1160x100mm.

91. The final section is between chamber #3 and the existing manhole. For this section, the design provides one pipeline PE100SDR26 Ø500mm, length 57.1m, 0,4 ‰. The pipes will be installed on sand and gravel bedding $t=10\text{cm}$.

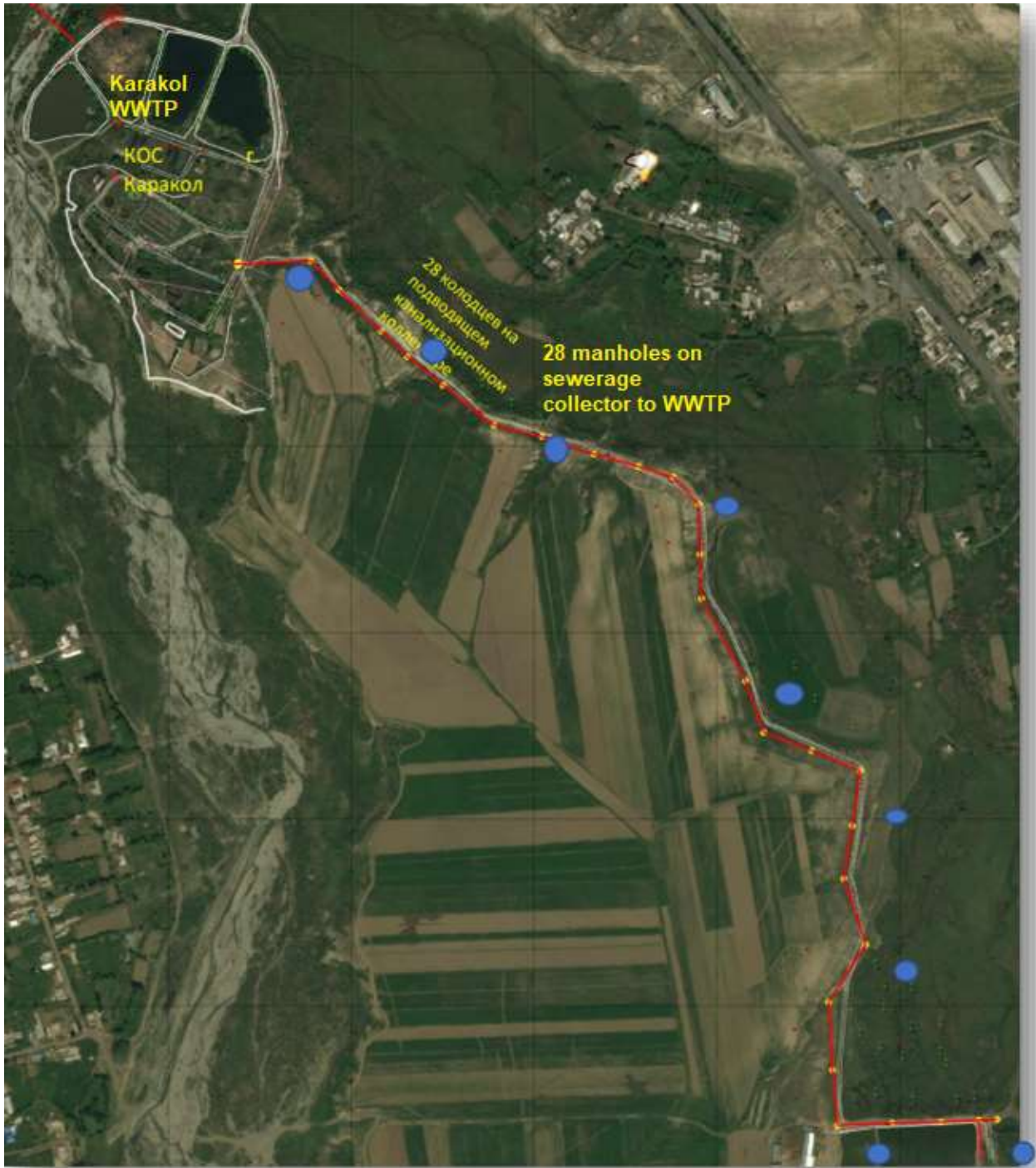


Figure 3-8: Elevating 28 Manholes on incoming collector to Karakol WWTP



Figure 3-9: Karakol River Crossing of Discharge Line to Ak-suu Irrigation Pond

Table 3-2: Preliminary list of works

Actions	Details	Comments
SPS #4 Construction Phase 1		
1. Receiving tank	The receiving reservoir is a steel wastewater tank with a storage capacity of up to 50 m ³ .	Site for placement of a reservoir with an area of 1350 m ² with perimeter fencing along the guard zone and vehicle access.
SPS #4 Construction Phase 2		
Sewage Pump station with two submersible pumps (one – operating, one – standby)	The capacity is 30 m ³ /h, head is 35 m. The pumps will work in turns in the order determined by an automatic control system. Pump station is supplied as a package: •Fiberglass receiving tank •Submersible pumps •Pump control panel •Pavilion above the pump station with an approximate dimension of 2.5x2.5 m. - Emergency reservoir in metal structures with an effective volume of up to 50 m ³	
The designed pressure collector Ø140 mm from SPS #4 to SPS #2.	The dimensions of the pump station are 9 m x 4.8 m at a depth of 7.4 m. The pump station is combined with the coarse screen chamber. The pump station has two operating and two backup pumps with a capacity of 90 m ³ /h The designed pressure line is constructed from polyethylene pipes PE 80 (technical) Ø140 mm GOST 18599-2001 at a depth of 1.87 m to 2.64 m. Sewer manholes have a diameter 1.5 m. Pressure collector D _u = 125 mm (D _{outer} =140 mm), length is 2.9 km.	The diameter of pipeline is selected based on the throughput capacity – 30 m ³ /hour and the permissible wastewater flow rate – 0.7 m/s. Installation method: underground
Karakol river crossing	At intersection with Karakol river, the collector will be installed in a case with D _u +350 mm, which is placed inside one-span metal truss. The truss will be installed on underground reinforced concrete supports located on both river banks. The supports and truss are located outside the scouring zone and zone of washing out. A special manhole with discharge valve will be installed at the lower part of collector for dewatering of the collector lower part.	This solution provides: • Stable and reliable operation of the crossing during flood and maximum flow in Karakol river. • The case prevents flow of wastewater into the river in emergency cases i.e. creates the safe operation for environmental considerations.
Installation of transformer 25 kVA	Power load is 22 kW.	
28 Manholes Rehabilitation Works.		
The height of 28 manholes before the discharge to Karakol WWTP	The height will be increased to ground surface to prevent surface water flowing inside. Pipe and manhole connections will be sealed in the sections where the water	Moreover, depending on ground water elevations manholes will be sealed wherever necessary.

Actions	Details	Comments
	table is higher than the bottom elevation to prevent infiltration	
Karakol River Crossing		
The construction work will cover the replacement of existing pipe with 2 parallel pipes in between 2 manholes	The pipes will be installed inside prefabricated concrete flume. A check structure will be formed within the river bed.	Groundwater will be pumped out from the construction site by a drainage pump installed in an lined manhole with a capacity of up to 6 l/s. The bottom soil will be compacted by pneumatic vibrator to the design level.

3.5.4 Sanitary Protection Zone of SPS #4

92. According to the Resolution of the Government of the Kyrgyz Republic "On approval of Acts for public health sector" on April 11, 2016 № 201, Appendix 3, Sanitary and epidemiological rules and standards "Sanitary Protection Zones and Sanitary Classification of Enterprises, Structures and Other Facilities" (SanPiN) , to ensure public safety around facilities and industries that are sources of impact on human health and environment, established a sanitary protection zone (SPZ), as a special area with a special regime. The extent of SPZ reduces the impacts of pollution on air to the values specified by hygienic standards Maximum Allowable Concentrations of pollutants in the air of populated areas.

93. By its functional purpose, the SPZ is a protective barrier that provides a level of public safety during the operation of the facility. The extent of the SPZ varies depending on the type and size of facilities.

94. The Sanitary Protection Zone of industrial production and facilities is developed sequentially: calculated (preliminary) Sanitary Protection Zone, made on the basis of the project with calculations of dispersion of atmospheric air pollution and physical impact on the atmospheric air (noise, vibration, electromagnetic fields, etc.); the established (final) Sanitary Protection Zone, made on the basis of the results of field observations and measurements to confirm the calculated parameters.

95. The size of the SPZ for enterprises can be changed by the Chief State Sanitary Doctor of the Kyrgyz Republic in agreement with the authorized state bodies in the field of architecture, construction and housing and communal services and environmental protection, environmental safety and nature management.

96. SPZ for SPS #4 with a capacity of 50 m³/hour is 15 meters (refer to Appendix 3 of Sanitary and epidemiological rules and standards "Sanitary Protection Zones and Sanitary Classification of Enterprises, Structures and Other Facilities" (SanPiN)).

3.5.5 Analysis of Alternatives

97. This subproject on the additional works are based on the existing pipeline alignment, hence no alternate options has been explored. However, when considering the "**Without project scenario**" as mentioned in the sections 3.2 and 3.3, the existing manholes are below the ground levels, which will allow the stormwater / surface water to enter the manhole, this will have an impact on the WWTP storage capacity and hence with "**With Project scenario**" the rehabilitation of the 28 manholes above the ground level will prevent entering of stormwater/ surface water will be prevented and the WWTP performance shall be maintained.

3.5.6 Implementation Schedule

98. Tank 50m³: T_{total} = 2.0 months including preparatory period of 0.3 month (See Section 11 Duration of Site Construction of the detailed design for Phase 1) in accordance with SNiP 1.04.03-85* "Standards of construction duration and reserve in construction of enterprises, buildings and structures", part 2 p. 7 of General Provisions, part II, chapter 3, Non-manufacturing construction, Section 7 Municipal utilities, General instructions, para.5.

99. 28 manholes and 200 m of pipe: Total estimated construction duration is 1 month (See *Volume 1. Detailed drawing p. 6.1.4. Duration of construction*) in accordance with SNIIP 1.04.03-85 page 499 p 21 and Guideline Document RD 9 Kyrgyz. Page 6 p. 14 and 15 and page 7 p.1.

4 DESCRIPTION OF THE ENVIRONMENT

4.1 Location

100. Karakol is the 4th largest city in Kyrgyzstan, near the eastern part of Issyk-Kul Lake. Karakol City is about 380 kilometers from the capital Bishkek. It is the administrative capital of Issyk-Kul Region and occupies 44 square kilometers. Its resident population is 81 952 people in 2023¹⁷. The city is in the east of the Issyk-Kul Basin at the mouth of the Karakol River, in the foothills of the Teskey Ala-Too Mountains. The city is located at 1770 m above sea level, 13 km away from Issyk-Kul Lake shore (Figure 1-2).

101. The construction area is located on the eastern shore of Issyk-Kul, on the southern border of Pristan village population 3 492, 15 km northward of Karakol. The site area is connected with Karakol city by asphalt road and located at 30 km. The distance to Cholpon-Ata is 143 km, 404 km from Bishkek.

4.2 Physical Resources

4.2.1 Geography, Topography, Land Use, and Soils

102. Kyrgyzstan is located in Central Asia, is landlocked and borders Kazakhstan, China, Tajikistan and Uzbekistan. It lies between 39° and 44° northern latitude and 69° and 81° eastern longitude. The total area of the country is 199.951 km², where 191.801 km² is earth surface and 8.150 km² is water surface. KR's topography features the peak of Tien Shan, which rise to over 7,000 meters, and about 90% of KR has an elevation exceeding 1,500 meters above sea level (masl).

103. Lake Issyk-Kul and the adjacent region located in the eastern part of the Kyrgyz Republic are a valuable economic and cultural asset. Being 180-km long, 60-km wide, and with a surface area of 6,200-km², the lenticular-shaped lake is the world's second largest high-altitude lake. Over 100 rivers and streams feed it, including hot springs and snow melt. The wider region is designated as a Ramsar (wetlands) site of globally significant biodiversity and forms part of UNESCO's Issyk-Kul Biosphere Reserve, extending over 43,000-km². The project area, where the construction of SPS # 4, rehabilitation of 28 manholes and 200 m pipeline under the Karakol River comes under the transition zone¹⁸ of the Issyk-Kul Biosphere Reserve. Various types of business activities are allowed in the transition zone.

4.2.2 Site of Storage tank

104. Geomorphologically, the sections of the designed construction of sewer lines are located on the right bank of the delta fan of the Karakol River. Absolute ground elevations range between 1,634.00 and 1,640 m.

105. Along the route of the pressure pipeline from SPS#4 to SPS#2, in the intersection of the Karakol river floodplain (see pits No. 5; 6), groundwater was discovered at a depth of 2.0 meters from the ground surface. Water-bearing soil is medium-sized sand. Groundwater is fed by infiltration of surface water from the Karakol River. It flows along the slope towards the regional discharge - Issyk-Kul Lake.

106. A possible long-term rise of groundwater level depends on the seasons of the year and the surface runoff along the river and may be 0.5 meters from the level recorded at the time of the survey (May-June 2020). Consequently, the maximum possible level in the long-term will be at a depth of 1.5 meters from the ground surface. According to previously conducted surveys, in terms of chemical composition, groundwater is hydrocarbonate water and hydrocarbonate-sulfate water, calcium-

¹⁷ <https://www.stat.kg/ru/statistics/naselenie/>

¹⁸ The transition zone focuses on sustainable economic development. Economic activities are permitted, but are regulated so as to ensure sustainable use of ecosystems.

sodium-potassium with substitution of Na and K salts by Mg, sometimes combined, fresh (dry residue is 632 - 712 mg/l), hard water. Water is not aggressive to concretes according to SNiP 2.03.11-85.

107. The area of SPS#4 location is composed of loess-like light brown, macroporous, hard, subsiding loam to a depth of 0.3 meters. Sand of medium size lays below loess-like loam, it has low moisture, light brown color. Sand of loose composition is up to a depth of 1.5 meters, below it has average density with a gravel content of up to 10-15%; sand is wet from a depth of 3.5 meters.

4.2.3 28 manholes on the main sewer from Karakol city to the wastewater treatment plant (WWTP)

108. Rocky, semi-rocky, large clastic, sandy and clay soils form the geological structure of the area. Rocky, semi-rocky, large clastic, sandy and clay soils form the geological structure of the area. They include gneisses, shales, marbleized limestones, sandstones, volcanic rocks of basic and medium composition. Intrusive formations include granitoid rocks of pinkish-red color of Late Ordovician age (γ^3). Granitoids are laid from the ridge of the Kungei Ala-Too and Terskei Ala-Too to the foothills of the slopes.

109. In the piedmont part of the ridges, Neogene (I), Neogene-Lower Quaternary (Y2-3 - \wedge^1), and less frequently Paleogene-Neogene (Pd-#1) sediments are mainly distributed. Paleogene-Neogene deposits are formed by marl limestones, conglomerates, sandstones, siltstones, clays, with interlayers of marl and pink and reddish gypsum. The thickness of deposits is more than 500 m. These deposits are widespread on the southern shore of Issyk-Kul. Neogene (M) and middle-upper quaternary (Pn \wedge sh) deposits are also more common on the southern shore and are formed by gray-colored conglomerates, sandstones, gravel, gravel and loam, more than 50 m thick.

110. The directly surveyed area is in the zone of development of modern Quaternary deposits formed by pebble stones, gravel, sands of different sizes, sandy loam, loam, less often clay. Soils of alluvial, proluvial, lake, rarely aeolian origin. The total thickness is from the first meters to 100 meters or more.

4.2.4 Climate

111. The Issyk-Kul Lake basin has a temperate continental climate and is characterized by warm summers with higher temperatures in June, July and August; cool winters with low temperatures from November to March, and relatively short spring and autumn periods. Although they are situated at quite high altitude, the Project towns are not subject to extreme seasonal temperature swings, as the climate is tempered by the mass of Issyk-Kul Lake, which does not freeze. The general climatic characteristics of the area are given according to data of Karakol MS ¹⁹(Table 4-1-), located at altitude of 1660.0 m.

Table 4-1: Climatic zoning for construction

Administrative division, point	Climate area	Climate sub-area	Zone by humidity
Karakol	II	IIB	dry

112. The climatic zoning of Kyrgyzstan was developed on the basis of a complex combination of average monthly air temperature in January and July, average wind speed for three winter months, and average monthly relative air humidity in July.

Table 4-2: Climate zoning

Climate area	Climate sub-area	Average monthly air temperature in January, t° C	Average wind speed for three winter months, m/s	Average monthly air temperature in July, t° C	Average monthly relative air humidity in July, %
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¹⁹ SNiP KR 23-02-00 Construction climatology

II	IIB	from -5 to +2	5 and more	from +21 to +25	75
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Table 4-3: Average monthly and annual air temperature (Co)

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Год Ann.
-5.5	-5.5	0.5	7.3	11.7	15.1	16.9	16.6	12.6	6.4	0.6	-3.7	6.2



Figure 4-1: Average monthly air temperature diagram

Table 4-4: Number of days when air passes through zero values (Co)

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Год Ann.
11	16	25	10	1	0.06		-	1	12	25	21	122

Table 4-5: Wind and calms recurrence directions (%)

Ann	_	NE	E	SE	S	SW	W	NW	Calm
January	6	13	43	7	18	6	4	3	28
July	12	12	19	5	12	8	21	11	30

Table 4-6: Average monthly, annual speed of wind (m/sec)

Ann	_	NE	E	SE	S	SW	W	NW	Calm
January	1.1	2.4	3.3	1.3	1.4	2.5	3.2	1.0	28
July	1.7	2.3	2.7	16.	1.6	2.0	2.2	2.0	30



Figure 4-2: Wind patterns for characteristic months of cold seasons



Figure 4-3: Wind patterns for characteristic months of warm seasons

Table 4-7: Average amount of precipitation (mm)

I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XI-III	IV-X	Ann
22	15	24	48	66	63	72	52	47	39	28	21	110	387	497

4.2.5 Water resources

113. The closest natural water body to the site is the Karakol River.

114. **Karakol River**²⁰ Water regime of the river is determined by quantity and regime of precipitation, evaporation, as well as by the altitude, orientation of the watershed slopes relative to moisture-bearing air masses, as well as by such factors as topography, the impact of Lake Issyk-Kul, etc. Karakol River has a glacier-snow type of feeding, the main source is meltwater from seasonal

²⁰ Hydrogeological Note of Geoconsult Ltd.

snows and glaciers. Three main single-phase periods can be distinguished in the annual river flow:

- i. snow flooding, formed mainly by meltwater from seasonal snows of the lower and middle mountain tiers, and the volume of flooding correlates well with the amount of precipitation in the preceding autumn-winter period. Flooding is determined by the start of stable positive air temperatures. The temporary timeframes of snow floods are April-June months.
- ii. snow a-glacial flooding, formed mainly by meltwater from high mountain snow, snowfields, and glaciers. This period is the hottest part of the year, and its runoff correlates well with the sums of positive air temperatures, The period of snow-glacial flooding is July-September, with June-July months characterized by high runoff. During this period, there is usually a maximum flow of water.
- iii. autumn and winter low-water periods, when the river is fed by waters accumulated by the active surface of the runoff, i.e. groundwater. This period is characterized by small discharges, which decrease smoothly by the beginning of the next flood period, there is no intraday fluctuations in discharges. The period of autumn-winter low water lasts from October to April.

115. Maximum water flow as noted earlier, the maximum discharges in the Karakol River during the floods are usually observed in July-August months, depending on climatic conditions of the flood period, which determine the start time, duration and vigor of seasonal snowpack melt. Outstanding maximum discharges are also formed under the combined effect of liquid precipitation and high meltwater runoff. In some years, there may be two maxima - spring and summer. Hydrograph of Karakol river is given in the following figure



Figure 4-4: Hydrographs of Karakol River

116. Chronological course of the maximum discharges of the Karakol River, shown in Figure 4-5, was prepared to characterize the long-term amplitude of maximum discharges which shows that in 2009 there was an outstanding maximum flow for the entire period of observation, the probability of which was more than 0.1%.

117. It should be noted that the Karakol River bed at upstream of the site proposed for the inverted syphon construction runs through Karakol City, intense construction is in progress on its banks, they are littered and, accordingly, the flow capacity decreases. As a result, for example, the past 30.07.2021 flood caused by pouring rains, the flow rate of which, according to the Kyrgyz Hydromet, is estimated at 29.9 m³/s, i.e. below the mean annual, led to an increase in the level of the Karakol River. As a result, parks, recreation areas and various infrastructure were flooded, and dozens of households were evacuated for safety reasons.

Figure 4-5: Maximum flow in Karakol River

118. The values of maximum flow of the Karakol River were determined based on the available series of observations on the Karakol river-mouth Kashkasu, method of moments³.

4.2.6 Water Quality

119. Monitoring of the Karakol River was carried out in 2014-2018 by the SAEPF under the GKR, water samples were taken from points at upstream and at downstream of the discharge point of treated water. Surface water samples were taken at a place located 0.5 km downstream from the Karakol WWTP. Samples were collected and analyzed. The results of analysis are in **Ошибка! Источник ссылки не найден.** 4-8 According to the results, wastewater related parameters such as TSS, BOD₅, conductivity, COD and TN comply with the standards.

Table 4-8: Surface Water Quality in Karakol River, at upstream of Karakol WWTP – 2018

Parameter	Unit	Sampling date					MPC
		11.07.17	30.01.18	20.03.18	15.10.18	26.11.18	
pH	pH unit	8.22/8.21	7.16	8.11	8.095	7.8	6.5-8.5
Low speed	m/sec	--	-	-	-	-	-
Suspended particles	mg/l	35/32	45	12	39.75	12.25	-
BOD ₅	mg of O/L			3	2.945	2.45	3
Electrical conductivity	µS	2.4/2.4	544.3	328.5	137.45	245.55	
Ammonium N	mg/l	0.04	10.5	<0.039	<0.08	0.057	0.4
Nitrite N	mg/l	0.001	0.002	0.02	<0.0009	<0.0009	0.08
Nitrate N	mg/l	0.1	0.12	0.4	1.2	0.12	40

Source: IssykKul Territorial Department for Environmental Protection (ITDEP), 2018

4.3 Ecological Resources

120. A study of biodiversity in WWTP area and around it was conducted in July 2020 (see **Appendix 5**). The Karakol wastewater treatment facility includes the wastewater treatment plant and four lagoons, and discharges to an irrigation reservoir 2,5 km to the northwest via a pipeline. Most

steppe areas around the WWTP have been developed for crop production and agricultural fields, and remaining natural habitats include areas of trees and shrubby vegetation, with small fragments of meadows on slopes and remnant forest areas along the Karakol River. The lagoons and irrigation reservoir form artificial wetlands.

121. Fragments of meadow-steppes are occupied by shrubby vegetation dominated by German Tamarisk (*Caragana alopecuroides*), with Fescue (*Festuca sulcata*); Sagebrush (*Artemisia elongata* and *A. tianschanica*); and Feather grass (*Stipa kirghisorum*) present at the tops of deep valleys (**Figure 4-6**). They are replaced downslope by tall bushes of Altai Hawthorn (*Crataegus altaica*), Barberry (*Berberis integerrima*), Wild Dog-roses (*Rosa beggeriana* and *R. albertii*), Iberian Meadow-sweet (*Spirea hypericifolia*), Cotoneaster (*Cotoneaster multiflorus*) and other shrubs. Local fauna is represented mostly by bird species, which are very abundant in this habitat. The most common and widely distributed are Greater Whitethroat (*Sylvia communis*), Common Rosefinch (*Carpodacus erythrinus*), Eurasian blackbird (*Turdus merula*), and Turkestan Shrike (*Lanius phoenicuroides*).

122. Riparian river forest and wet meadows stretch along the Karakol River (**Figure 4-7**). Rich in diversity, they include Common Sea-Buckthorn (*Hippophae rhamnoides*) and other bushes and shrubs such as Silver Berry (*Elaeagnus angustifolia*), Willow (*Salix tianschanica*), Barberry (*Berberis integerrima*), German Tamarisk (*Myricaria alopecuroides*), and many others. In places where the river flow is swift and seasonally floods there are open gravel bars, while in areas where the flow is slow, dense thickets of Common Hop (*Humulus lupulus*), Chinese Clematis (*Clematis orientalis*) and other bushes have formed. Animal diversity is also rich. Wildlife is also very rich. Birds include Common Pheasant (*Phasianus colchicus*), Black-headed Gull (*Larus ridibundus*), Common Sandpiper (*Actitis hypoleucos*), Little Ringed Plover (*Charadrius dubius*), Common Snipe (*Gallinago gallinago*), Oriental Turtle Dove (*Streptopelia orientalis*), Common Cuckoo (*Cuculus canora*), Common Kingfisher (*Alcedo attis*), Turkestan Shrike (*Lanius isabellinus phoenicuroides*), Common Magpie (*Pica pica*), Pale Martin (*Riparia diluta*), and Cetti's Warbler (*Cettia cetti*), many of which breed in this habitat. Several mammal species were observed, including Least Weasel (*Mustela nivalis*), Muskrat (*Ondatra zibethicus*), Tolai Hare (*Lepus tolai*) and Red Fox (*Vulpes vulpes*).



Figure 4-6: Slope with shrubs and meadow-steppe formation



Figure 4-7: Riparian remnant forest along Karakol River

123. The artificial wetlands of the lagoons and irrigation reservoir are quite rich in biodiversity. Many plant species from natural riparian habitats are found there, and several types of trees have been planted around the lagoons, including Poplars (*Populus sp.*), Willows (*Salix sp.*), Maples (*Acer sp.*), and Silver Berry (*Elaeagnus angustifolia*). Other bushes and shrubs inhabit wet areas around the lagoons, and some marsh and wet-meadow plants have successfully settled in this area, such as Spotted or Marsh Orchid (*Daktylorhiza kotschyi*), Iris (*Iris sogdiana*), several dock (*Rumex sp.*) species, Laxman's Burlush (*Typha laxmanii*), sedges (*Carex sp.*), rushes (*Juncus sp.*), and Cranesbills (*Geranium collinum*). These habitats are also characterized by the presence of many aquatic weeds,

such as Black Henbane (*Hyoscyamus niger*), Motherwort (*Leonurus turkestanicus*), Horehound (*Marrubium alternidens*), Common Toadflax (*Linaria vulgariformis*), and Three-lobe Beggar-ticks (*Bidens tripartite*). Three amphibian species were recorded in the lagoons: Pevzov's Toad (*Bufo pewzowi*), Marsh Frog (*Pelophylax ridibundus*) and Central Asian Frog (*R. asiatica*). Many waterfowl and shorebirds also occur there, some of them nesting on the lagoons or in bushes, like the Mallard (*Anas platyrhynchos*), Ruddy Shelduck (*Tadorna ferruginea*), Common Coot (*Fulica atra*), and Common Moorhen (*Gallinula chloropus*).

4.3.1 Vegetation

124. Plant diversity around the WWTP is rich, and 175 species from 45 families were recorded, the most numerous species belonging to the Poaceae (21), Rosaceae (18), Asteraceae (19), and Fabaceae (13) families. The flora range includes plants belonging to natural formations and plants and weeds associated with agricultural fields, abandoned places and human-modified habitats. The richest plant diversity was in the riparian habitats and around the artificial wetlands of the lagoon and reservoir. The richest plant diversity was in the riparian habitats and around the artificial wetlands of the lagoon and reservoir.

4.3.2 Fauna

125. Wildlife in and around Karakol WWTP was rich and diverse. Five fish species were identified from the catch of local fishermen; all are reportedly still quite abundant in the local mountain rivers. Three amphibian species were observed or heard, one of which, the Central Asian Frog (*Rana asiatica*), is included in the Red Book of KR as a vulnerable species, and which is threatened by collection for traditional medicine. Only one reptile, a Stummer's Racerunner (*Eremias stummeri*), was observed.

4.3.3 Assessment

126. The Karakol WWTP is situated in a naturally rich area with sensitive riparian habitats and rich flora and fauna, although the surrounding habitats have been largely modified for crop and livestock production and human settlements. The creation of the lagoons and irrigation reservoir have provided good conditions for the enrichment of local riparian fauna with wetland species dispersed from natural wetlands such as Issyk-Kul Lake, and these artificial wetlands provide habitats for a rich diversity of wetland plants and animals. One vulnerable species, the Central Asian Frog (*Rana asiatica*), was found near the lagoons. In order to protect this species, the lagoons will not be disturbed (Refer Appendix 5).

127. Rehabilitation of SPS, as well as the construction of pipelines and other physical infrastructure, is a priority activity of the project. Field observations showed that there are no residential buildings within SPZ of SPS in Pristan-Przhevsk village.

4.3.4 Physical and Cultural Resources

128. There are no identified archaeological sites near or in the vicinity of the project area which includes (i) construction of SPS #4 (ii) reconstruction of 28 manholes, and (iii) replacement of the pipe crossing the Karakol River.

5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

129. Based on the site assessment and ADB SPS 2009, the Project has been classified as Category “B” for environment,²¹ as impacts are anticipated to be less adverse, site-specific, mostly reversible, and in most cases can be mitigated. This section includes identifying potential impacts, analyzing their nature and severity, and determining appropriate mitigation measures.

130. This section provides information on the impact assessment methodology and process adopted for the assessment of project impacts and determination of their significance. Development of mitigation measures for identified significant effects are set out, and any residual significant effects are reported.

131. The assessment findings are based on all mitigation measures presented in this document being fully implemented as part of the project implementation. All mitigation established in the report are considered to be committed mitigation once the report has been approved by ADB. The IEE and EMP will be a part of bidding documents and commitments on environment protection will be reflected in the contract.

132. The mitigation measures provided in this IEE shall be considered as high level in many cases and will need to be refined by the contractor during the development of Site-Specific Environmental Management Plan (SSEMP). The prepared SSEMP shall be reviewed and approved by the Design Supervision Consultants (DSC) and PMO, without the approval of the SSEMP, the contractor shall not initiate the construction activities in the project site.

5.1 Environmental Impact Area

133. The boundaries of the IEE study have the direct and indirect zones. The direct impact zone includes investigation of any important ecosystem components (fauna and flora) and physio-chemical features as well as existing human activities. The indirect impact zone includes areas or activities relatively far away from the project site but do have an indirect influence on the proposed project or vice versa.

134. The direct impact zones of the project are delineated with the construction site and adjacent areas for assessment and management of construction impacts on the base of project components. There are three main components: (i) construction of SPS #4 (ii) reconstruction of 28 manholes, (iii) replacement of the pipe crossing the Karakol River. Area of direct impact (50m) of the construction of SPS #4 (Phase 2) is shown on Figure 5-1. The area of direct impact of civil works for SPS and pressure line is a linear site with 1 crossing Karakol River and area under SPS.

²¹ Category A: anticipated to have significant adverse environmental impacts that are irreversible, diverse or unprecedented, requiring a full scale environmental impact assessment. Category B: anticipated to have environmental impacts that are less adverse, site-specific, mostly reversible, and in most cases, can be mitigated. An IEE including an EMP is required. Category C: is used for a project expected to have minimal to no adverse environmental impacts. Given the low levels of environmental impact from work associated with a rehabilitation project (much of the alignment will only require relaying of the surface layer) and the relatively low numbers of sensitive receivers adjacent to the alignment this project is considered to fall into Category B requiring an IEE and EMP to be prepared.

Figure 5-1: Direct Impact Zone



Source: Detailed design of Reservoir for wastewater on SPS#4 site in Pristan-Przhevalsk.

135. The direct impact area is a combination of works on the reconstruction of 28 manholes. The boundary of the direct impact area runs along the collector leading to the WWTP.

Figure 5-2: Area of direct impact of reconstruction of 28 manholes



136. The area of direct impact is a combination of works to replace the existing pipeline between the WWTP and irrigation pond.

Figure 5-3: Direct impact area of the replacement of 200 m pipeline across the Karakol River



137. The indirect impact area includes all areas of construction of SPS#4, as well as areas of reconstruction of the last 28 manholes on collector running to the WWTP and 200 m pipeline across the Karakol River between WWTP and the irrigation pond. The areas that will be benefitting or impacted during the operation of the project components are identified as indirect environmental impact zone. A segment of Karakol River, and the coastal area of Pristan-Przhevalsk village along Issyk-Kul Lake, are considered as positive or negative impact areas of the Project. Survey of Sensitive Receptors

138. Sensitive receptors are sites whose characteristics make them especially vulnerable to impacts, and which merit special attention when considering mitigation measures. Some prior understanding of the location and vulnerability of specific sensitive receptors in relation to the Project activities is useful in setting the stage for impact analysis; this opening section provides such a basis by presenting the results of a survey of sensitive receptors assembled based on site visits and primary field studies covering archaeology, biodiversity, and socio-economic sensitivity.

139. In addition to the lake and its ecology, sensitive receptors include, but are not limited to, (i) hospitals, schools, daycare facilities and elderly housing and convalescent facilities, where the occupants are more susceptible to the adverse effects of noise, pollutants and disturbance; (ii) environmentally sensitive areas with valuable or at-risk biological or physical resources; and (iii) areas with PCRs that may be at risk of damage from project activities. The sensitive receptors in the location of sites are the Karakol River and a private pond in close proximity to the pipeline. The distance to the nearest residential houses is given in Table 5-1.

Table 5-1: Distance to residential houses.

Distance between pipeline on which the manholes situated to residential houses	Distance from SPS #4 to residential houses
410m E and 655m SW	530m N to the lake
230m N and 730m SW, 300m NE, 560 E	380m NW to the lake
430m N, 460m NE, 650m E, 820m SW	710m W to the lake
595m N, 490m E, 979m W,	345m NE to the railway
835m N, 520m E, 1080 W, 970 SW	385m E to the railway
1050m N, 520m E, 850m S, 1265m W	170m SSE to the railway

140. The Karakol River, where construction work will be carried out, is a sensitive receptor. i.e. the works will be carried in water protection zone. Other sensitive receptors as indicated in para 125, will be identified by the contractor in the presence of DSC/PIU.

5.2 Anticipated Environmental Impacts and Mitigation Measures

141. This section provides information on the impact assessment methodology and process adopted for the assessment of project impacts and determination of their significance.

142. Development of mitigation measures for identified significant effects are set out, and any residual significant effects are reported. The assessment findings are based on all mitigation measures presented in this document being fully implemented as part of the project implementation. All measures established in the report are considered to be committed mitigation once the report has been approved by ADB. The commitments made within the IEE become a binding part of the contract.

143. At the current stage of the development a Design and Supervision Consultant (DSC) was appointed on 06th March, 2020. Based on the Detailed Engineering Design prepared for the (i) Construction of SPS#4 in Pristan-Przhevalsk, (ii) reconstruction of 28 manholes and (iii) 200m of underground pressure line across Karakol River, this IEE is updated by the DSC to reflect the fact that many of the potential impacts of this project relate to the pre-construction and construction phases. The mitigation measures provided in this IEE shall be considered as high level in many cases and will need to be refined by the contractor during the development of Site-Specific Environmental Management Plan.

Table 5-2: Assessment of impact from construction of SPS #4

Sewage Network Component	Description	Comments	Impacts
The procurement of the necessary materials,	<p>Phase 1. The receiving reservoir is a steel wastewater tank with a storage capacity of up to 50 m³.</p> <p>Phase 1. The packaged pump station with a maintenance pavilion is made from reinforced fiberglass and is delivered to the site as a complete set.</p> <ul style="list-style-type: none"> - Corrugated sewer pipe HDPE KORSIS SN8 Ø 400mm, Ø 200mm, Ø 150mm - Electric-welded steel pipe with highly reinforced corrosion-resistant insulation Ø 426x5 mm in accordance with GOST 10704-91 * - Cast iron plumbing pipe Ø 200 mm, TU 14-3-1247-83 class LA - Steel pipe bend 90 ° Ø 219x6 mm, series 4.900-10 	Any changes in procurement have to be agreed with DSC/ designing organization	Procurement has to comply with the standards adopted in Kyrgyzstan to ensure the safe operation of sewerage network.

Sewage Network Component	Description	Comments	Impacts
	<p>- Steel pipe crossing \varnothing 273x7 - \varnothing 219x6, ser. 4.900-10 4.900-10 4.900-10</p> <p>- Heavy hatches for water supply manholes, TU17-KR-24-765-88</p> <p>2. Construction products, structures and materials.</p> <p>- Water supply and sewage manholes are made of prefabricated reinforced concrete according to Typical Design Solution 901-09-11.84 and series 3.900-3, issue 7.</p> <p>- Manhole stepladders are metallic for manholes of series 3.006.1-2.87</p> <p>- Concrete class. B7.5, B12, B15, B25</p> <p>- Water insulation materials; "MASTERSEAL525", "TECHNOELASTOMOST"</p> <p>- Construction reinforcement steel in accordance with GOST5781-62</p>		
Excavation for collector and pipeline,	Excavation and storage of soil in the allocated area with subsequent use for leveling.	-	<p>-</p> <ul style="list-style-type: none"> • The following impacts from construction are possible: • Generation of dust during excavation • Exhaust gases from motor vehicles • Noise from vehicles and construction equipment • Wastes (industrial and domestic) • Safety of communities and workers
Laying, jointing and pressure testing of the new pipelines, backfilling and compaction of the trenches.	<p>The sewerage networks are designed in accordance with hydraulic calculations, to ensure the passage of the total estimated flow rate of wastewater from the block developments adjacent to the sewer network, and with the slopes of the pipelines along the route, determined based on the permissible flow rates, taking into account the natural terrain. The routes are designed along the roadways of streets and along street sections, by an "open method" underground laying at a laying depth of 1.7 to 3.5 m.</p>	-	<ul style="list-style-type: none"> • During the operation, the impact is possible in case an accident due to clogged sewerage lines.

Sewage Network Component	Description	Comments	Impacts
Construction of the required manholes.	Along the routes of the networks, it is envisaged to install control reinforced concrete manholes with D1.5 m with H operating part = 2- 3.5m, with tray elements H = 0.2-0.4m, complete with necks and hatches.	-	
Road restoration works	The design provides for the scope of rehabilitation work for the projected construction of existing road surfaces, as well as improvements in landscaping.	-	The following impacts from construction are anticipated: <ul style="list-style-type: none"> • Generation of dust during road restoration works • Exhaust gases from construction vehicles / equipment • Noise from vehicles and construction equipment • Construction Wastes (debris/ surplus earth) • Road users and workers safety

Table 5-3: Evaluation of impact from rehabilitation of 28 manholes

Sewage Network Component	Description	Comments	Impacts
The procurement of the necessary materials,	Construction products, structures and materials. - Water supply and sewage manholes are made of prefabricated reinforced concrete according to Typical Design Solution 901-09-11.84 and series 3.900-3, issue 7. - Manhole stepladders are metallic for manholes of series 3.006.1-2.87 - Concrete class. B7.5, B12, B15, B25 - Water insulation materials; "MASTERSEAL525", "TECHNOELASTOMOST" - Construction reinforcement steel in accordance with GOST5781-62	Any changes in procurement have to be agreed with DSC/ designing organization	The following impacts from construction are possible: <ul style="list-style-type: none"> • Generation of dust during excavation • Exhaust gases from motor vehicles • Noise from vehicles and construction equipment • Wastes (industrial and domestic) • Safety of communities and workers <p>During the operation, the impact is possible in case an accident due to clogged sewerage lines.</p>
Road restoration works	The design provides for the scope of rehabilitation work for the projected construction of existing road surfaces, as well as improvements in landscaping.		The following impacts from construction are anticipated: <ul style="list-style-type: none"> • Generation of dust during road restoration works

Sewage Network Component	Description	Comments	Impacts
			<ul style="list-style-type: none"> • Exhaust gases from construction vehicles / equipment • Noise from vehicles and construction equipment • Construction Wastes (debris/ surplus earth) • Road users and workers safety • Occupational, community health and safety impacts if manholes are left open, which increase the risk of falling or accidents.

Table 5-4: Evaluation of impact from replacement of pipeline crossing Karakol River

Sewage Network Component	Description	Comments	Impacts
The procurement of the necessary materials,	<p>For the construction of the facility, the pipes were selected on the basis of:</p> <ul style="list-style-type: none"> - characteristics of the construction area; - requirements of SNiP 2.04.03-85 "Sewerage. External networks and structures", SNiP External networks and structures", SNiP External networks and structures" 3.05.04-85. 3.05.04-85. External networks and facilities for water supply and sewerage - pipe assortment; - hydraulic calculation; 1. Pipes, fittings. - Corrugated sewer pipe HDPE KORSIS SN8 \varnothing 400mm, \varnothing 200mm, \varnothing 150mm - Electric-welded steel pipe with highly reinforced corrosion-resistant insulation \varnothing 426x5 mm in accordance with GOST 10704-91 * - Cast iron plumbing pipe \varnothing 200 mm, TU 14-3-1247-83 class LA - Steel pipe bend 90 ° \varnothing 219x6 mm, series 4.900-10 - Steel pipe crossing \varnothing 273x7 - \varnothing 219x6, ser. 4.900-10 4.900-10 4.900-10 - Heavy hatches for water supply manholes, TU17-KR-24-765-88 	Any changes in procurement have to be agreed with DSC/ designing organization	Procurement has to comply with all standards to ensure the safe operation of sewerage network.

Sewage Network Component	Description	Comments	Impacts
	<p>2. Construction products, structures and materials.</p> <ul style="list-style-type: none"> - Water supply and sewage manholes are made of prefabricated reinforced concrete according to Typical Design Solution 901-09-11.84 and series 3.900-3, issue 7. - Manhole stepladders are metallic for manholes of series 3.006.1-2.87 - Concrete class. B7.5, B12, B15, B25 - Water insulation materials; "MASTERSEAL525", "TECHNOELASTOMOST" - Construction reinforcement steel in accordance with GOST5781-62 		
Excavation for removal of the existing pipelines,	Excavation of the existing manholes is not provided in the design	To install the sewerages pipelines underground, the existing ducts of steel pipes were used, previously installed for the prospective utilities, as well as new ducts at the intersection with roads and communications were installed.	<p>The following impacts from construction are possible:</p> <ul style="list-style-type: none"> • Generation of dust during excavation • Exhaust gases from motor vehicles • Noise from vehicles and construction equipment • Wastes (industrial and domestic) • Safety of communities and workers <p>During the operation, the impact is possible in case an accident due to clogged sewerage lines.</p>

Table 5-5: Assessment of Impacts for Archaeology – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
AR01	Risk of encountering unknown archaeological resources or artefacts	Potential unknown below ground artefacts	National/High	Average	<ul style="list-style-type: none"> Development and implementation of Chance Findings Procedure as a part of the EMP. 	Low

Table 5-6: Assessment of Impacts for Air Quality – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
AQ01	Localised changes in ambient air quality due to operation of mobile and stationary equipment burning fossil fuels.	Local population health	National/High	Average	<ul style="list-style-type: none"> Contractor to maintain all fossil fuel burning equipment in accordance with manufacturers recommendations Contractor to use good quality equipment with minimum emissions and avoid using old equipment and vehicles No idling of equipment when not in use 	Low
AQ02	Emissions from mobile and stationary equipment on sewer lines, affecting local air quality standards	National Air Quality Standards	National/High	Low	<ul style="list-style-type: none"> No idling of equipment when not in use Contractor to use good quality equipment with minimum emissions and avoid using old equipment and vehicles 	Low
AQ03	Fugitive dust emissions from works, construction traffic causing dust soiling and increase in PM2.5 and PM10	Local population health	National/High	Average	<ul style="list-style-type: none"> Construction traffic speed limit when passing through populated areas Water of dusty-unpaved roads and populated areas 	Low

Table 5-7: Assessment of Impacts for Community Safety – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
CS01	Increased risk of road traffic accident due to construction traffic movements	Local population health	National/High	Average	<ul style="list-style-type: none"> Actively enforce speed limits for Project vehicles. Awareness program for local population prior to works commencing, including visits to local schools Development of Traffic management Plan as part of the EMP Drivers to be fully competent and authorized to drive heavy loads vehicles and to receive specific training. Ensure all drivers have completed training and are licensed to drive the vehicles they are operating. Limits to be adopted and enforced for maximum number of work hours to avoid overtiredness. Minimise the number of road movements as much as practicable, maximising capacity of vehicles. Schedule road movements to minimise impact on existing road users. Zero tolerance policy for drug and alcohol use amongst all workforce. Use road signs at site areas where required 	Low
CS02	Impacts on health of dust and noise emissions	Local population health	National/High	Average	<ul style="list-style-type: none"> Avoid using older vehicles and machinery, with significant noise and air emissions. Build trenches in short lengths; refill quickly; remove excess spoil quickly. Water unpaved site roads and large areas of exposed soil thrice daily in dry weather. 	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					<ul style="list-style-type: none"> Ensure that no noise above 70 dB(A) is audible for significant periods within 50 m of any construction site and Cease activity producing significant noise at night (19pm-07am), Sundays & Public Holidays 	
CS03	Damages to utilities by excavation and temporary access cut-off to properties	Local population health	National/High	Average	<ul style="list-style-type: none"> Require contractors to carry out a utility survey before construction and take action during construction to minimize impact on utilities and attend to any damage. Provide temporary access/pedestrian bridge during construction, if required. The Contractor and PIU shall held a coordination meetings, and agreement has been obtained with Municipality; prior to any construction beginning on the maintenance site. 	Low

Table 5-8: Assessment of Impacts for Worker Safety – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					•	
WH03	All construction works carry risk to the health/safety of workers Injury or fatality of workers due to insufficient controls on work activities and processes	Occupational Health and Safety	National/High	Average	<ul style="list-style-type: none"> Contractor shall develop Method Statements for all major activities and include health and safety risk assessment for each of these activities Contractor shall provide health and safety induction training for all staff, and specific training for staff working on work sites. Contractor shall supply to site workers, free of charge all necessary Personal Protective 	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					<p>Equipment (PPE) to include as protective footwear, high visibility vests, safety helmet and hearing protection. For specific tasks other PPE may be required, for example welding masks, hot work gauntlets.</p> <ul style="list-style-type: none"> • Contractor will prepare and implement a Health & Safety (H&S) Plan for all work sites and activities (including offsite) including fatal case. • Contractor will train and assign a specialist as Health and Safety officer as responsible person for the duration of the project. • Provision of health care and first aid - Contractor shall ensure that adequate first aid supplies and trained first aiders are available. • Keep records of accidents; review periodically; amend procedures if needed 	
WH04	Potential presence of asbestos piping - risk of worker exposure to asbestos fibres	Occupational Health and Safety	National/High	Average	<ul style="list-style-type: none"> • If asbestos is encountered, Contractor needs to inform the PIU, PMO • Contractor shall develop an Asbestos Management Plan • Contractor to conduct the worker awareness of asbestos and risks associated with handling such material 	Low
WH05	Handling complaints	Safety related grievances	National/High	Average	<ul style="list-style-type: none"> • Maintaining of register of complaints from local population and employees during project work. The details of the complaint, the contact information of the person filling the complaint and actions to be taken will be registered. 	Low

Table 5-9: Assessment of Impacts for Waste Management – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
WM01	Inappropriate management and disposal of waste during construction		Regional/ Moderate	Low	<ul style="list-style-type: none"> • Prior to start of construction, develop an inventory of waste fractions expected to be generated during construction • Get approval for disposal routes and sites by Municipality of Karakol 	
WM02	Inappropriate management and disposal of waste during construction affecting water courses	Water courses - water quality	Regional/ Moderate	Low	<ul style="list-style-type: none"> • EMP to include appropriate waste management protocols • Location of appropriate waste storage facilities at all work sites • Worker induction and regular tool box talks to make all staff aware of zero waste discharge to environment • Zero tolerance of waste entering water course or flood plain areas, this will include all materials (e.g welding rod stubs, wood, plastics and metals) • Ensuring cleanliness of work sites 	Low
WM03	Poor waste management practices resulting in direct and indirect effects on project area environment	Environmental Protection	Regional/ Moderate	Low	<ul style="list-style-type: none"> • All hazardous waste containers to be labelled clearly with a waste hazard identification label. • Contractor will establish a demarcated temporary waste storage area where waste is stored pending transport to final treatment/disposal location. • Contractor will put in place measures to minimise waste, i.e. procure materials with less packaging, refrain from ordering excess materials, make arrangement with suppliers to return surplus, unused materials. 	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					<ul style="list-style-type: none"> • Contractor will take measures to prevent the disposal, burying and burning of waste on-site, roadside dumping and illegal land filling. • Burning of waste is prohibited by the law and not allowed; • Contractor workforce will be trained in the requirements of the Waste Management Plan, particularly with regards to waste segregation, storage and handling. • Introduction of recycling/recovery initiatives to reduce waste sent for disposal. • Contractor will practice good housekeeping on site. • Waste storage containers will be secure, undamaged and appropriately labelled. • Waste to be segregated and containers clearly labelled specifying which type of waste is contained to assist with identifying appropriate disposal routes and in case of accidental spills or loss to the environment. • Waste to be stored in appropriate containers or skips and removed for treatment/disposal at a frequency so as to avoid the build-up of waste on site. • Waste will be collected and transported under cover of a Waste Collection Log and Waste Manifest. 	

Table 5-10: Assessment of Impacts for Water Resources – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
WR01	Potential for contamination of water course due to release of hydrocarbons or oils and grease etc	Water courses - water quality	Regional/ Moderate	Low	<ul style="list-style-type: none"> Contractor to conduct construction works strictly within the allowed boundaries Contractor to conduct risk assessment on all activities near to water courses and apply appropriate controls. No refuelling of vehicles or equipment to take place within river beds or within 25 metres of the edge of the water course. It is not allowed to wash vehicles or other machinery in surface waters or on their banks, or to carry out any work that could be a source of water pollution. In case of accidental spills of oil products, immediate works to prevent pollution are necessary. The contaminated soil layer must be removed/ collected and placed at an authorized landfill 	Low
WR02	Site rainwater runoff can wash away residues, garbage, leaves, grease, etc., thereby potentially polluting nearby surface water	Water courses - water quality	Regional/ Moderate	Low	<ul style="list-style-type: none"> Store all liquid/solid waste properly above ground to avoid spills/ leaks; Store hazardous materials, e.g. fuels, chemicals, and hazardous waste, in bunded areas to avoid leaks escaping to the ground or nearby surface waters. Provide ample natural ventilation; Develop spill response procedures and provide spill response kits at all Haz-Mat storage areas and work sites; 	
WR03	Impacts due to mining of construction materials	Water courses - water quality	Regional/ Moderate	Low	<ul style="list-style-type: none"> Procure construction material (sand, gravel, aggregate, etc) only from government approved existing quarry sites; Minimize extraction of construction materials 	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					from rivers and stream beds; Maintain a material entry log book at the site indicating material, source and quantity	
WR04	Unsafe transportation of wastewater by vacuum trucks	Water courses - water quality	Regional/ Moderate	Average	Use only machinery that has passed technical inspection and is in good condition.	Low
WR05	Karakol River Crossing	Water courses - water quality	Regional/ Moderate	Average	Monitoring of pipeline operation	Low

Table 5-11: Assessment of Physical Factor impacts/Noise and vibration – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
NO01	Noise disturbance due to equipment and construction activities.	Local population health	National/High	Average	<ul style="list-style-type: none"> Awareness program for local residents prior to commencement of works Limitation of working hours for normal construction activities near to settlements times to be set out in the SSEMP Avoid using older vehicles and machinery, with significant noise and air emissions. No idling of equipment when not in use Haul materials to and from the site in off peak traffic hours; halting work during excessive winds; no truck movements in inhabited areas between 22:00 and 6:00. Minimize noise whenever possible. Prohibiting works in the night hours (from 22:00 PM to 6:00 AM) and on weekends or holidays Equipping the personnel with personal protecting equipment (earmuffs) when required 	Low

Table 5-12: Assessment of Impacts for Socio-economics – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
SE03	Positive effect - short term employment of local people, this can offset some of the disturbance experienced by people living near construction sites.	Local incomes	Regional/ Moderate	Low	<ul style="list-style-type: none"> Develop plan for local recruitment of workers for project - train as required Employ at least 30% of workforce from the vicinity of construction works if possible 	Positive - Low

Table 5-13: Assessment of Impacts for Soil and Ground Water – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
SG01	Accidental spillage of hydrocarbon affecting local ground water	Ground Water	Regional/ Moderate	Low	<ul style="list-style-type: none"> Fuels should be stored in good quality above ground tanks placed on an impervious surface with a spill containment bund capable of containing 110% of the tank capacity No onsite refuelling within or adjacent to water courses On site refuelling of equipment and vehicles shall utilise a drip tray to prevent hydrocarbons entering the ground. Maintain, repair & refuel all vehicles/machines at chosen premises, not on site. 	Low
SG02	Potential damage or loss of soil resource due to erosion or improper handling.	Soils	Regional/ Moderate	Low	<ul style="list-style-type: none"> Soils shall be protected from water and wind erosion. Removal of vegetation shall be minimised Top soil resources should be stripped from site and stored for later restoration Stock piles should be no more than 1.5 m in height and shall be protected from erosion either by seeding with quick growing non invasive grass mix or covered Valued topsoil shall not be compressed by tracking of equipment and machinery. 	Low

Table 5-14: Assessment of Impacts for Biodiversity – Construction Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
TE01	Potential impacts on trees/vegetation adjacent to work sites	Trees/vegetation within pipelines right of way and on SPS sites	Local/Low	Low	<ul style="list-style-type: none"> Contractor to develop a tree protection plan as part of the EMP. This will as a minimum set out restrictions on tree removals, stock piling soils over tree root systems, excessive compression of soils around tree root systems. Prior to any clearing of vegetation, make a species inventory of the area to be cleared. Use vegetation inventory to identify appropriate local plant species to be used for revegetation. Avoid tree removal unless justified on engineering, and it is agreed by the competent state organization. Obtaining of preliminary permits from self-governance and planting of new plants in coordination with local self-governance, vodokanals and environmental authorities Worker awareness training to include protection of trees. No tree cutting for fuel to be allowed Prohibition of the movement of vehicles and construction equipment outside roads 	Low
TE02	Site clearance works will require habitats loss	General Wetland habitat	Local	Low	<ul style="list-style-type: none"> Minimise clearance of areas of vegetation to least required for safe construction and operation of WWT facility Maintenance of land in present condition is not required 	Low
TE03	Loss of habitat, and indirect impacts such as noise, lighting, visual	Breeding birds	Local	Low	<ul style="list-style-type: none"> Do not conduct vegetation clearance during breeding season of species present Monitor nesting activity during noisy construction procedures near to nesting habitats 	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
	disturbance during construction				<ul style="list-style-type: none"> Organization of storage facilities for construction materials in a territory with less vegetation, prevention of cluttering of the construction zone with garbage, pollution with fuels and lubricants Moving of construction equipment on designed roads 	
TE04	Introduction of invasive species and predators	Critical Habitat and Ecosystem functioning	National	Average	<ul style="list-style-type: none"> All equipment to be used on site shall be cleaned thoroughly prior to delivery to project site. Soils and possible seeds from past projects shall be removed from all equipment. 	Low
TE05	Increase in hunting pressure, predators etc.	Critical Habitat and Ecosystem functioning	National	Average	<ul style="list-style-type: none"> No workers will be allowed to hunt animals within the project site or surrounding areas. Work camps if any on site shall not allow domesticated cats or dogs to be kept. Appropriate control of vermin such as rats and house mice shall be carried out by the contractor at worker camps and site office facilities. 	Low

Table 5-15: Assessment of Impacts for Socio-economics – Operation Phase

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
SE01	Large portion of population in Pristan-Prezhevsk village will receive an adequate access to centralized sewerage system.	Local incomes	Regional/ Moderate	Average	Consider development of sustainable community tourism plan.	Positive - Medium

Table 5-16: Assessment of Impacts for Air Quality/Odour – Operation

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
WR03WR03AQ 01	Localised changes in ambient air quality (odour) due to operation of SPS.	Local population health	National/High	Average	Adhere to operation rules.	Low

5.3 Additional Impact Assessment Requirements

144. The Contractor and ME Vodokanal shall be responsible for obtaining all required National and Local Permits for these facilities. The results of any assessment for the facilities shall be considered and any required updates to the IEE and/or the EMP's shall be carried out and supplied to ADB for approval.

5.4 Environmental Reporting Requirements

145. The contractors have to develop a Site Specific Environmental Management Plan (SSEMP) prior to the commencement of the construction works. The SSEMP will incorporate the environmental concerns identified in this IEE, the detailed in the EMP included in this document, and the contract. No civil works can commence without approved SSEMP. The SSEMPs provide contractors an opportunity to address environmental concerns identified in the IEE, and utilizing their own experience and site practices, to state clearly how environmental issues will be addressed. The contractor will submit SSEMP to DSC for review prior to submitting to PMO for approval. From an SSEMP, a series of checklists will be derived by a Contractor with DSC input for use in auditing the contractor's environmental performance and offering early identification of any deteriorating environmental standards.

146. Contractors will submit monthly and quarterly engineering reports and these must include information on environmental performance. Reporting will include but not be limited to:

- Status of the SSEMP (each measure implementation);
- Status of any other contractor prepared environmental documents;
- Status of environmental permits;
- Recording any physical environmental monitoring results (e.g. air, noise, water quality, vibration);
- Results of contractor and joint contractor / DSC site audits;
- Grievance Redress Mechanism;
- Interaction with the public – public consultations and complaints;
- Training of site staff in environmental matters.

147. DSC and PMO will prepare semi-annual environmental monitoring reports, drawing on the DSC's Environmental Specialist's monthly and quarterly environmental monitoring information and reporting the environmental performance of the project. This document will be submitted to ADB for review and will be disclosed on the ADB and project website.

5.5 Environmental Management Budget

148. Most of the mitigation measures require the contractors to adopt good site practice, which should be part of their normal construction contract; so there are additional costs, such as instrumental monitoring, cost of mitigation measures, etc. to be included in the EMP.

149. Following Table 5-17 shows the environmental management costs of this project. The duration for implementing the works is really short (6 to 12 months) and so EM costs are relatively low.

Table 5-17: Contractor's Cost for Environmental Management

	Item	Unit	Quantity	Rate	Total
				(in figures)	
A.	Personnel			US \$	
1	Appointment of a dedicated full-time Environment, Health and Safety (EHS) Specialist of Contractor throughout contract period for maintaining safety and protection against accidents including traffic control, preparation of site-specific EMP, coordination work, addressing field-level grievances, and compliances with EHS requirements with one standby emergency vehicle. (Payment shall be made upon deployment of all resources/manpower)	person-month	12	1000	12000
B.	Environmental Management Plan (EMP) Implementation and Safeguards				
2	Training by EHS Staff to workers on SSEMP implementation, chance finds, health and safety	Number of trainings	3	600	1800
3	Provision of cutting, temporary closing, dismantling, cleaning and reinstating all utilities such as the electricity line, water supply lines and telecom network; reinstatement or relocation of public utilities within land services, i.e. electric pole, transformer, telephone poles, street lightning, etc.; reinstatement of affected ; reinstatement of damaged structures during construction activities etc. including supply of necessary materials, labours, equipment, tools and installation of all complete work as per specification and instructed by the Employer/Engineer.	Lump sum	1	1200	1200

	Item	Unit	Quantity	Rate	Total
				(in figures)	
4	Safety signage boards, caution tapes during construction works in sites. Street lighting and safety fences Pavement Markings, Channelizing Devices(cones), Arrow Panels and Warning Lights. Night lights, solid barricades, and reflectorized signages.	Lump sum	1	600	600
5	Guardrails or barriers, metal planks as walkways or cover for vehicles over open excavation/trenches	Lump sum	1	600	600
6	Flyers/brochures/notification to surrounding communities 7 days and again 1 days before start of excavation	Lump sum	1	300	300
7	Air quality monitoring - Instrumental air quality monitoring (parameters CO, NO2, SO2, O3 and PM10)	Per monitoring	26	120	3120
8	Noise levels monitoring - Instrumental noise levels monitoring (dB)	Per monitoring	26	50	1300
9	Water quality Monitoring	Per monitoring	12	120	1440
10	Personal protective equipment (work-related and COVID-19 related), first aid kits, fire extinguishers, chemical/fuel spill controls	Lump sum	1	1,200	1,200
11	Asbestos management (preparation of asbestos management plan, testing, third-party contractor for dismantling, transport, storage and disposal, and training of workers)	Lump sum	1	1,000	1,000
	Total				24,560
	Contingency 10%				2,456
	Grand Total				27,016

5.6 Conclusion:

150. This chapter of the IEE has described the potential impacts of the project activities in the pre-construction, construction and operation phases, and has identified appropriate mitigation measures for addressing each one. To aid in the translation of this material into practice, the impacts and mitigation measures described here will be extracted and presented in concise form in the EMP.

6 CONSULTATION, PARTICIPATION AND DISCLOSURE OF INFORMATION

6.1 Stakeholder Consultation Approach

151. Consultation, participation and the disclosure of information during project preparation has ensured that feedback on the proposed project design has been received from the public so that views and preferences of stakeholders were adequately considered in the project design. Consultation will continue during ongoing project development, processing and implementation phases of the project. Public participation during project formulation has included: (i) identifying interested and affected parties stakeholders; (ii) informing and providing the stakeholders with sufficient background and technical information regarding the proposed development; (iii) creating opportunities and mechanisms whereby stakeholders can participate and raise their views (issues, comments, and concerns) with regard to the proposed development; (iv) giving the stakeholders feedback on process findings and recommendations; and (v) ensuring compliance to process requirements with regards to the environmental and related legislation.

6.2 Compliance with ADB and KR Requirements

152. This IEE complies with the information disclosure and public consultation and participation requirements of both the ADB and the KR. This includes the following:

- a. The Project has provided timely disclosure of relevant information through channels readily accessible to affected people and stakeholders;
- b. A GRM is established (Refer Chapter 7).
- c. Information has been presented in an understandable way in the Russian language in both information disclosure and the public consultations;
- d. Information disclosure was started early in the Project cycle;
- e. A formal public consultation meeting was organized;
- f. Public consultation has been gender inclusive;
- g. Views of stakeholders and the potentially affected population have been documented and incorporated into decision-making regarding acceptable technical solutions.

6.3 Public Consultation

153. Public consultations were carried out in accordance with ADB's Public Communications Policy (2011) and SPS (2009). Public consultations on environmental aspects were held on October 29, 2020 and on July 25, 2023 in the Conference Hall of Karakol City Hall. Consultations were organized by DSC/PIU/PMO team through a formal arrangement with city mayors and Vodokanal with invitations to key stakeholders in the cities. Details of the consultation, including all supporting information, is presented in Appendix 2 and 3 of this IEE.

6.3.1 Objective

154. Official public consultations were organized by DDWSSD, PMO and DSC. Official messages has been sent to the local leaders to invite all interested parties of residents and representatives of local self-government for the opportunity to present and discuss with them environmental and social issues related to the construction of sewer networks.

155. On October 29, 2020 and on July 25, 2023, meetings were held with public participation on social and environmental issues in the Conference Hall of Karakol Mayor's Office. Protocols were kept

during the meetings, which can be found in Appendices 2&3 to this report. Brief description of the meetings is presented at the table 6-1 below.

156. As a result, the following proposals were received: fences and warning signs / signals to be installed to prevent the entry of local transport to the construction site, as well as entry of construction machinery in the territory not allocated for construction; to compensate the felled trees with new plantings in agreement with representatives of Zelenhoz.

157. Participants : The public hearing was attended by representatives of the Executing Agency (EA), the Implementing Agency (IA), the Mayor's Office of Karakol, ME Vodokanal, regional governments, the design and supervision consultant (DSC), the Project Management Office (PMO) and the Project Implementation Unit (PIU) of Karakol, Local Self Governance (LSG) and the residents of Karakol. The registration sheet is attached.

6.3.2 Organization

158. A copy of OVOS report was provided to key stakeholders before the meeting. At the registration, all participants have been supplied with mask and hand gloves due to prevailing COVID 19 pandemic conditions. During the public consultations, PowerPoint presentations were presented, outlining the technical features of the project and explained the potential environmental and social impacts, together with associated mitigation measures by two local experts of DSC. Presentations regarding environmental safeguards and social safeguards which were prepared by Mrs. Olga Zinina and Mr. Iuri Dolgov, respectively, were delivered in Russian, with explanations in Kyrgyz as necessary, followed by question-and-answer sessions. The representatives of the vodokanal and local experts of DSC answered technical questions and clarified issues that were raised. Printed hand-outs of the presentations were prepared and distributed to the participants for their information, and as a way of disseminating the environmental concerns of the project to the greater public.

159. The main issues discussed during the question/answer section were about the compensations; household connections.

Table 6-1: Public Consultations (October 2020) Participation summary

Meeting #	Place	Date/ Appr. time	Language	Participants
1	Karakol (city administration)	29/10/2020 15:00 – 17:00	Rus/Kyrg	36
2	Karakol (city administration)	25/07/2023 15:00 – 17:00	Rus/Kyrg	20

6.3.3 Conclusion:

160. All participants of the public participation meetings were eager to see the project implementation, and supposed that no additional consultations would be needed and the civil works would be implemented in accordance with the approved design.

6.3.4 Information disclosure

161. After ADB endorses the OVOS and EMP, it is made available as information to the public, both in the English and Russian languages. The procedure for public consultation in the Kyrgyz Republic includes the following steps:

1. Public notification on public discussions 30 days in advance;
2. Providing public access to the OVOS and EMP documentation by the project initiator and/or other accessible locations (local authorities, the territorial bodies of environmental protection), and disclosure of the OVOS and EMP report on the website of the proponent (if a website exists);

3. The general public familiarizes itself with the OVOS and EMP documentation 30 days in advance;
4. In the case of public interest:
 - a. Provide public notice regarding the date and place of the meeting to discuss the IEE documentation;
 - b. The collection and analysis of comments and suggestions, summarizing the results of public discussions of the OVOS and EMP documentation

6.4 Public Consultation for construction of 28 manholes on the collector of Karakol WWTP and 200 m of pipe at the intersection with Karakol River

162. A public consultation has been conducted on 25th July 2023 in the conference hall of Karakol mayor's Office to discuss the additional works involved in the Issyk-Kul Wastewater Management Project, including the construction of 28 manholes on the collector of Karakol WWTP and 200 m of pipe at the intersection with Karakol River. The project design prepared for implementation has been detailed by the DSC's design subconsultant. It was also highlighted that the proposed design is having minimal environmental and social impacts. The prepared design is based on the following:

- installation of discharge pipe under the river in the flumes;
- construction of service chambers for valves;
- installation of two interchangeable pipelines for designed collector from PE 100 SDR26 Ø500 mm pipe with gate valves;
- increasing the height of the manholes installed on the sewage supply collector;
- provision of measures to prevent infiltration of rainwater into manholes.

163. Based on the prepared project design, an Initial Environmental Examination report has been prepared. The prepared IEE is in line with the ADB SPS 2009 requirements, the outcome of the IEE has been discussed by the DSC safeguard specialists (Environment and social) has been shared in the public consultation. The key points during the environmental safeguard discussion are.

- Based on the project design/ construction activities the project is classified as category B.
- Project implementation will not cover Specially Protected Natural Areas (SPNA).
- The project will not cover cultural heritage sites.
- The project will not cover forestry.
- Anticipated adverse impacts are minor or reversible, and preventive and mitigation measures will help prevent or reduce these impacts.
- The Environmental Management Plan (EMP) provides for implementation of recommended preventive actions and mitigating measures, which satisfies ADB's policy on safety measures and also the legislation of the Kyrgyz Republic.

164. The key points during the social safeguard discussion are

- As per the proposed design no land or structures are affected by the project and accordingly no losses are expected.
- In case of unforeseen situation related to impacts on agricultural land, such as soil dumps or damage to some fence or an irrigation canal, the project will need to restore all of that It is ADB's policy that all household losses are necessarily compensable regardless of legal status.
- For the recorded grievances from the site has to be sorted out through the established grievance redressal mechanism

165. Following the presentation, clarification has been provided for the queries raised by the stakeholders. The details of the same along with the participants list is included in the Appendix 3.

7 GRIEVANCE REDRESS MECHANISM

166. The principal purpose of the Grievance Redress Mechanism (GRM) is to provide an effective and systematic mechanism for responding to appeals and complaints from persons whose interests are affected by the project activities, as well as for providing feedback.

167. Grievance Redress Group (GRG). During the project implementation period, order dated December 31, 2021, No. 140 of the State Agency for Architecture, Construction of Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic, a commission was established to consider complaints and applications from citizens arising from the implementation of IWMP on social and environmental security measures and gender issues at the central and local levels. This order approved the Regulations and Commissions for Considering Complaints and Applications of Citizens Affected by IWMP, and a Grievance Redress Group (GRG) has been established under the project, which will consider issues related to the project. The task of the GRG includes all activities necessary to discuss complaints, assess their validity, assess the scale of their possible impact, address social, environmental, and other issues.

168. The scope of the GRM encompasses issues of environmental performance, involuntary resettlement, and information disclosure. Any complaints regarding matters of fraud and corruption are registered under the GRM but dealt with under separate procedures as established under the law of the KR and the Anti-Corruption Policy of ADB. The GRM will remain in force throughout the construction phase of the project and continue into the operation phase for as long as the primary project institutions (PMO and PIU) are in existence.

169. The GRM has the following four primary elements:

- GRM: The procedure through which complaints are received, screened, reviewed, and resolved promptly and satisfactorily.
- Grievance Redress Group (GRG): Meets to review complaints and decide on necessary actions. The GRG includes representatives of relevant parties (including affected persons) and an independent observer.
- Local Focal Point (LFP): Receives and screens complaints, convenes and facilitates GRG meetings, provides necessary documents, and keeps all records, including a complaints log.
- Public Information: The borrower must ensure that the public in the project area is fully informed about the existence and operation of the GRM and the channels for registering any complaints.
- Affected Person (or Group) (AP): The people who are directly affected by the project and have a grievance to raise.

170. Complaints and appeals from affected persons and other stakeholders will be received in the PIU office in Karakol, or in the General Department of the Mayor's Offices in Karakol. They will then be forwarded to the PMO. All complaints will be recorded in a Logbook held in the PMO. Complaints and appeals that can be resolved by simple action on site are dealt with by the LFP in discussion with the affected person or persons, and contractors if necessary. A response letter will be prepared and signed by the LFP, with the approval of the PMO Director, and sent to the applicant within 14 days from the date of registration.

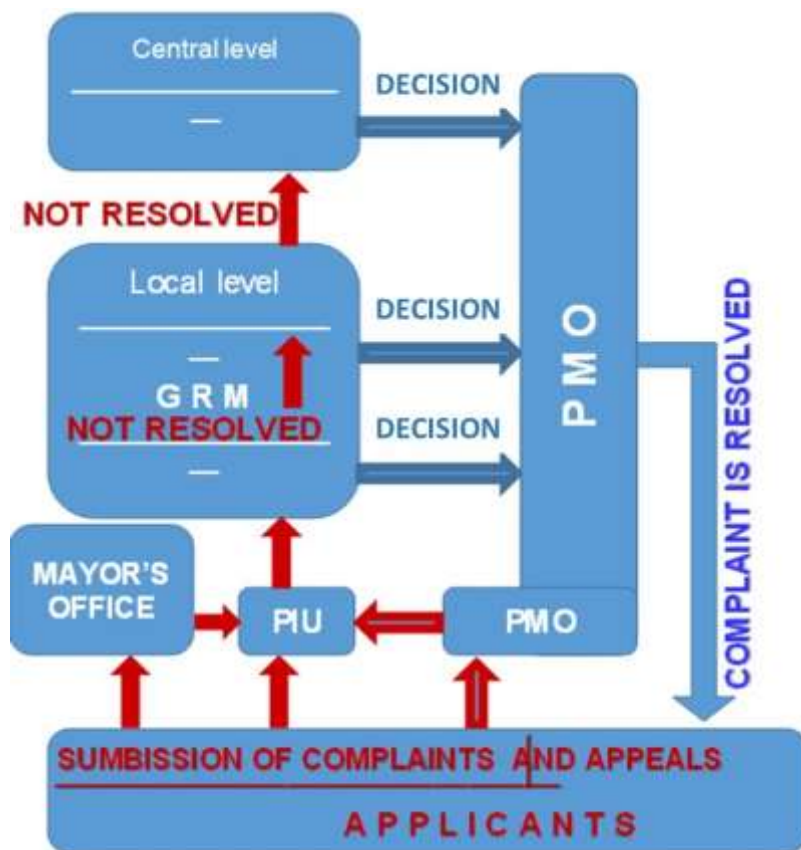


Figure 7-1: Grievance Redress Steps

171. At the initial stage, the LFP listens to the AE appeal and tries to propose acceptable solutions. If the AP is not satisfied with the decisions, he / she will file a complaint in writing to the local GRG committee within 3 days.

172. Upon receipt of a written complaint, the Local Contact will review and prepare a case file for the local hearing and decision of the committee. A formal hearing will be held with the committee on the date set by the LFP in agreement with the AP. On the day of the hearing, the AP should appear before the committee and provide evidence in support of his claim. LFP will record the AP's statements and document all evidence. The decision of the majority of the committee members will be considered final by the GRG and will be prepared by the LFP and signed by the other members of the committee. The case will be updated and the LFP will communicate the decision to the AP within 14 days.

173. If the affected person is not satisfied with the solution, the LFP will lodge grievance in written to the committee at the central level with conclusion and supporting documents prepared at local level. After receiving a written complaint, the committee chairperson will review and prepare a file for hearing and resolution by the committee. The formal hearing will be held on a date agreed by the committee chairman and the AP. The committee members will contact the applicant and go to his/her village. The PMO Social Safeguards and Resettlement Specialist will record the AP's statements and document all the evidence. The decisions of the majority of members will be considered final by the committee at the central level, which will be prepared by the chairman and signed by other members. The case will be updated, and the PIU Social Safeguards Specialist will communicate the decision to the AP within 14 days of filing.

174. To solve the assigned tasks, the committee (GRM) performs the following functions:

- 1) Reviews appeals/complaints on gender, environmental and social protection measures, and resettlement received from people affected by IWMP.
- 2) Monitoring the implementation of previously made decisions.

175. The committee chairman will perform the following functions:

- 1) Presides over the meetings of the committee and organizes its work.
- 2) Has a casting vote at meetings of the committee.
- 3) Approves the agenda for the committee meetings.
- 4) Appoints a date, time and place of committee meetings.
- 5) Follows up the execution of the committee's decisions.

176. The committee has the right to:

- 1) Hold meetings when appeals and complaints are received.
- 2) Check the materials (documents) related to the received appeals/complaints submitted for consideration by the committee.
- 3) Request and obtain information from state bodies, local self-government bodies and organizations, regardless of their organizational and legal forms and forms of ownership, in accordance with the established procedure.
- 4) If necessary, invite to the meetings of the committee representatives of state bodies, local self-government bodies, civil society, as well as persons who have submitted appeal/complaint.

177. Members of the committee have the right to:

- 1) To recuse themselves or inform the committee's chairman of circumstances for the recusal of one or more members of the committee if such circumstances have become known and they lead to a conflict of interest.
- 2) Notify the committee's chairman about attempts to impact on the results of the committee work by persons involved in the consideration of the appeals/complaints or other interested parties.
- 3) The committees carry out their activities in the form of meetings.
- 4) Meetings of the committee shall be deemed as valid if at least half of its members are present, and members of the committee shall participate in its meetings without the right to be replaced.
- 5) The chairmen of committees preside at the meetings of the committees, and, in their absence, the deputy chairmen of the committees shall preside.
- 6) In there is no quorum at committee meetings, or if the resolution of a disputed issue requires to request additional materials, or take other measures, the time for consideration of the appeal / complaint by the committee may be exceptionally extended, but not more than by 25 calendar days.
- 7) Decisions of the committees shall be taken by open ballot and shall be deemed adopted if a majority of the committee members vote in favor.
- 8) Minutes of the committee's meetings should be recorded.
- 9) At the construction phase of the project, this procedure will be slightly modified to reduce adverse impacts at the lowest level and address short-term adverse impacts, incidents, and complaints directly with the contractor, such as temporary blocked access, isolated dusty conditions, inconveniences. The contractor should keep a complaint log in the site office, and any logged incident will be forwarded to the PIU.
- 10) The public will be informed about the GRM during the public consultation, as well as through regional newspapers and on websites and by PMO.

178. The tentative composition of the GRG for review and redress of complaints and grievances in Karakol is:

- 1) First Vice Mayor of Karakol - Chairman of the Committee
- 2) Head of the Municipal Property Department of Karakol - Deputy Chairman of the Committee (by agreement).
- 3) Representative of Karakol Branch of the State Enterprise "Cadastre".
- 4) Representative of the Issyk-Kul Territorial Department of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic.
- 5) Representative of Karakol Department of Urban Planning and Architecture of the State Construction Committee.
- 6) Head of Boru-Bash ayil okmotu (by agreement).
- 7) Director of Karakol Vodokanal (by agreement).

- 8) Isanov Sabyrbek Dolosovich - resident of the city of Karakol.
- 9) Kaliev Baktiyar Nazarbekovich - resident of the city of Karakol.
- 10) Representative of IWMP's Consulting Company.
- 11) Manager of IWMP Implementation Unit (PIU);

179. Composition of Grievance Redress Committee at central level:

- 1) Deputy Director of State Agency for Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic - Chairman of the Committee.
- 2) First Deputy Plenipotentiary Representative of the President of the Kyrgyz Republic in Issyk-Kul region - Deputy Chairman of the Committee.
- 3) Deputy Director of the Department of Drinking Water Supply and Sewerage Development under the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of the Kyrgyz Republic.
- 4) Head of Drinking Water and Sewerage Development Unit of Department of Drinking Water Supply and Sewerage Development under the State Agency for Architecture, Construction, Housing and Communal Services under the Cabinet of the Kyrgyz Republic.
- 5) Representative of IWMP's DSC
- 6) .PMO Environmental Specialist, IWMP.
- 7) PMO Social Safeguards and Resettlement Specialist.

8 ENVIRONMENTAL MANAGEMENT PLAN

180. The EMP provides the basis for action and responsibility in relation to the specific environmental, social and cultural heritage concerns raised in this IEE. It ensures that appropriate preparatory, preventive and mitigation measures, as well as effective monitoring and follow-up actions, are properly implemented in a timely manner by designated entities. The actions and responsibilities specified in the EMP has been applied during the detailed design work and incorporated into the contract bidding documents, establishing an agreed framework of shared responsibility for ensuring that the proposed activities are fully compliant – throughout the pre-construction, construction and operational phases, as set out in the ADB's SPS 2009 and in the relevant laws, standards and regulations of the KR.

8.1 Mitigation and Monitoring Actions

181. This section provides an overview of and guide to the mitigation and monitoring actions that have been specified on the basis of impact analysis in Chapter VI of this report.

8.1.1 EMP Tables

182. The impacts identified in the course of the analysis presented in this report are listed as line items in EMP, which appears in Table 8-1 -Table 8-6 for design, construction and operation phases for different direct impact areas. Alongside each impact, the recommended mitigation action or actions; location and timing of their implementation; responsibility for their implementation; and responsibility for supervising their implementation is detailed. The EMP provides the basis for defining contractual obligations for contractors, as well as responsibilities and expectations for the vodokanal, municipal and national government entities, and Project staff.

183. Accompanying the EMP is a table which specifies the follow-up actions required to ensure that the prescribed mitigation measures are in fact implemented appropriately. This Environmental Monitoring Table provides the basis for ensuring accountability and thoroughness in relation to certifying the environmental soundness of the Project and helps define responsibilities and expectations for the Project staff and governmental entities involved in the follow-up. In the case of mitigation measures specified for the operation phase, the monitoring responsibilities specified in the EMoP (Environmental Monitoring Program) provide a basis for the establishment of long-term compliance monitoring programs. EMoP is provided at the end. Indicators of EMoP implementation performance are of two general types: (i) those that can be measured or observed in the environment; and (ii) those that are reported and can be measured with reference to compliance monitoring, reporting, and communication with people in the Project area.

184. It is anticipated that the following SSEMPs, as a minimum, will form part of the overall Environmental Management System.

- Tree Management Plan
- Asbestos Management Plan
- Traffic Management Plan
- Waste Management Plan
- Archaeological Chance Finds Protocol/Plan
- Water Course Protection Management Plan
- Construction Camp Management Plan
- Response measures in emergency situations

- Air quality and Dust Suppression Plan
- Complaints Log Book
- Health and Safety Management Plan
- Construction management plan

8.1.2 Pre-Construction Phase

185. Impacts arising in the pre-construction phase typically involve land acquisition and resettlement of people displaced as a result of infrastructure siting decisions. Although conventional land acquisition or resettlement will not be required for construction of SPS. Other components to be installed outside the boundaries of the existing sites will be installed either on land already owned by the relevant vodokanal or in existing public rights-of-way. The preconstruction section of the EMP also includes several line items for impacts for which mitigation measures are prescribed. These are impacts likely to arise during the construction and operation phases, but for which preventive mitigation action is appropriate in the pre-construction phase, especially during detailed design work. Similarly, mitigation of most construction period impacts appropriately begin with incorporation of preventive measures into the Contractor Environmental Management Work Plans during construction planning. It will be ensured that all design related measures of the EMP are included design and EMP is included in bidding documents and civil works contracts. The bid/contract documents will include specific provisions requiring contractors to comply with all applicable labour laws and core labour standards, and with the requirement of the hiring Environmental Health and Safety Officer. It will be ensured that EMP cost must be included in the contract of Construction Works contractor. Prior to invitation of bids and prior to award of contract, it was ensured that all clearance/permissions as required for implementation of subproject are in place, to the extent possible.

8.1.3 Construction Phase

186. Characterization of the sub-project " Karakol Sewerage Network Improvement. Reservoir for wastewater on SPS#4 site Pristan-Przhevalsk is given in Section 3.4 Description of the project implementation in Karakol/Pristan-Przhevalsk. Construction phase impacts are related to the effects of specific construction practices on elements of the biophysical environment and on people. Construction sites are designed for municipal land, and in this project the impact on households is excluded. In this regard, a social due diligence report was prepared, approved by ADB and posted on the website. The Executing Agency/PMU will ensure that the contractor notifies nearby households in advance and restores any disturbed property. Some of these can be severe and long-term, e.g., soil erosion, surface water contamination, and worker exposure to asbestos dust, if preventive action is not taken. Most construction impacts, such as noise, vibrations, disruption of community life, and dust and emissions, are temporary, and can generally be addressed through relatively simple interventions like good maintenance and being a responsible contractor. In this regard, during the preparation period before the implementation of the project, public hearings were held in Karakol City Hall on October 29, 2020 and July 25, 2023 for the community to familiarize them with the preventive measures provided by the design, as well as environmental and social protection measures. The implementation of measures to reduce environmental and social impacts were discussed in detail. Brief brochures with information about the Grievance Redress Mechanism and any appeals to local focal point were developed and distributed. Environmental and social monitoring activities will be conducted regularly until the completion of construction works.

187. All construction period impacts identified in the EMP are generally minimized through implementation of mitigation measures prescribed in the EMP as (good site practices), and none are likely to be permanent or long-term, provided they are addressed as identified.

(i) Prior to start of construction:

- Ensure that all necessary clearances/permissions/licences, including that of contractor's are in place prior to start of construction.

- Provide oversight on environmental management aspects of project and ensure EMPs are implemented by contractors. The contractor submitted SSEMP to PMO, for review and approval.
- (ii) Oversee and provide guidance to the PMO to properly carry out the environmental monitoring as per the EMP
- (iii) Oversee grievance redress mechanism to address any grievances brought about in a timely manner; ensure that records are properly maintained
- (iv) Consolidate quarterly environmental monitoring reports from PMO and submit semi-annual monitoring reports to ADB.
- (v) Oversee site closures to ensure that all work / facility sites are restored properly prior to issuing work completion certificate to the contractor.
- (vi) Post-Construction stage: the contractor will be requested to submit a post-construction audit report, including photographic documentation and confirmation that all disturbed areas have been restored to at least preconstruction condition and that all materials that will not be used for facility operations have been removed and disposed.

8.1.4 Operating Period

188. Impacts with potential to be experienced in the operating phase of the Project are varied and include noise and odour impacts associated with community disturbances during sewer maintenance.

189. Sewage infrastructure conveys sewage to a sewage treatment plant. The components of sewage infrastructure primarily consist of pipes, house connections, and manholes. An effective maintenance program is essential to the operation of a sewage system. Sewer infrastructure maintenance consists of cleaning, inspection, assessment, and repair. In case of failure of a sewerage system, the excavation will be required to remove the damaged pipe and replace the broken section(s) of pipe, to install a connection thereto and pour a concrete base under the City sewer or provide adequate support, if the material removed from the hole is unacceptable for backfilling, a new backfill material will be found, hauling off any excess dirt or other material unacceptable for backfill, removal of any debris left on a safe disposal area, replacing the surfacing. .

ENVIRONMENTAL IMPACT MITIGATION PLAN

Table 8-1: Environmental impact mitigation plan – Pre-construction Phase

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Submission of updated environmental management plan (EMP)/ SSEMP; EMP implementation and reporting	Unsatisfactory compliance to EMP	(i) Appoint Environmental, Health and Safety (EHS) Supervisor to ensure EMP implementation (ii) Submission of updated EMP/ SSEMP (ii) Timely submission of monthly monitoring reports, including documentary evidence of the implementation of the EMP, such as photographs	Contractor	Contractor Costs
Utilities	Telephone lines, electric poles and wires, water lines within proposed project area	i) Identify and include the locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during the construction phase; and (ii) Require construction contractors to prepare an emergency plan that includes actions to be taken in the event of an unintended interruption of services.	Project Management Office (PMO)	
Consents, permits, clearances, No Objection Certificates (NOCs), etc.	Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works	(i) Obtain all necessary consents, permits, clearance, NOCs, etc. prior to award of civil works. (ii) Ensure that all necessary approvals for construction to be obtained by contractor are in place before start of construction (iii) Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.	Contractor, PMO	PMO costs for project approvals Contractor cost for construction approvals

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Protection of historical/cultural areas	Identify potential historical / cultural sites that could be affected by onsite or offsite construction activity. Locate optional construction sites/activities away from them. Ensure construction personnel are aware of locations of historical / cultural areas and avoid them. If the proposed construction passes close to historical / cultural areas, include temporary fences to restrict machines and activities from encroaching in the area.	Chance Finds Procedure as part of the EMP for the construction phase includes provision for ceasing work and notifying the Engineer should artifacts of cultural or historical importance be unearthed. A provisional sum shall be identified in the Contract document to cover the costs of engaging a national archaeological specialist to determine the status of the find and remedial works needed.	PMO agreed that a detailed survey is carried out and mitigation requirements (in the form of protection of off alignment features and relocation of online features) are included in the contract documents. PMO agreed that a provisional sum is included in the Contract Document to cover the cost of engagement of a national archaeological specialist to visit the site, assess any chance finds and identify mitigation / remedial programs.	Project cost
SPZ for SPS #4	Negative Impact on environment and human health due to the operation of the proposed facility, the impact shall include, pollutants emitted into the environment, noise, vibration and other harmful physical factors	The estimated SPZ is 15meters, which should be formed before the initiation of the construction works ((refer to Appendix 3 of Sanitary and epidemiological rules and standards "Sanitary Protection Zones and Sanitary Classification of Enterprises, Structures and Other Facilities" (SanPiN)).	Contractor under the supervision of the DSC and PMO	Contractor cost
Chance finds	Damage / disturbance to artifacts	Contractor to follow these measures in conducting any excavation work <ul style="list-style-type: none"> • Create awareness among the workers, supervisors, and 	Contractor	Contractor cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<p>engineers about the chance finds during excavation work</p> <ul style="list-style-type: none"> • Stop work immediately to allow further investigation if any finds are suspected; • Inform departments of archeology if a find is suspected, and taking any action they require to ensure its removal or protection in situ. 		
Asbestos containing materials (ACM)	Asbestos fibers can increase risk of fatal diseases like Asbestosis (a scarring of the lungs that causes increasingly labored breathing) Mesothelioma (a cancer of the lining of the lungs and abdominal cavity) Lung cancer	<ul style="list-style-type: none"> • Hire an Asbestos Expert to undertake training for all workers / contractors in identifying existing ACM and on Occupational Environment, Health and Safety related to potential hazardous material exposure • Conduct detailed walk over survey by ACM expert to ascertain the location of any ACM prior to construction / pipelaying works • Conduct the pipelaying works without disturbing any ACM • Support contractor assigned person (Contractor ACM) in conducting site assessment, developing inventory of existing ACM including tagging and marking locations of existing ACM in all site maps. 	Contractor	Contractor cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> • Develop ACM management plan/protocol for compliance with asbestos policies of major international agencies²² and national requirements • Submission of site assessment, inventory, and ACM management plan to DSC/PMO for review and approval • Contractor-ACM to carry out general awareness campaigns on ACM exposure for field staff and community • Conduct training of workers on ACM during orientation / induction 		

Table 8-2: Environmental impact mitigation plan – Construction Phase

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
EMP Implementation Training	Irreversible impact to the environment, workers, and community	Project manager and all key workers will be required to undergo training on EMP implementation including spoils/waste management, Standard operating procedures (SOP) for construction works; occupational health and safety (OHS), core labor laws, applicable environmental laws, etc.	Contractor	Project cost
Cultural heritage Chance finds. Archaeological find on site. The desk survey did	Damage/disturbance to artifacts	<ul style="list-style-type: none"> • Construction contractors to follow these measures in conducting any excavation work • Create awareness among the workers, supervisors and engineers about the chance finds during excavation work 	DSC, Contractor, PMO	Contractor Costs

²² In the USA, standards and approaches for handling asbestos are prescribed by the Occupational Health and Safety Administration (OHSA) and the Environmental Protection Agency (EPA) and can be found at <http://www.osha.gov/SLTC/asbestos>

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
not identify any cultural and heritage elements on the pump station site Casual finds: there is always potential, during excavation works for cultural and archeological artifacts to be uncovered		<ul style="list-style-type: none"> • Stop work immediately to allow further investigation if any finds are suspected. Inform Ministry of Culture if a find is suspected and taking any action, they require to ensure its removal or protection in situ. • Chance Finds Procedure as part of the EMP for the construction phase includes provision for ceasing work and notifying the Engineer should artifacts of cultural or historical importance be unearthed. (Refer Appendix 2) 		
Earthworks	<ul style="list-style-type: none"> • Instability due to Earthworks • Trench Collapse • Impact upon structures and houses • Slip hazard due to long and unattended trench • Slope failure • Disturbance to existing customs, movements and way of life of local people in the different sections of subproject alignments. 	<ul style="list-style-type: none"> • Shoring should be properly maintained along the excavated trenches • Water flows need to be managed • Erection of safety signage boards, project information boards, prohibiting unauthorized person. If trenches or excavations for the manholes will be left open longer than 24 hours, provide night lights, solid barricades, and reflectorized signages. • Excavated materials shall be handled properly, which shall be loaded to dump truck and shall be taken to temporary disposal/storage site. The excavated material shall not be stored along the excavated trench. • Avoid any accident • Implement all other applicable site-specific mitigation measures as indicated in the respective SEMP 	Contractor/ DSC	Contractor Costs
Shoring works	Inadequate shoring can result in equipment falling into the excavation/trench and	<ul style="list-style-type: none"> • Inspect the shoring system through the duration of a project. If there's any doubt about the safety of the shoring, stop use immediately and contact a site supervisor. 	Contractor/ DSC	Contractor Costs

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
	injury or death to the workers	<ul style="list-style-type: none"> Shoring systems should not be used for fall protection. Furthermore, workers should not use shoring systems if they feel dizzy or lightheaded 		
Collection, storage and backfilling of excavated materials	Air pollution as dust will be generated during loading and transportation of materials Excavated materials if piled along the trench likely to occur trench collapse. Disturb mobility of people;	<ul style="list-style-type: none"> Excavated materials will be directly loaded to dump truck/disposal vehicle and will take to temporary disposal sites. No excavated materials will be piled along the trench and along the roadside near the excavated trench. Identify temporary disposal site 	Contractor	Contractor Costs
Social or Community Concerns	To minimize social disturbance and maximize community benefits from the project:	<p>Decision to close a particular street and divert the traffic should involve the following steps:</p> <ul style="list-style-type: none"> approval from the relevant authorities to use the local streets as detours; consultation with businesses, community members, traffic police, etc., regarding the mitigation measures necessary at the detours where the road is diverted during the construction. determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents. determining if additional traffic control or temporary improvements are needed along the detour route. considering how access will be provided to the worksite; approval from the relevant authorities to use the local streets as detours; consultation with businesses, community members, traffic police, etc., regarding the mitigation measures necessary at the detours where the road is diverted during the construction. 	Supervision by DSC Implementation by Contractor	Included in overall project cost; Assume: meetings with residents before construction, during construction and after construction.

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> • determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents. • determining if additional traffic control or temporary improvements are needed along the detour route. • considering how access will be provided to the worksite; 		
	Increased risk of road traffic accident due to construction traffic movements	<ul style="list-style-type: none"> • Actively enforce speed limits for Project vehicles. • Awareness program for local population prior to works commencing, including visits to local schools • Development of Traffic management Plan as part of the SSEMP • Drivers to be fully competent and authorized to drive heavy loads vehicles and to receive specific training. • Ensure that all drivers have completed training and are licensed to drive the vehicles they are operating. • Limits to be adopted and enforced for maximum number of work hours to avoid overtiredness. • Minimise the number of road movement's as much as practicable, maximizing capacity of vehicles. • Schedule road movements to minimise impact on existing road users. • Zero tolerance policy for drug and alcohol use amongst all workforce • Providing signages, guardrails or barriers, metal planks as walkways or cover for vehicles, night lighting etc. 	Supervision by DSC Implementation by Contractor	Included in overall project cost
	Impacts on health of dust and noise emissions	<ul style="list-style-type: none"> • Avoid using older vehicles and machinery, with significant noise and air emissions. • Build trenches in short lengths; refill quickly; remove excess spoil quickly. Water unpaved site roads and large areas of exposed soil thrice daily in dry weather. 	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> • Ensure that no noise above 70 dB(A) is audible for significant periods within 50 m of any construction site and • Cease activity producing significant noise at night (19:00 pm 07:00 am), Sundays & Public Holidays. 		
Community Socioeconomics	Positive effect - short term employment of local people, this can offset some of the disturbance experienced by people living near construction sites.	<ul style="list-style-type: none"> • Develop plan for local recruitment of workers for project - train as required • Employ at least 30% of workforce from the vicinity of construction works if possible 	Contractor	No additional cost associated.
Air Quality	Localised changes in ambient air quality due to operation of mobile and stationary equipment burning fossil fuels.	<ul style="list-style-type: none"> • Contractor to maintain all fossil fuel burning equipment in accordance with manufacturer's recommendations. • Contractor to use good quality equipment with minimum emissions and avoid using old equipment and vehicles • No equipment shall be left idling if not in use. 	Supervision by DSC Implementation by Contractor	Included in overall project cost
	Emissions from mobile and stationary equipment on sewer lines, affecting local air quality standards	<ul style="list-style-type: none"> • No equipment shall be left idling if not in use. • Contractor to use good quality equipment with minimum emissions and avoid using old equipment and vehicles 		
	Fugitive dust emissions from works, construction traffic causing dust soiling and increase in PM2.5 and PM10	<ul style="list-style-type: none"> • Construction traffic speed limit when passing through populated areas • Water of dusty-unpaved roads and populated areas 		
	Transportation of construction materials	<ul style="list-style-type: none"> • Dust suppression by water tankers with sprinkling systems are to be deployed along regularly trafficked routes. 	Contractor with approval of DSC/PMO/PIU	Contractor Costs

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> • The vehicles deployed for material transportation will be spill proof to avoid or minimize the spillage of the material during transportation. • Transportation links are to be inspected daily to clear accidental spillage, if any. • Precaution will be taken to avoid inconvenience to the local community due to movement of materials. • Dry materials to be covered to avoid dust blow. 		
Noise and Vibration	Noise disturbance due to equipment and construction activities.	<ul style="list-style-type: none"> • Awareness program for local residents prior to commencement of works • Limitation of working hours for normal construction activities near to settlements times to be set out in the EMP and SSEMP • Avoid using older vehicles and machinery, with significant noise and air emissions. • No idling of equipment when not in use • Plan activities in consultation with PMO so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance, especially near schools and other sensitive receptors. • Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity; if any building at risk, structural survey be completed prior to work, to provide baseline in case any issues from vibration, and if building is structurally unsound that measures taken to avoid any further damage. • Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach. • Consult local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as night times, religious and cultural festivals. 	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Occupational Health and Safety	Poor quality housing and hygiene standards resulting in injury or sickness	<p>Contractor to ensure that workers accommodation and rights are in line with the FIDIC Pink Book requirements</p> <ul style="list-style-type: none"> • Contract documentation to include requirement that worker accommodation be in line with good practice, such as that set out in World Bank Workers Accommodation Guidance. • Contractor to appoint camp manager who will be responsible for ensuring standards of accommodation meet basic requirements and are safe and hygienic 	Supervision by DSC Implementation by Contractor	Included in overall project cost
	Injury or fatality of workers due to insufficient controls on work activities and processes	<ul style="list-style-type: none"> • Contractor shall develop Method Statements for all major activities and include health and safety risk assessment for each of these activities • Contractor shall provide health and safety induction training for all staff, and specific training for staff working on work sites, including COVID-19 measures. • Contractor shall supply to site workers, free of charge all necessary Personal Protective Equipment (PPE) to include as protective footwear, high visibility vests, safety helmet and hearing protection. For specific tasks other PPE may be required, for example welding masks, hot work gauntlets • Contractor will prepare and implement a Health & Safety (H&S) Plan for all work sites and activities (including COVID-19 measures and emergency response plans for it) • Contractor will train and assign a specialist as Health and Safety officer as responsible person for the duration of the project. • Provision of health care and first aid - Contractor shall ensure that adequate first aid supplies, disinfectants, masks, gloves, etc. and trained first aiders are available. If required Contractor will 	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Hazardous and Non-hazardous waste management including Asbestos Containing Materials (ACM)	To manage all hazardous and non-hazardous waste as per international best practices.	<p>organize polymerase chain reaction test (PCR) which detects genetic material from a specific organism, such as COVID-19.</p> <ul style="list-style-type: none"> • A waste management plan will be developed prior to the start of construction, including an Asbestos Management Plan in accordance with international good practices and protocols on handling and disposing ACM. This plan will cater to sorting of hazardous and non-hazardous materials prior to disposal, placing of waste bins at the project site for waste disposal and an onsite hazardous waste storage facility • Periodic on-site audits of waste management will be undertaken along with auditing of waste disposal Contractors and disposal facilities on regular basis to check that procedures are being followed. • Records of all waste generated during the construction period will be maintained. Quantities of waste disposed, recycled or reused will be maintained • Licensed waste Contractors will be engaged to dispose of all non-hazardous waste material that cannot be recycled or reused. • Training will be provided to personnel for identification, segregation, and management of waste. 	Supervision by DSC Implementation by Contractor	Included in overall project cost
Occupational Health and Safety	Establishment of construction camp sites (offices)	<ul style="list-style-type: none"> • The construction campsites will be located away from any local human settlement areas and preferably located on lands, which are barren/waste lands. • The campsites will be provided with adequate water supply, sanitation and all requisite infrastructure facilities. This will minimize dependence on outside resources, presently being used by local populace and minimize undesirable social friction. 	Supervision by DSC Contractor with approval of DSC	Contractor Costs

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> • The camps will have septic tank/soak pit of adequate capacity so that it can function properly for the entire duration of its use. • After completion of construction works, location of campsites will be restored to its previous state by undertaking clean-up operations. 		
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	<ul style="list-style-type: none"> • Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and • All excavated roads shall be reinstated to original condition. • All disrupted utilities restored • All affected structures rehabilitated/compensated • The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. • All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and re-grassed using the guidelines set out in the revegetation specification that forms part of this document. • The contractor must arrange the cancellation of all temporary services. • Request PIU/PMO to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work. 	Contractor	Contractor Costs
Waste Management	Inappropriate management and disposal of waste during construction	<ul style="list-style-type: none"> • Include appropriate waste management protocols • Location of appropriate waste storage facilities at all work sites • Worker induction and regular tool box talks to make all staff • aware of zero waste discharge to environment • Zero tolerance of waste entering water course or flood plain areas, this will include all materials (e.g. welding rod stubs, wood, plastics and metals). 	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
	<p>Poor waste management practices resulting in direct and indirect effects on project area environment</p>	<ul style="list-style-type: none"> • All hazardous waste containers to be labelled clearly with a waste hazard identification label. • Contractor will establish a demarcated temporary waste storage area where waste is stored pending transport to final treatment/disposal location. • Contractor will put in place measures to minimise waste, i.e. procure materials with less packaging, refrain from ordering excess materials, make arrangement with suppliers to return surplus, unused materials. • Contractor will take measures to prevent the disposal, burying and burning of waste on-site, roadside dumping and illegal land filling. • Contractor workforce will be trained in the requirements of the Waste Management Plan, particularly with regards to waste segregation, storage and handling. • Implementation of recycling/recovery initiatives to reduce waste sent for disposal. • Contractor will practice good housekeeping on site. • Waste storage containers will be secure, undamaged and appropriately labelled. • Waste to be segregated and containers clearly labelled specifying which type of waste is contained to assist with identifying appropriate disposal routes and in case of accidental spills or loss to the environment. • Waste to be stored in appropriate containers or skips and removed for treatment/disposal at a frequency so as to avoid the build-up of waste on site. • Waste will be collected and transported under cover of a Waste Collection Log and Waste Manifest. 	<p>Supervision by DSC Implementation by Contractor</p>	<p>Included in overall project cost</p>
	<p>Cleaning work sites and waste disposal</p>	<ul style="list-style-type: none"> • All operational areas (office/storage area, work force camps) will be cleaned up and restored to their previous state soon after operations are complete. 		

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> All construction waste will be disposed in approved municipal dump sites, after receiving permit for construction waste disposal from the Municipality. Local district authorities will be consulted to determine any conditions imposed while issuing permits. 	Supervision by DSC Contractor with approval of DSC	Contractor Costs
Water resources	Potential for contamination of water course due to release of hydrocarbons or oils and grease etc.	<ul style="list-style-type: none"> Contractor to conduct risk assessment on all activities near to water courses and apply appropriate controls. No refueling of vehicles or equipment to take place within river beds or within 25 meters of the edge of the water course. Works in the water protection zone of the river to be carried out with the special requirements that will be reflected in the SEMP. 	Supervision by DSC Implementation by Contractor	Included in overall project cost
Biodiversity	Potential impacts on trees/vegetation adjacent to work sites	<ul style="list-style-type: none"> Contractor to develop a tree protection plan as part of the SEMP. This will as a minimum set out restrictions on tree removals, stock piling soils over tree root systems, excessive compression of soils around tree root systems. Prior to any clearing of vegetation, a Contractor will make a species inventory of the area to be cleared; use vegetation inventory to identify appropriate local plant species to be used for revegetation. Trees will not be cut unless justified on engineering, safety, and environmental grounds. Worker awareness training to include protection of trees. No tree cutting for fuel to be allowed Plant three trees of same specie for each tree that is cut for construction. 	Supervision by DSC Implementation by Contractor	Included in total project costs (a number will be confirmed during SEMP preparation)
Soil and Ground Water	Accidental spillage of hydrocarbon affecting local ground water	<ul style="list-style-type: none"> Fuels should be stored in good quality above ground tanks placed on an impervious surface with a spill containment bund capable of containing 110% of the tank capacity 	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<ul style="list-style-type: none"> No onsite refueling within or adjacent to water courses On site refueling of equipment and vehicles shall utilise a drip tray to prevent hydrocarbons entering the ground. 		
	Potential damage or loss of soil resource due to erosion or improper handling.	<ul style="list-style-type: none"> Soils shall be protected from water and wind erosion. Removal of vegetation shall be minimised Topsoil resources should be stripped from site and stored for later restoration. Stockpiles should be no more than 1.5 m in height and shall be protected from erosion either by seeding with quick growing non-invasive grass mix or covered. Valued topsoil shall not be compressed by tracking of equipment and machinery. 	Supervision by DSC Implementation by Contractor	Included in overall project cost
Reporting	Environmental monitoring and reporting to confirm compliance	Safeguards Monitoring: Contractor's monthly reports and DSC's quarterly progress reports should have a section on safeguard compliance. PMO will submit for disclosure on ADB and EA websites semi-annual environmental monitoring reports (SAEMR) in January and July each year. Final EMR will include post-construction environmental audit and will be submitted one month after the project physical completion.	Implementation by Contractor, DSC, PIU and PMO	Included within management costs

Table 8-3: Operating Phase Environmental Mitigation Plan of SPS #4, 28 manholes and pipeline.

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Community disturbances during maintenance of SPS#4, 28 manholes and pipeline	Contamination caused by accidental spills	<ul style="list-style-type: none"> Emergency areas will be contained and cleaned up immediately Contaminated soil will be removed, placed in a sealed container, and taken to a safe area for disposal Contaminated soil will be replaced with clean aggregate material 	Vodokanal	Included in maintenance budget of Vodokanal

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
	Air pollution	Machinery and equipment must be operated properly during operation of sewerage	Vodokanal	Included in maintenance budget of Vodokanal
	Noise	All parts used in mechanical equipment in the sewerage systems must be tightly secured	Vodokanal	Included in maintenance budget of Vodokanal
	Water pollution Emergency pipeline breaks	Efficient operation of pipelines will ensure quality work of sewerage networks in Karakol and Pristan-Przhevalsk	Vodokanal	Included in maintenance budget of Vodokanal
Response measures in emergency situations	Emergency response teams are created as soon as possible	Thorough and continuous monitoring of the sewage network and systems providing early warning of malfunctions	Vodokanal and stakeholders	Included in maintenance budget of Vodokanal
Operation and maintenance of sewerage system	Blocks, overflows, system malfunction, occupational health and safety	<p>Establish regular maintenance program, including:</p> <ul style="list-style-type: none"> • Regular cleaning of grit chambers and sewer lines to remove grease, grit, and other debris that may lead to sewer backups. Inspection of the condition of sewer structures and identifying areas that need repair or maintenance. Items to note may include cracked/deteriorating pipes; leaking joints or seals at manhole; frequent line blockages; lines that generally flow at or near capacity; and suspected infiltration or exfiltration; and • Monitoring of sewer flow to identify potential inflows and outflows • Conduct repairs on priority based on the nature and severity of the problem. Immediate clearing of blockage or repair is warranted where an overflow is currently occurring or for urgent problems that may cause an imminent overflow (e.g. pump station failures, sewer line ruptures, or sewer line blockages); • Maintain records; review previous sewer maintenance records to help identify “hot spots” or areas with frequent maintenance problems and locations of potential system failure, and 	Vodokanal and stakeholders	OPEX

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		<p>conduct preventative maintenance, rehabilitation, or replacement of lines as needed.</p> <ul style="list-style-type: none"> • When a spill, leak, and/or overflow occurs, keep sewage from entering the storm drain system by covering or blocking storm drain • inlets or by containing and diverting the sewage away from open channels and other storm drain facilities (using sandbags, inflatable dams, etc.). Remove the sewage using vacuum equipment or use other measures to divert it back to the sanitary sewer system. • Prohibit/prevent disposal of wastewater/effluent from industrial units in the sewers; ensure regular checking to ensure no illegal entry of industrial wastewater into sewers • Develop an Emergency Response System for the sewerage system leaks, burst and overflows, etc. • Provide necessary health and safety training to the staff in sewer cleaning and maintenance • Provide all necessary personnel protection equipment • Do not conduct manual cleaning of sewers; for personnel engaged sewer maintenance work, there is a risk due to oxygen deficiency and harmful gaseous emissions (hydrogen sulfide, methane, etc.); provide for adequate equipment (including oxygen masks) for emergency use. 		

9 Environmental Monitoring Plan (EMoP)

190. EMoP implementation performance are of two general types: (i) those that can be measured or observed in the environment; and (ii) those that are reported and can be measured with reference to compliance monitoring, reporting, and communication with people in the Project area.

Table 9-1: Environmental monitoring plan of construction of SPS #4 in Pristan-Przhevalsk, reconstruction of 28 manholes and replacement of pipeline through Karakol River.

Project Activity and Potential Impact	Objective of Monitoring	Monitoring parameters	Measurements:	Location	Frequency	Responsibility
Preconstruction Phase Monitoring Requirements						
Air Quality	To establish baseline air quality levels	CO, NOx & PM10 (particulate matter smaller than 10 microns) concentration at receptor level	1-hr and 24-hr concentration levels	Receptor locations TBD to be provided by PMO and DSC prior to contract award	Twice in total (Once on a weekday and once on a weekend)	Contractor
Ambient Noise	To establish baseline noise levels	Ambient noise level near key noise sensitive receptors	A-weighted noise levels	receptor locations TBD by DSC	Twice in total (Once on a weekday and once on a weekend)	Contractor
Construction Phase Monitoring Requirements						
Noise Disturbance due to noise from construction activity	To determine the effectiveness of noise abatement measures on sound pressure levels	Ambient noise level near key noise sensitive receptors	A-weighted noise levels	At key receptor locations	On monthly basis	Contractor
Air Quality Dust emissions from construction vehicles and equipment	To determine the effectiveness of dust control program on dust at receptor level	CO,NOx & PM10 (particulate matter smaller than 10 microns) concentration at receptor level	1-hr concentration levels	At key receptor locations	On monthly basis	Contractor
		Visible dust	Visual observation of size of dust clouds, their dispersion, and the direction of dispersion	Sites	On daily basis	Contractor's H&S/DSC Environmental Specialist

Project Activity and Potential Impact	Objective of Monitoring	Monitoring parameters	Measurements:	Location	Frequency	Responsibility
Workers camp – water quality monitoring (drinking water)	To determine water quality to ensure worker's safety and health	To meet national drinking water quality standards and/or WHO Guidelines for Drinking Water Quality	Instrumental water quality test	At workers camp	On weekly basis	Contractor's H&S/DSC Environmental Specialist
Increase in traffic accidents	To minimize risk of traffic accidents	Number of accidents taking place	Visual monitoring	Construction vehicles traveling to/from construction sites	On weekly basis	Contractor's H&S/DSC Environmental Specialist
Safety precautions by Safety workers	To prevent accidents for workers and general public	Number of near miss events and accidents taking place	Visual inspections	Sites	On weekly basis	Contractor's H&S/DSC Environmental Specialist
Water pollution	Surface water quality change	Content of oil products in water and major components in accordance with national standards	instrumental monitoring	Karakol River	On weekly basis	Contractor's H&S/DSC Environmental Specialist
Soil Pollution	To prevent contamination of soil from oil and toxic chemical spills and leakages	Incidents of oil and toxic chemical spills	Visual inspections	Sites	Once a month	Contractor's H&S/DSC Environmental Specialist
Solid Waste & Effluent disposal Insufficient procedures for waste collection, storage, transportation and disposal	To check the availability of waste management system and implementation	Inspection of solid and liquid effluent generation, collection, segregation, storage, recycling and disposal at construction sites	Visual inspections	Sites	On daily basis Liquid effluent to be tested on quarterly basis	Contractor's H&S/DSC Environmental Specialist

Table 9-2: Environmental Monitoring Plan for SPS #4 in Pristan-Przhevalsk, reconstruction of 28 manholes and replacement of pipeline through Karakol River

Environmental Aspects	Aspect Monitored	Time and Frequency of Monitoring	Place	Responsible party	
				Implementation	Supervision
Preconstruction Phase Monitoring Requirements					
Air Quality	Qualitative analysis of parameters for determination of background levels.	Before construction starts, once	At the sensitive points	DSC	PMO
Construction Phase Monitoring Requirements					
Air Quality.	Qualitative analysis during the construction phase.	During weekly audit by contractor and DSC.	At all working sites as part of regular environmental	Contractor	DSC/PMO
Noise and Vibration	Qualitative analysis during the construction phase.	During weekly audit by contractor and DSC.	At all working sites as part of regular environmental monitoring program	Contractor	DSC/PMO
Operating Phase Monitoring Requirements					
Air Quality	Qualitative analysis of SPZ related parameters during operation	During Operation, Once per year	At the sensitive points	Vodokanal	IKTA of MNRETS/SPZ

Table 9-3: Indicators for Assessing EMoP Implementation

Indicator	Actions	Monitoring parameters	Place	Method	Responsibility
Occurrence of avoidable impacts	Violations of noise limits (construction period)	Ambient noise levels (day, night levels), dB(A)	All construction sites and accesses	Physical noise monitoring (though site observation by DSC is often more immediate and effective)	DSC, PMO
	Sedimentation in watercourses as a result of erosion from work sites (construction period)		All construction sites and accesses	Water quality monitoring (though visible observation by DSC is often more immediate and effective)	DSC, PMO
	Exceedances of MAC of airborne asbestos fiber in demolition site indoor air (construction period)		All construction sites and accesses	Indoor air quality monitoring	DSC, PMO
	Spills of fuels, lubricants, coolants or hazardous chemicals at work sites		All construction sites and accesses	Visual site inspections	DSC, PMO
	Exceedances of dust standards at residences and sensitive receptor sites	Air Quality (SPM, RSPM, CO, SO ₂)	All construction sites and accesses	Physical air quality monitoring (though site observation by DSC is often more immediate and effective)	DSC, PMO
Recurrence of impacts	Rate of recurring impact by site/contractor/impact			Review of inspection records	
Compliance with EMP prescriptions	Number of findings of non-compliance as proportion of total compliance findings			Visual site inspections	

Table 9-4: Indicators for Assessing EMP Implementation

Indicator	Actions	Monitoring parameters	Place	Method	Responsibility
Pre-construction Phase					
Delineation of SPZ	Background Levels of Air Quality Parameters (Nitrogen Dioxide, Carbon monoxide, Soot, Sulfur dioxide, Hydrogen sulfide)	As per the government regulations	At the sensitive points	Physical air quality monitoring	Contractor, DSC, PMO
Construction Phase					
Occurrence of avoidable impacts	Violations of noise limits (construction period)	Ambient noise levels (day, night levels), dB(A)	All construction sites and access routes	Physical noise monitoring (though site observation by DSC is often more immediate and effective)	DSC, PMO
	Evidence of sedimentation in watercourses as a result of erosion from work sites (construction period)		All construction sites and access routes	Water quality monitoring (though visible observation by DSC is often more immediate and effective)	DSC, PMO
	Exceedances of MAC of airborne asbestos fiber in demolition site indoor air (construction period)		All construction sites and access routes	Indoor air quality monitoring	DSC, PMO
	Spills of fuels, lubricants, coolants or hazardous chemicals at work sites		All construction sites and access routes	Visual site inspections	DSC, PMO
	Exceedances of dust standards at residences and sensitive receptor sites	Air Quality (SPM, RSPM, CO, SO ₂)	All construction sites and access routes	Physical air quality monitoring (though site observation by DSC is often more immediate and effective)	DSC, PMO
	Exceedances of noise limits	As per the government regulations	At SPS	Noise monitoring	SPZ and Vodocanal
Recurrence of impacts	Rate of recurring impact by site/contractor/impact			Review of inspection records	
Compliance with EMP prescriptions	Number of findings of non-compliance as proportion of total compliance findings			Visual inspections	

Indicator	Actions	Monitoring parameters	Place	Method	Responsibility
	Number of repeat non-compliance findings			Review compliance findings	
Effects of Project activities on public	Number of complaints received by PIO, PMO, and contractor about impacts considered unacceptable by members of public			Gather and count complaint reports	
	Number of grievances files under GRM about impacts			Review GRM records	
Safeguard specialists at work with PMO and Contractor	Safeguard specialists on the staff			Inspection of safeguard specialist contract and terms of engagement.	
Compliance monitoring of the SPZ borders	Air Quality Parameters (Nitrogen Dioxide, Carbon monoxide, Soot, Sulfur dioxide, Hydrogen sulfide)	As per the government regulations	At the sensitive points specified at Figure 8-1.	Physical air quality monitoring	Vodokanal

9.1 Implementation Arrangements

9.1.1 Environmental Requirements to be implemented

191. Implementation of the EMP will require several different classes of actions. Training needs must also be met at this stage, to make the PMO and contractors fully aware of their responsibilities and improve their understanding of environmental impact and mitigation. During construction planning, proactive effort will be required to lay the groundwork for effective implementation of mitigation measures during construction, primarily through the preparation and approval of the SEMP. On-the-ground mitigation actions will dominate during the construction period, as contractors apply the measures specified in the SEMP to the physical works. Similar day-to-day actions will continue in the hands of system operators once the facilities open. EMP implementation will transition to include ongoing testing, analytical and adaptive work in the operation period. Throughout the entire Project life cycle, monitoring for compliance and environmental performance, as well as enforcement, will be a constant.

9.1.2 Implementation arrangement

192. The following organizations and/or staff responsible for EMP implementation, environmental monitoring and/or supervision during the design and construction:

- a. **PMO Environmental Specialist.** To carry out overall coordination in implementing the SEMP, monitoring and control to ensure Contractors' compliance with the norms and requirements of the national environmental legislation, the ADB's Safeguards Policy Statement and prepare analytical documents and reports
- b. **International and National Environmental Safeguard Specialists of DSC.** To assist the PMO Environmental Specialist in coordinating and overseeing design, construction supervision and monitoring activities under the project based on the contract. To undertake the technical oversight for the delivery of all safeguard measures, ensures that SEMP mitigation and monitoring measures implemented, and compliance reporting completed.
- c. **Contractor's environmental managers and/or Health, Safety and Environmental officers.** Responsible for preparation and implementation of Site-Specific Environmental Management Plan (SSEMP) for approval by the Employer (EA) prior to the Contractors taking possession of the construction site; Ensure that the SSEMP is implemented effectively throughout the construction period; Carry out the monitoring and mitigation measures set forth in the IEE/EMP/SSEMP; Establish an operational system for managing environmental impacts; Allocate the budget required to ensure that such measures are carried out. Construction contractor was responsible to prepare monthly progress reports on SSEMP implementation, which should contain information on the main types of activities carried out during the reporting period, status of any clearances/permits/licenses which were required for carrying out such activities, mitigation measures applied, and any environmental issues that have emerged in relation with suppliers, local authorities, affected communities, etc. HSE officers of Contractors carry out the activities stipulated in SSEMPs, monitoring and control to ensure Contractors' compliance with the norms and requirements of national environmental legislation and ADB Safeguards Policy

Terms of Reference for Contractor's EHS Specialist

- Understand the SSEMP requirements and allocate necessary resources (budget, staff, etc.);
 - Understand the regulatory compliance requirements related to labour welfare, safety, environment etc.
 - Mobilize EHS Supervisor prior to start of construction work;
 - Prepare SSEMP and submit to DSC/ PIU;
 - Ensure that all regulatory clearances (both projects related and contractor related) are in place prior to start of the construction work;
 - Prepare and submit
 - Traffic Management Plan,
 - Waste Management Plan,
 - Tree Management Plan
 - Asbestos Management Plan
 - Archaeological Chance Finds Protocol Plan
 - Construction Camp Management Plan
 - Emergency Response Plan
 - Health and Safety Management Plan
 - Air quality and dust management plan
 - Water Quality Management Plan
 - Wastewater Management Plan
 - Implement the mitigation measures as per the SSEMP including various management plans as indicated above;
 - Follow the SSEMP measures/guidelines for establishment of temporary construction camps, construction waste disposal sites, and material borrow areas, etc;
 - Implement SSEMP and ensure compliance with all the mitigation and enhancement measures;
 - Conduct environmental monitoring (air, noise, water, etc.), as per the environmental monitoring plan (included in the SSEMP);
 - Undertake immediate action as suggested by DSC/PIU to mitigate unexpected adverse impacts or ineffective mitigation measures found during the course of implementation;
 - Submit monthly progress reports on SSEMP implementation to DSC/PIU;
 - Act promptly on public complaints and grievances related to construction work and redress in a timely manner in coordination with DSC/PIU; and
Comply with applicable government rules and regulations.
- d. **Authorized state bodies and their territorial divisions:**
- i. State Agency of Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic (SAACCHS),

- ii. Department of Drinking Water Supply and Sewerage Development under the State Agency of Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic (DDWSSD),
- iii. Project Implementation Units in Karakol and Balykchy (PIUs),
- iv. Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic (MNRETS),
- v. Department for Disease Prevention and State Sanitary and Epidemiological Control and the Karakol Inter district Center for Disease Prevention and State Sanitary and Epidemiological Control under the Ministry of Health KR (MoH),
- vi. Ministry of Culture, Information, Sports and Youth Policy (MCISYP),
- vii. Ministry of Emergency Situations (MES), Ministry of Agriculture (MOA) and others.

9.1.3 Reporting

193. Implementation of the EMP will be documented by the PMO working closely with the DSC (environmental specialists), ensuring proper compliance with all mitigation and monitoring measures specified in the EMP. The process of documentation will be guided by the framework provided by the EMP, and incorporate decisions coming from the application of the Grievance Redress Process. The Contractor will submit monthly and quarterly environmental monitoring reports to the DSC. The DSC will prepare semi-annual environmental monitoring report, drawing on the Contractors monthly and quarterly environmental monitoring information and reporting the environmental performance of the project. This document will be disclosed on the ADB project website. Performance indicators specified in Table 8-4.

Figure 9-1: Map of proposed air quality, noise and vibration and SPZ air quality measurement points



Coordinates	Air samples	Coordinates	Water samples (surface sources)
42°32'21.69"C 78°21'47.64"B	A-1	42°32'21.81"C 78°21'46.94"B	SW-1
42°31'36"N 78°22'44"E	A-2	42°34'5.02"C 78°18'33.69"B	SW-2
42°34'2.78"C 78°17'35.16"B	A-3		
42°34'5.02"C 78°18'33.69"B	A-4		

10 SUMMARY AND RECOMMENDATIONS

10.1 Conclusions

194. This IEE has examined the potential impacts of the wastewater management component of the project, which proposes solutions to inadequacies in sewage treatment in Pristan-Przhevalsk village, pipeline conveying water to WWTP (last 28 manholes) and pipe between WWTP and the irrigation pond. This final chapter of the report reviews the findings of the assessment and puts forward recommendations concerning further steps towards Project implementation.

195. The assessment has concluded that the likely positive environmental and social impacts of the Project are considerable and help to address a genuine and significant need. It is clear that virtually the wastewater currently generated in Pristan-Przhevalsk is adequately managed and is instead released directly to the environment. The existing reservoir is in an emergency condition. In order to prevent surface ground water intrusion into the incoming collector of Karakol WWTP which overloads the treatment capacity unnecessarily, final 28 manholes before discharge of Karakol wastewater to WWTP, will be elevated to ground level to prevent surface water intrusion, pipe connections and manholes will be sealed at the sections where ground water level is higher than bottom elevations to prevent ground water intrusion. At the moment, treated water in Karakol WWTP is cumulated in 4 ponds and from these ponds transmitted to irrigation pond with existing gravity line. Transmission capacity of the pipe crossing under the river is decreased since it is utilized for a long period of time due to deposition inside of pipe. Moreover, in the existing situation there is only one pipe crossing the river and there are 2 manholes at both side of river which connects the pipe. There are no standby pipes in parallel for emergency case. In the scope of the project this pipe will be renewed and additional parallel pipe will be inserted for emergency case. Depending on hydrological character of Karakol river, riverbed at crossing may need to be widened to decrease the speed of flow to prevent erosion at bottom to keep stable the pipe under river.

196. The construction work will cover the replacement of existing pipe with 2 parallel pipes in between 2 manholes. Pipes can be covered with concrete and riverbed at the section can be covered with riprap. The river bed can also be widened. Based on loads resulted from wastewater volume, the technical solutions for SPS No.4 in Karakol City are adopted as 2 phases of construction:

- 1 Phase - construction of inlet reservoir.
- 2 Phase - construction of SPS and pressure line.

197. The following structures are considered for Phase no. 1 of construction.

- The receiving reservoir is a steel wastewater tank with a storage capacity of up to 50 m³.
- Site for placement of a reservoir with an area of 1350 m² with perimeter fencing along the guard zone and vehicle access.
- Procurement of 2 sewage trucks with a tank volume of 16 m³ to transport out sewage.

198. No unavoidably severe or permanent negative impacts are likely to arise from project activities, provided appropriate mitigation measures are applied in a timely and competent fashion. The generally low expected incidence of impacts is due in part to the fact that virtually all Project activities will be carried out within existing sites or within public rights-of-way, with no conversion of land from other uses, and with the enforcement of the SPZ.

199. On balance, the potential positive impacts of the Project greatly outweigh the potential negative ones, and this should hold true as long as appropriate mitigation of negative impacts is undertaken. To ensure that this happens, an EMP has been developed to specify appropriate mitigation measures for each individual Project impact, with the timing of implementation indicated and responsibility assigned. The measures included in the EMP cover the entire Project life cycle, from detailed design and construction planning through the eventual end of the operation period. The EMP also specifies responsibility for monitoring the implementation of each mitigation action, to ensure that all are put properly in place when needed, and that implementation problems can be addressed as

they arise.

10.2 Recommendations

200. It is crucial to ensure that environmental measures and monitoring requirements are considered and applied during the project implementation. During the implementation evaluation findings will be regularly reported to ADB and PMO. In view of the impact balance discussed above, as well as the importance of effective mitigation and capacity building, this IEE report concludes with the following recommendations:

- a. The Project should be implemented, because it is needed and can be expected to make an overwhelmingly positive contribution to environmental quality, public health, and social and economic development in the Issyk-Kul basin.
- b. All measures in the EMP for all components, should be fully implemented in a competent and timely manner to ensure that the Project realizes its positive potential.
- c. The institutional capacity building elements of the Project should be pursued with special vigor to ensure the long-term sustainability of the infrastructure and environmental management systems put in place.
- d. The technical capacity building should parallel the institutional strengthening, with a focus on environmental monitoring, data management analysis and information sharing.
- e. During the construction period recommendations from independent evaluations and subsequently tracking and reporting on the implementation of actions should be taken.

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Appendix 1: Rapid Environmental Assessment (REA) Checklist

Instructions:

- (i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.
- (ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title: KGZ: Issyk-Kul Wastewater Management Project: Procurement of Construction of receiving tank (50m³), discharge pipeline (0,2 km) and rehabilitation of the main collector's manholes to WWTP

Sector Division: Water and other urban infrastructure and services

Screening Questions	Yes	No	Remarks
B. PROJECT SITING IS THE PROJECT AREA			
▪ DENSELY POPULATED?		<input checked="" type="checkbox"/>	Population in the project area is sparsely populated
▪ HEAVY WITH DEVELOPMENT ACTIVITIES?		<input checked="" type="checkbox"/>	Not envisaged
▪ ADJACENT TO OR WITHIN ANY ENVIRONMENTALLY SENSITIVE AREAS?	<input checked="" type="checkbox"/>		The IWMP comes under the Issyk-Kul Lake surrounding region, which is a nationally valuable environmental, economic and cultural asset. ²³ Being 180-km long, 60-km wide, and with a surface area of 6,200-km ² , the lenticular-shaped lake is the world's second largest high-altitude lake. As per the Issyk-Kul Biosphere Reserve (IKBR) classification the lake area has been divided into 4 zones, in that the IWMP comes under the Transition Zone ²⁴ , where sustainable economic development is allowed. Hence with exemption to construction related impacts (which is temporary in nature and will exist till the completion of the construction activities), no other major impacts which are irreversible has been envisaged
• CULTURAL HERITAGE SITE		<input checked="" type="checkbox"/>	As per the conducted Initial Environmental Examination (IEE), the whole project area, under the IWMP (including this subproject) do not have any cultural heritage sites in the vicinity or its surroundings
• PROTECTED AREA	<input checked="" type="checkbox"/>		The whole project area, under the IWMP (including this subproject) comes under the Issyk-Kul Biosphere Reserve (IKBR) classification, however, this subproject on the additional works

²³ The lake's rich environmental, archeological and cultural resources are renowned internationally

²⁴ The transition zone focuses on sustainable economic development. Economic activities are permitted, but are regulated so as to ensure sustainable use of ecosystems.

Screening Questions	Yes	No	Remarks
			(Capital repair of 28 manholes, replacement of the pipeline under the Karakol River) comes under IKBR Transition Zone ²⁵ , where sustainable economic development is allowed.
<ul style="list-style-type: none"> • WETLAND 	<input checked="" type="checkbox"/>		Some sections of the Issyk-Kul lake come under the RAMSAR site, however as indicated in the remarks given under "Adjacent to or within any environmentally sensitive areas" construction of this subproject will not have any impact (both construction and operation stages)
<ul style="list-style-type: none"> • MANGROVE 		<input checked="" type="checkbox"/>	Not envisaged
<ul style="list-style-type: none"> • ESTUARINE 		<input checked="" type="checkbox"/>	Not envisaged
<ul style="list-style-type: none"> • BUFFER ZONE OF PROTECTED AREA 	<input checked="" type="checkbox"/>		Please refer the remarks given under Protected area
<ul style="list-style-type: none"> • SPECIAL AREA FOR PROTECTING BIODIVERSITY 	<input checked="" type="checkbox"/>		Please refer the remarks given under Protected area
<ul style="list-style-type: none"> • BAY 		<input checked="" type="checkbox"/>	Not envisaged
A. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE...			
<ul style="list-style-type: none"> ▪ impairment of historical/cultural monuments/areas and loss/damage to these sites? 		<input checked="" type="checkbox"/>	Please refer the remarks given under Cultural heritage site
<ul style="list-style-type: none"> ▪ interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.? 		<input checked="" type="checkbox"/>	Not envisaged. The subproject is planned for construction in such a way that the existing infrastructure including other utilities and access to the locals will not be disturbed.
<ul style="list-style-type: none"> ▪ dislocation or involuntary resettlement of people? 		<input checked="" type="checkbox"/>	Not envisaged
<ul style="list-style-type: none"> ▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups? 		<input checked="" type="checkbox"/>	Not envisaged, as per the prepared and disclosed Project Data Sheet (PDS), this project is classified as "c" as per the SPS 2009
<ul style="list-style-type: none"> ▪ impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage? 		<input checked="" type="checkbox"/>	The subproject is located in the downstream, the key objective of the IWMP is to restore the water quality of the Issyk-Kul lake by replacing the existing dilapidated waste management system to a new technology-based waste management system with better capacity.
<ul style="list-style-type: none"> ▪ overflows and flooding of neighboring properties with raw sewage? 		<input checked="" type="checkbox"/>	Not envisaged, as indicated in the previous remarks, the proposed WWTP at Karakol, will improve the waste water quality and the surrounding environment. Moreover, the ground levels of the WWTP are fixed based on the historical flood levels due to this, flooding in the WWTP will be avoided, for overflow issues, as a precautionary measure, the STP will remain shut during the flooding's (if any) to protect the STP equipment's.

²⁵ The transition zone focuses on sustainable economic development. Economic activities are permitted, but are regulated so as to ensure sustainable use of ecosystems.

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> ▪ environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers? 		<input checked="" type="checkbox"/>	<p>Not envisaged, a sludge disposal plan has been prepared for effective sludge management practices and hence sludge related environmental issues (including groundwater and surface water contamination, deterioration of water quality etc.) shall be mitigated.</p> <p>As per the IEE outcome, a dairy industry located at Karakol used to discharge the wastewater in the existing sewerage network system, which was identified and removed from the proposed sewerage network system. It was also informed to the dairy industry to have their own WWTP</p>
<ul style="list-style-type: none"> ▪ noise and vibration due to blasting and other civil works? 		<input checked="" type="checkbox"/>	<p>Not envisaged, the construction activities proposed under the additional works (Capital repair of 28 manholes, replacement of the pipeline under the Karakol River) are minimal and does not require heavy equipment's for construction works. Blasting operation are not envisaged.</p>
<ul style="list-style-type: none"> ▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation? 		<input checked="" type="checkbox"/>	<p>As indicated in the earlier response, the proposed construction activities under this subproject is very minimal and hence physical, chemical, and biological hazards are not envisaged</p>
<ul style="list-style-type: none"> ▪ discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers? 		<input checked="" type="checkbox"/>	<p>Not envisaged</p>
<ul style="list-style-type: none"> ▪ inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities? 		<input checked="" type="checkbox"/>	<p>Not envisaged, an SPZ has been marked and accordingly this subproject will be implemented</p>
<ul style="list-style-type: none"> ▪ road blocking and temporary flooding due to land excavation during the rainy season? 		<input checked="" type="checkbox"/>	<p>Not envisaged, construction works will be halted during the rainy season.</p>
<ul style="list-style-type: none"> ▪ noise and dust from construction activities? 	<input checked="" type="checkbox"/>		<p>Dust and noise pollution are anticipated during construction activities, however suitable mitigation/ management measures are provided in the EMP, which shall be included in the contract agreement as a requirement for the contractor to fulfill, which shall be monitored by the DSC.</p>
<ul style="list-style-type: none"> ▪ traffic disturbances due to construction material transport and wastes? 		<input checked="" type="checkbox"/>	<p>Not envisaged, as per the assessment, the project area does not have high volume of traffic and hence transportation of the construction materials do not have any traffic disturbance to the locals.</p>
<ul style="list-style-type: none"> ▪ temporary silt runoff due to construction? 		<input checked="" type="checkbox"/>	<p>Not envisaged, construction works will be halted during the rainy season. However, silt management measures are provided in the EMP which shall be adopted to control silt runoff</p>
<ul style="list-style-type: none"> ▪ hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system? 			<p>Not envisaged. Please refer to the remarks given under "overflows and flooding of neighboring properties with raw sewage?"</p>
<ul style="list-style-type: none"> ▪ deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water? 		<input checked="" type="checkbox"/>	<p>Not envisaged, please refer to the remarks given for the question "environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?"</p>

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> ▪ contamination of surface and ground waters due to sludge disposal on land? 		<input checked="" type="checkbox"/>	Same as above
<ul style="list-style-type: none"> ▪ health and safety hazards to workers from toxic gases and hazardous materials which maybe contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unstabilized sludge? 		<input checked="" type="checkbox"/>	Not envisaged, Toxic gas and hazardous materials are not envisaged in this subproject. The WWTP is designed to have UV treatment and hence the pathogens will be removed, a sludge management plan is prepared to safe disposal of sludge
<ul style="list-style-type: none"> ▪ large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)? 		<input checked="" type="checkbox"/>	Not envisaged, as indicated earlier, the proposed subproject involves minimal construction works which shall be managed through engaging local labours and hence huge labour influx and burden on the social infrastructure are not anticipated
<ul style="list-style-type: none"> ▪ social conflicts between construction workers from other areas and community workers? 		<input checked="" type="checkbox"/>	As indicated in the previous remarks, local labours shall be engaged in the construction works and hence social conflicts is not envisaged
<ul style="list-style-type: none"> ▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation? 		<input checked="" type="checkbox"/>	Not envisaged
<ul style="list-style-type: none"> ▪ Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning? 		<input checked="" type="checkbox"/>	Not envisaged, the proposed construction activities do not envisage the mentioned impacts.

A Checklist for Preliminary Climate Risk Screening

Country/Project Title: KGZ: Issyk-Kul Wastewater Management Project: Procurement of Construction of receiving tank (50m³), discharge pipeline (0,2 km) and rehabilitation of the main collector's manholes to WWTP

Sector: Water and other urban infrastructure and services

Subsector:

Division/Department:

	Screening Questions	Score	Remarks ²⁶
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	0	The proposed subproject does not have any impact on the climate condition.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?	0	For the proposed subproject designs, hydro-meteorological parameters are not required
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	The construction materials are chosen to withstand extreme weather condition and hence the life of the project outputs shall not have any impacts
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?	0	Not envisaged
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	Not envisaged

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): LOW

²⁶ If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Other Comments: The proposed subproject on the additional works (Capital repair of 28 manholes, replacement of the pipeline under the Karakol River), shall not have any impact on the climate change, the design and the construction materials shall withstand any extreme weather condition, hence as per the given scoring this subproject shall be considered as LOW risk.

Prepared by: Department of Drinking Water Supply and Sewerage Development (DWSSD) under the State Agency for Architecture, Construction and Public Utilities under the Government of Kyrgyz Republic (Gosstroy) for the Asian Development Bank

Appendix 2: Archeological Survey

A. Karakol

CONCLUSION June 20, 2017

This conclusion of archaeological expertise is prepared by A. Abdykanova according requirements of agreement for conducting the archaeological expertise from June 12, 2017 ordered by the Global Works Incorporated Corporation (further Client).

Archaeological expertise (further Expertise) is carried out on the basis:

- The Law of Kyrgyz Republic No.91 from 26.07.1999 r. «About protection and use of historical and cultural heritage»;
- The Law of Kyrgyz Republic No.65 from 20.03.2015 r. «About making changes and adding's in the Law « About protection and use of historical and cultural heritage»;
- Land code of the Kyrgyz Republic No.45 from 02.06.1999 r.

The reason of making expertise:

Reconstruction of structures, land development.

Aim of works:

Determination of presence or absence of historical and cultural objects in the zone of reconstruction of structures and land development.

The territory of expertise:

The territory of wastewater treatment plants (WWTP) of Karakol city with total area of 14, 6 hectares, which include sewage treatments plants, biological ponds and sewerage.

Methodology:

Expertise is carried out on the basis of information received from the Client according methods of making archaeological expertise by preliminary works with archival and bibliographic data, analysis of space images from Google Earth, topographic maps, GPS-fixation and visual survey of the territory in order to reveal the objects of historical and cultural heritage.

Conclusion:

As a result of survey of the territory of Karakol WWTP with total area of 14, 6 hectares, which include sewage treatments plants, biological ponds and sewerage, objects of historical and cultural heritage were not revealed.

Recommendations:

There is a need to be vigilant and careful in the process of making construction works and/or land development on the territory of Karakol WWTP with total area of 14, 6 hectares, which include sewage treatments plants, biological ponds and sewerage, in Issyk-Kul oblast. In case of finding artifacts, bones (human) and other signs of material culture, it is necessary to stop all construction work and report about findings to local executive bodies, departments responsible for the protection of cultural heritage or experts in archeology.

In case of land development of the nearby zones of the territory of Karakol WWTP: sewage treatment plants, biological ponds and sewerage with a total area of 14.6 hectares in Issyk-Kul oblast, it is necessary to conduct a new archaeological examination in order to reveal the objects of historical and cultural heritage.

Appendix 3: OVOS -network (Minutes of Public Consultations)

Loan L3742/Grant G0628 Issyk-Kul Wastewater Management Project Implementation Office Karakol

Minutes of the Public Hearing

On environmental impact assessment (EIA) and social safeguards during expansion/construction of the sewerage network, sewage pumping station No.4 and the collector from SPS-4 to SPS-2 in Karakol within the framework of the ADB Issyk-Kul Wastewater Management Project

October 29, 2020, 15:00

Conference-Hall, Municipality of Karakol

The Participants:

Representatives of the Executing Agency (EA), Implementing Agency (IA.), Karakol Municipality, KE "Vodokanal", regional state bodies, Design and Supervision Consultant (DSC), Project Management Office (PMO) and Project Implementation Office (PIO) of Karakol, Municipal Territorial Departments (MTDs) and residents of Karakol took part in the public hearing. The list of registration is attached.

Agenda:

1. Presentation of the EIA for the sewer lines, SPS-4 and the collector from SPS-4 to SPS-2 in Karakol.
2. Presentation of social safeguards.
3. Discussion of the EIA and summary of the public hearing.

Summary of speeches of the participants:

Mr. Janybekov A.K. - Manager of Karakol PIO: Dear participants of the Public Hearing, as you know, Issyk-Kul Wastewater Management Project is being currently implemented in Issyk-Kul oblast. Implementation of this Project will help improve and expand access to reliable, sustainable and affordable wastewater services in the cities of Balykchi and Karakol. A part of this Project is the construction of 21.6 km of sewer networks, including 11.3 km in Karakol; construction of a new pumping station in the village of Pristan-Przhevalsk - SPS-4, as well as reconstruction of the pressure pipeline in the village of Pristan-Przhevalsk from SPS-4 to SPS-2. Today we will discuss the issues of environmental impact assessment (EIA) and social safeguards during construction of 11.3 km sewer network in Karakol and the collector from SPS-4 to SPS-2.

Ms. Ivanova I.Yu. - Main Specialist of Regional Development Department, OPRGKRIKO: Dear participants of the public hearing, I am glad to see you. I hope today the work will be carried out effectively, and the participants will be active in considering the issues under the Agenda, so that the Project objects are implemented properly.

Mr. Ismailov I.S. - Head of the Monitoring and Analysis Department, DDWSSD: I am the curator of the Project from the Executing Agency. This ADB Project is being implemented in Balykchi and Karakol. Construction and rehabilitation of sewer facilities, as well as wastewater treatment plants (WWTP) are foreseen in the framework of IWMP. The project will improve collection and treatment of wastewater that enters the WWTP and will contribute to improving the environment and public health. Today's public hearing concerns the EIA and social safeguards. The Department of Drinking Water Supply and Sewerage



Development (DWSSD) is the Executing Agency (EA), there is a Project Management Office (PMO), and a Project Implementation Office (PIO) in Karakol. The Turkish company Temelsu is a Design and Supervision Consultant. I ask participants to actively participate in the public hearing and express your wishes and comments in order to consider all issues.

Mr. Imanaliev A.S. - Head of the Department of Economic Development and Housing and Communal Services of Karakol Municipality: Dear participants, the lack of a sewage network and treatment facilities is a problem that we have had for a long time. For this reason, the city needs this Project, and the issues to be discussed are important, therefore I ask all participants to take an active part. I hope that the public hearing will be fruitful and in the future the Project will be successful.

Mr. Zhundubaev K.Sh. - PMO Environmental Specialist: dear participants of the public hearing. We will discuss the environmental impact assessment and social safeguards during construction / expansion of sewage networks in Karakol. Representatives of state bodies and the State Environmental and Technical Inspectorate are well aware that there is a GoKR Resolution according to which each project must pass a state ecological expertise. The EIA submitted for your review covers the third stage of the EIA. Of course, implementation of the project is a huge contribution to improving the infrastructure, environment, and sanitary/hygienic conditions of Karakol. Materials were provided to the participants. I encourage representatives of each municipal territorial department (MTD) and those present here to be active, ask questions, and share their wishes, if any. The Minutes will be taken. Thank you for taking the time and attending the public hearing.

After this, the DSC consultants provided information and made presentations.

Ms. Komova L.L. - Head of Water Supply and Sewerage Department of OJSC DI Kyrgyzgiprostroj, DSC: in accordance with the Terms of Reference, the sewerage networks of Karakol were designed for 19 streets in 5 sections. Taking into account the terrain, sewer networks were designed to be self-flowing. The work was carried out in accordance with the requirements of the SNiP (Sanitary Norms and Rules) "Sewerage. Outdoor networks", and in view of the requests from the operating organization - KE Vodokanal. Each section of the network was worked out with KE Vodokanal for the convenience of network operation. Since the construction conditions are very tight, as well as taking into account the existing communication along the streets and the placement of electric poles, it was decided to design the sewer network route on one side of the street, provided that there would be transition to the opposite side of the street and connection of the second part of the street, and connection of sections of other streets that are perpendicular to this collector. This is a mandatory condition that must be met, because when the construction work is completed, it would be necessary to restore the asphalt cover and perform other improvement works, and then it would be possible to connect to the sewer network without disturbing any improvements.

Pipes characteristics: the minimum diameter 200 mm, corrugated pipes (HPDE "Korsis") made of high-density polyethylene. The pipes were selected based on hydraulic calculations for the maximum flow rate of the wastewater that will be connected in this section. Additional inflows from surface and ground water that enter the sewer network through loose points in covers of the manholes are also taken into account. The slopes are performed so that there is no extra lowering to avoid sedimentation of sediments and no extra upward bias, to avoid abrasion of pipes. Therefore, the optimal minimum slopes were selected to transmit the wastewater. The network will be filled up to 0.7 of the network's diameter in order to provide ventilation. The depth of the sewer network is agreed with KE Vodokanal and for the sewer collector is accepted up to 2.5 meters, and when connecting side collectors, the depth can be from 1.5 m to 2 m. Along the sewer route, manholes are installed at least in every 50 meters and at the turning corners or where it is



necessary to accept additional wastewater from objects. All elements of the manholes are from reinforced concrete, cast-iron covers will cover the manholes. After completion of all the work on laying the sewer route, restoration works are foreseen - restoration of asphalt pavement, irrigation networks, and trees.

Ms. Zinina O.V. - DSC Environmental Specialist: any human activity causes impact on environment and social environment. The impact is regulated by the relevant laws of the Kyrgyz Republic. Also, it is necessary to comply with the ADB environmental policy in implementing the Project. Within the framework of the ADB environmental policy, the Project is classified under category "B", which requires an Initial Environmental Examination (IEE) and development of the Environmental Management Plan (EMP). The EMP provides for measures that minimize the impact of construction work on the environment, and the implementation of recommended preventive actions and mitigation measures as per the requirements of the ADB's SPS. The sequence of environmental actions includes screening of objects, environmental assessment, contracting a contractor, construction stage, commissioning, and operation. Appropriate measures are taken at each stage to ensure environmental protection.

The Environmental Impact Assessment (EIA) reflects the background state of the environment before construction. Monitoring of the impact of construction works on atmospheric air, surface and underground water, soil, flora and fauna, and on the social environment will be carried out. To mitigate environmental impacts, such as the operation of construction machinery, earthworks, and the life activity of construction workers, mitigation measures will be taken: use of only technically sound equipment, conducting of construction work from 08.00-18:00, organization of a construction camp, installation of sanitary toilets and garbage containers on the construction site, watering of construction sites, observing and ensuring the safety of workers and residents, planting new trees, etc.

Mr. Dolgov Yu.Yu. - DSC Social Safeguards Specialist: My presentation concerns information about the ADB'S Safeguard Policy Statement. The ADB's Safeguard Policy Statement has been developed for investment projects to minimize any impact of the project on the environment and social environment, i.e. on the property and income of citizens located in the project construction area.

The Project was prepared in 2018. At that time, the routes of sewer networks were preliminary planned. To minimize the impact on households, routes were chosen so as to exclude any impact on household property: fences, land plots, structures, houses, buildings, including commercial ones. In 2018, work was carried out on all these issues and any impact was excluded, so the budget for resettlement was not included in the project for the sewer networks construction, since all issues have already been considered earlier. However, there may be temporary inconveniences during construction work related to crossing streets, blocking driveways. The ADB policy aims to minimize the impact and inform the public about the project implementation. An important component is the Grievance Redress Mechanism (GRM), as well as monitoring and reporting. The implementation of all project activities is controlled by ADB, EA, PMO, and PIO.

The GRM provides interaction between people, PMO and PIO, EA, IA, a contractor, and the consultant. If there are difficulties in the process of project implementation, the population can contact the PIO with a complaint or an appeal that will be registered. Minor complaints are dealt with at level 1, while more serious complaints are dealt with at level 2. After the decision is made, the applicant is given a written response. The complaint is considered in the optimal time frame. The table of complaints and their status are available online on the Internet.

The Project is classified as category C "no impact" in regard with involuntary resettlement. The impact can be permanent or temporary. For example, a temporary impact is trees that are located on municipal land; they will be counted, records will be made as to their



diameter, variety, and then 2-3 trees will be planted instead of each tree that was cut off during construction.

Issues of land acquisition and resettlement, as well as property valuation standards, are regulated by the relevant laws of the Kyrgyz Republic.

International institutions, including the ADB, have a broader range of activities on social issues. When implementing a project, international rules apply to the participants of this project. Any interference with the property of citizens will be considered in accordance with international standards. If household property is affected, the impact will be considered as per the ADB policy, regardless of whether it is built legally or illegally. According to the legislation of the Kyrgyz Republic, illegal buildings cannot be compensated. But according to the ADB policy, if there is an impact on a dwelling or a building that was built illegally on municipal land, then compensation would be paid for the building, but not for the land, since it is municipal land. However, to compensate it is necessary to fill out the documents, make measurements, carry out a valuation, and then the compensation will be paid. Let me remind you once again that the Project for the sewer networks construction does not foresee the impact of the Project. If there is any impact, it will be considered through the GRM.

Monitoring and reporting are carried out in the Project on a regular basis. The DSC and EA prepare reports on their work for ADB on a monthly, quarterly, semi-annual, and annual basis.

Speeches by Interested Stakeholders

Mr. Omurkanov S.A. - Director of KE Vodokanal: There is a problem with the sewer network coverage in Karakol. If there are about 20,000 households in the city, only 30-35% of the city's population are connected to the centralized sewer system. Implementation of this Project will help expand the sewer network by 11.3 km and provide 55% of the population with sewer network services. Streets in the central part of the city were selected for this Project. The arrangement of the future sewer route was studied several times on-site by specialists from the DSC, KE Vodokanal, the Architecture Department, and the PIO in order to prevent the impact of the Project on households, and also to comply with the ADB policy. The constructed sewer network, as well as the WWTP, will be of great benefit for Karakol. I will inform you. Being the operating organization, KE Vodokanal is aware of the city's problems in this area. In the future, KE Vodokanal will have to maintain these facilities, so I hope that the Project will be implemented well.

Mr. Zhakshylykov E.R. - Sanitary Doctor of the State Sanitary and Epidemiological Control of Karakol City: This is a nice project for Karakol, people have been waiting for it for a long time. I wish you success in implementation of the Project.

Questions and Answers:

Mr. Daniyar Usupov - Chairman of MTD-4: the question that is being considered here is very important for residents. Many objects such as sheds and baths have been built along the streets. In the event of any impact, how compensation will be made. This is the most problematic issue. Second, could you provide information about the time of sewerage network construction - the start and the completion?

Mr. Janybekov A.K. - Manager of Karakol PIO: the sewer lines are arranged so as to avoid impact on households as much as possible. If there is an impact, the issue will be considered according to the established procedure. Regarding the implementation period, in general, in December 2024, the construction works will be completed.



Mr. Daniyar Usupov - Chairman of MTD-4: The illegally built objects will be compensated as well, have I got it correctly?

Mr. Janybekov A.K. - Manager of Karakol PIO: Dear participants, please understand the situation correctly. The dissemination of incorrect information will lead to the fact that residents will unreasonably demand compensation. At first, the sewer network will benefit residents; secondly, the impact was minimized as much as possible, if there is an impact, it will be carried out according to the appropriate procedure.

Mr. Dolgov Yu.Yu. - DSC Social Safeguards Specialist: during preparation of this Project, a survey was conducted in 2018. The cutoff date was set for Karakol. If someone builds a building after this date, no compensation will be provided. After this date, no authority can issue a permission for construction on this land plot. Local self-government bodies must ensure that no one builds illegally on municipal land.

Ms. Komova L.L. - Head of Water supply and Sewerage Department of OJSC (DSC): an official topographic survey was carried out. The Architecture Department has already issued the APC and ETC for sewer networks.

Ms. Ivanova I.Yu. - Main Specialist of Regional Development Department, OPRGKRIKO: appeal to the Municipality of Karakol about the need to inform the population about the issues being considered today in order to avoid complaints in the future. The public needs to be informed in a timely manner, inclusive the issues on impact and compensation.

Mr. Maralbaev A.B. - Chairman of MTD-1: I am not sure to whom address this question. On Section-5 a sewer line is foreseen along Przheval'skaya street to Udilova street. How were the streets chosen for the construction of the sewer network? Is it possible to move the network to other streets?


Mr. Omurkanov S.A. - Director of KE Vodokanal: sewer networks were foreseen in non-covered areas of the city. KE Vodokanal has a GIS-system and a general map of the sewer network location. Within the first ADB Issyk-Kul Sustainable Development Project, there were 12 km of sewer lines built, they covered a new settlement area. Now these 12 km are preserved, because the WWTP has not yet been built. Udilova and Przheval'skaya streets were included in this Project, as there are kindergartens and many commercial objects on these streets that need to be connected to the sewer network.

Mr. Maralbaev A.B. - Chairman of MTD-1: the sewer line runs along Valikhanova street, is it still possible to include Shevchenko and Fadeeva streets?

Mr. Omurkanov S.A. - Director of KE Vodokanal: on Torgoeva street, the sewer network was built as part of the first phase of the Project. Fadeeva street can be connected to the network via the network on Torgoeva street. Currently, KE Vodokanal does not give permission to connect, because the WWTP does not function. Fadeeva and Shevchenko streets should be connected to the network on Torgoeva street.

Mr. Kasiev T.B. - Chairman of MTD-5: since Karakol has a natural slope of 3-4% to the North- East, wouldn't it happen that this particular section will have a contra slope, the slope wouldn't be adequate?

Pastuhova I.S. - Mechanical Engineer, DSC: there is an earth slope, and there is a slope of pipes. The pipe will run on a different slope. The main collectors will be at a depth of 2.5 meters, if a particular section would need to be placed deeper than during the approval



of the detailed design at the request of KE Vodokanal, this can be done. Manholes with a diameter of 1.5 m are foreseen. So far, the private sector is designed at a depth of 2.5 m.

Mr. Ismailov I.S. - Head of the Monitoring and Analysis Department, DDWSSD: Yes, MTDs and the Municipality as well, work directly with the city's population on the ground, and people first of all go to complain to the MTD. In order to avoid such issues in the future, it is necessary to involve the chairmen of the MTDs in all the hearings now at the preparation stage, so that they are well informed.

Mr. Omurkanov S.A. - Director of KE Vodokanal: it is necessary to conduct an information campaign in parallel so that the population is informed about the progress of the Project. Thus, while the main collector will be built under the Project, households will already provide funds for yard connections. I appeal to the PMO about the need to conduct an information campaign on the project implementation.

Mr. Maralbaev A.B. - Chairman of MTD-1: Sabyr Asanalievich, I have a question. A sewer line is being laid along the street. As for connecting households to the main collector, will it be paid for by the residents themselves? And if so, what is the cost. We, as representatives of local government, will be asked such questions. If residents connect themselves, they need to be informed in advance. This is the first question.

Mr. Omurkanov S.A. - Director of KE Vodokanal: residents will connect each release from a private dwelling to the street collector themselves in accordance with established procedures and according to the relevant documents.

Mr. Ismailov I.S. - Head of the Monitoring and Analysis Department, DDWSSD: And the connection of each individual household must be according to the project, with the permission of the Architecture Department, the Municipality. It is unacceptable simply to insert the pipe yourself.

Mr. Maralbaev A.B. - Chairman of MTD-1: the second question, why Masalieva street is not included although there are a lot of guest houses there?

Mr. Omurkanov S.A. - Director of KE Vodokanal: mainly streets with no asphalt cover and no sewerage system were selected for the Project.

Mr. Sydykov K.A. - Chairman of MTD-6: Sabyr Asanalievich, since today's discussion is devoted to environmental impact assessment, we have a question about Elebayeva street. The construction of the sewer line on this street was completed three years ago. We understand that it is preserved. But at the same time, there are many bathing complexes on our street that were connected to this network. Where does the wastewater go?

Mr. Omurkanov S.A. - Director of KE Vodokanal: To be honest, there are a lot of unauthorized connections on Elebaeva street - the bathing complex and other objects, although this line is preserved. And all the wastewater flow to our treatment facilities. We are doing everything in our power to prevent such cases from occurring, but problems still exist.

Mr. Sydykov K.A. - Chairman of MTD-6: When it will be fully functioning? The population tends to connect to a centralized sewer system, even if this requires citizens to pay out of pocket. There are four streets where people would like to connect to the network.

Mr. Omurkanov S.A. - Director of KE Vodokanal: The construction of the treatment facilities is planned to be completed in 2024, and connection to the network will be possible from about the middle of 2023, I think.



Mr. Bapaev CH.A. - Chairman of MTD-8 Pristan-Przhevalsk: I want to welcome all the participants. This is a long-awaited project, and its implementation is very important for all of us. During our meeting, it was said that there will be complaints from the population due to construction. I firmly believe that people have a different position, they understand that this is important for Karakol. In our city the centralized sewer system does not cover the whole city, and if the situation does not change over the next 10 years, all those septic tanks that are in most homes will fill up and start to smell. I have a question for the specialists present here: will the WWTP be built before connecting households to the sewage system? The main problem of Pristan is garbage and the WWTP. When winter ends, due to the proximity of WWTP and the landfill, a bad smell spreads. If the network is built first, the capacity of the WWTP will not be sufficient.

Mr. Janybekov A.K. - Manager of Karakol PIO: Indeed, construction of the WWTP is a priority issue, and the WWTP must be built first. Only after the construction of the WWTP is completed, we will start connecting to the network, but construction work will be carried out in parallel, both the WWTP and the sewer network. And only after the construction of the WWTP is completed, we will connect the network, and the previously built 12 km of sewer network will be connected.

Mr. Ismailov I.S. - Head of the Monitoring and Analysis Department, DDWSSD: Let me make a small addition. The Head of the Design and Supervision Consultant arrived in Bishkek yesterday, and we had a meeting where we raised the issue of building the WWTP. First of all, the design of the WWTP will be completed, and the construction phase will begin in October 2021. After the design phase is completed, Temelsu company will supervise construction until 2024.

Mr. Bapacv Ch. A. - Chairman of MTD-8 Przhevalsk Przhcvalsk: residents of Pristan appealed to the government with complaints about the unpleasant smell. We have been working with residents to raise awareness and inform them about this ADB-funded project, which involves the reconstruction of the WWTP. I have a question: will the WWTP be built on the same territory? Perhaps the experts present here are well aware that the Karakol river is very close.

Mr. Janybekov A. K.-Managcr of Karakol PIO: Taking into account environmental protection measures, it is planned to build modern treatment facilities. The WWTP will be built on the same territory. A public hearing on EIA for the WWTP will be held separately. Even a red-listed frog species has been found in the area, which will be protected in accordance with the rules. All measures for the protection of the environment will be respected.

Mr. Abduvaliev Kurmanbek - resident of MTD-4: Sewer lines will be laid to the house, what is being done during construction, and homeowners pay for the connection. Do residents have to pay for connecting the outdoor network?

Mr. Omurkanov S. A. - Director of KE Vodokanal: the Municipality of Karakol or KE Vodokanal is obliged to do external network. This issue was discussed with deputies of the City Parliament. The internal network is done by residents, as it is a house internal network.

Mr. Kasiev T.B. - Chairman of MTD-5: was the soil structure taken into account when preparing the design?

Ms. Pastuhova I. S. - Mechanical Engineer, DSC: Yes, topographical and hydrogeological surveys were carried out, all parameters were taken into account.

Mr. Atakozuev K.A.- Senior Inspector of Interregional Department for Karakol, Ak-Suu, Tyup and Jety-Oguz raions of the State Inspectorate for Environmental and Technical Safety: I have a proposal. First of all, it is important to complete the construction of the WWTP, since there are many illegal connections to the existing 12 km of sewer networks on Elebaeva Street. The current project looks great. In order to avoid a repeat of the previous situation with the preservation of sewer networks, the construction of the WWTP is very important. The second proposal concerns the GoKR Decree No. 271 from 1995, which is now worth paying attention to. It was reported that the sewer network will cover 12 streets, there are several "mezhkhozcanals" (canals between enterprises) and "vnutrikhoz" (canals within enterprises) canals. It is necessary to observe their water protection zones.




Mr. Janybekov A. K.-Manager of Karakol PIO: Karakol is the 4th big city in Kyrgyzstan, which is a tourist center. Therefore, it is necessary that the centralized sewer system works well. Good implementation of the project requires support from government agencies and MTDs.

Mr. Ismailov I.S. - Head of the Monitoring and Analysis Department, DDWSSD: there was a good and active discussion at the public hearing today. I appeal to the management of Karakol Municipality to ensure good close communication between residents and the Municipality and the MTDs, so that issues are considered in advance. A good information campaign should be conducted. Banners should be posted on sites so that people know what project is being implemented, who is the contractor, and that the inconveniences caused during construction are temporary. I wish you good luck in implementing the Project.

Ms. Ivanova I.Yu. - Main Specialist of Regional Development Department, OPRIGKRIKO: today, fruitful work was carried out. Representatives of MTDs asked the questions that were of interest to them. In the future, if there is good communication between the Municipality of Karakol, MTDs and the Project, people will be informed and grateful for the implementation of the Project.

Mr. Janybekov A.K. - Manager of Karakol PIO: dear participants, I would like to thank you all for your participation in today's public hearing. Thank you for your support in implementing the Project. The Project will work with all relevant services and coordinate actions for the implementation of the Project. The work progress report is provided quarterly to ADB, EA, IA, Municipality of Karakol, and KE Vodokanal.

Taking into account the discussion held, the participants of the public hearing have taken notice of the EIA and social safeguards for sewer networks in Karakol.

Mr. Ismailov I.S.		Head of the Department for Projects Preparation and Implementation, DDWSSD
Ms. Ivanova I.Y.		Chief Specialist of the Regional Development Department of OPRIGKRIKO
Mr. Imanaliev A.S.		Head of the Department of Economic Development and Housing and Communal Utility of Karakol Municipality



Mr. Saban Cimen		International Environmental Specialist, DSC
Ms. Zinina O.V.		Environmental Specialist, DSC
Mr. Dolgov Yu.Yu.		Social Safeguards Specialist, DSC
Ms. Komova L.L.		Wastewater Design Engineer
Ms. Pastuhova I.S.		Mechanical Engineer, DSC
Mr. Omurkanov S.A.		Director, KE Vodokanal
Ms. Zaviyalova O.I.		Projects Consultant, KE Vodokanal
Mr. Zhundubaev K.Sh.		Environmental Specialist, PMO
Mr. Jumabekov M.K.		Social Safeguards and Resettlement Specialist
Mr. Janybekov A.K.		Project Manager, Karakol PIO, IWMP
Minutes were taken by Almira Alieva and Tolgonai Nadyrbek kyzy		Office-Manager/Translator, Karakol PIO, IWMP
		Translator, DSC

Appendix 4: Public Consultations for additional works

Loan L3742/Grant G0628 Issyk-Kul Wastewater Management Project

Minutes of the Public Hearing on "OVOS (EIA) and social safeguards during construction of a wastewater reception tank in Pristan-Przhevalsk village, construction of a 200 m discharge pipeline and modernization of 28 manholes at the main sewer collector in Karakol" within the framework of the ADB Project on «Issyk-Kul Wastewater Management»

March 31, 2022, 15:00

Conference-Hall, Karakol Municipality

The Participants:

Representatives of the Executing Agency (EA), Implementing Agency (IA), Karakol Municipality, KE "Vodokanal", regional state bodies, Design and Supervision Consultant (DSC), Project Management Office (PMO) and Project Implementation Office (PIO) of Karakol, Municipal Territorial Departments (MTDs) and residents of Karakol took part in the public hearing. The registration list is attached.

Agenda:

1. Presentation "OVOS (EIA) during construction of a wastewater reception tank in Pristan-Przhevalsk village, 200 m discharge pipeline and modernization of 28 manholes at the main sewer collector in Karakol"
2. Presentation "ADB's Social Safeguards"
3. Discussion of the OVOS (EIA) and summing up the public hearing.

Summary of speeches of the participants:

Mr. Dzhanybekov A.K. - Manager of Karakol PIO: Within the framework of the Issyk-Kul Wastewater Management Project, at this public hearing we will discuss issues of environmental impact assessment (EIA) and social safeguards during construction of a wastewater reception tank in Pristan-Przhevalsk village, construction of a 200 m discharge pipeline across the Karakol River and modernization of 28 manholes on the main sewer collector in Karakol.

Mr. Bapaev Ch.A. - First Vice-Mayor of Karakol City: At this public discussion of the OVOS (EIA) and the SS during the construction of designated facilities within the IWMP framework, everyone needs to actively participate and openly discuss existing issues, as for the development of the city it is necessary to develop infrastructure, including water supply and sewerage.

Ms. Ivanova L.Iu. – Chief Specialist of Regional Development Department, OPRPKRIKO: IWMP is a large, necessary and important Project for the city of Karakol, as a result of which the city will obtain a new WWTP and sewer networks. I hope that today fruitful work will be carried out, and the participants will be active in discussing the impact of this Project on environment and social sphere, so that in the future its implementation would not lead to damage to environment and social sphere.

Mr. Batyrkanov R.K. – Coordinator of DDWSSD in IK oblast: The WWTP was built in the 1980s, it now practically is non-functioning. As part of the IWMP, a new WWTP will be built, and sewer networks will be expanded. The public has to actively participate in the event to discuss the issues of OVOS (EIA) and SS.

Ms. Zinina O.V. – DSC Environmental Specialist: Within this subproject, a wastewater receiving tank V = 50 m³ with a fenced sanitary protection zone of 15 m will be built. In accordance with the ADB's policy, there is a sequence of environmental actions and stakeholder participation for projects. For each stage, including screening of facilities, environmental assessment, contract award, construction, commissioning and operation, certain measures are prescribed, including IEE, EIA, SSEMP, checklists upon construction completion.

Implementation of construction works will influence environmental parameters, such as atmospheric air, water resources, soil, trees and shrubs. Mitigation measures will be taken to mitigate the impact factors, including: using equipment only technically in good state, refueling machinery in specially designated areas; dedusting the

construction site with service water; carrying out construction work only during the daytime, compliance with the threshold of the maximum noise level; installation of dry closets at facilities for builders, installation of waste containers at the construction site and the builders' camp with direct removal of waste to the landfill, use of waste sorting; preservation of the upper fertile soil layer, land reclamation after completion of construction work. There is no large species diversity of flora and fauna on this site. The impact on flora and fauna from construction work will also be minimized, tree felling is not expected.

To mitigate the social impact during construction work, protective fences and marking of hazardous areas will be foreseen, safe access through the construction site will be provided. To mitigate the noise impact, the work will be carried out only during the daytime and the noise level will be measured. To ensure the safety of workers, the latter will be provided with PPE.

Upon delivery of the facility, environmental requirements will be met, including cleaning of the construction site, restoration of land, reclamation systems, and roadways to the condition equal to the pre-construction time or better.

Mr. Putilov A.A. - Chief Design Engineer, DSC: This subproject for the construction of a wastewater receiving tank in Pristan village was prepared, it passed an environmental assessment and was approved for implementation. The implementation of the subproject will improve the existing environmental situation in Pristan. After construction, wastewater from the tank will be transported by two sewage disposal machines to the Karakol WWTP – this is the first stage of upgrading the existing situation, while the volume of wastewater is small. KE Vodokanal will be able to do this work itself. When, as a result of population growth and the start of operation of the Ulan plant, the volume of wastewater in the village will increase, an SPS and a pipeline will be built – this is the second stage of upgrading.

Mr. Dolgov Iu.Iu. – DSC Social Safeguards Specialist: In 2009, the ADB adopted a Safeguards Policy Statement (ADB's SPS 2009). All projects funded by the ADB should eliminate or reduce the impact on environment and local community. The ADB's SPS 2009 provides for a permanent impact when the APs need to be relocated, since their households fall within the SPZ or construction is required to be carried out at the site of the household. In this subproject there is no permanent impact. The nearest households from the tank to be built are at a distance of 300 m. There will also be no temporary impact when some object needs to be temporarily removed or moved.

The ADB's SPS 2009 also foresees a significant and insignificant impact, for which a Land Acquisition and Resettlement Plan is prepared with compensation payments, and the entire process is controlled by ADB specialists. There is no resettlement for this subproject. Assistance to APs will be provided at all stages of the project. Special conditions are foreseen for vulnerable families. In this wastewater reception tank subproject, a constant monitoring of all appeals and complaints of the population will be carried out. There is a Grievance Redress Mechanism (GRM) within the IWMP framework, which functions according to the legislation of the Kyrgyz Republic as well. There are two levels for considering complaints and appeals: a local and a central. Any complaint about the project must be considered within 14 days and a response submitted. ADB specialists also visit facilities to check compliance with environmental and social safeguards. All activities are carried out in a maximally open way.

Questions and answers:

Mr. Sambaev B.A. - Chief Specialist of IKTDEP for Karakol City: how the pipeline across the Karakol River will be laid?

Mr. Putilov A.A. - Chief Design Engineer, DSC: Initially, the project foresaw the replacement of the entire pipeline from the oxidation ponds of the WWTP to the SSP with a length of 2.5 km. Then the task was set to build only 200 meters of pipeline under the Karakol River. This is a difficult task and must be carried out according to the requirements and norms. Under the river, the pipeline is laid in an inverted siphon. The inverted siphon must be in two parallel threads and pass at the marks to ensure gravity movement inside the pipeline. The issue is being studied now in order to meet all the requirements for watercourse, inverted siphon, bearing

capacity. A topographic survey was carried out. I believe that it is necessary to completely replace the entire pipeline from the beginning to the end in order to ensure a self-flowing mode. A preliminary design with an estimate for this subproject is being prepared. It is impossible to disturb the available pipeline, since it is an existing system. Technologically, it is necessary to foresee the construction of a 200-meter section, and then its connection to the general system.

Mr. Sambaev B.A. - Chief Specialist of IKTDEP for Karakol City: where the tank will be constructed? Will it be open or closed?

Mr. Dzhanbekov A.K. - Manager of Karakol PIO: The tank will be built on the territory of Pristan village and two sewage disposal machines will be procured for KE Vodokanal for the removal of wastewater from the tank to the WWTP. Currently, there are 300 households in the village, and the volume of wastewater is only 35 m³/day. Initially, according to the project, it was planned to build the SPS-4 at this place with a pipeline from SPS-4 to SPS-2. However, at the current flow rate of 35 m³/day, the SPS would work for 15 minutes /day, which is impractical. In the future, with an increase of wastewater volume, the SPS-4 will be built. The tank will be closed. The quality of effluent will be constantly monitored. An analysis of wastewater for heavy metals, pathogens and toxicity has already been carried out within the framework of the project. Currently, wastewater in the SSP and the oxidation ponds does not pose a danger to humans and environment, does not contain heavy metals and is non-toxic.

Regarding the existing discharge pipeline from the oxidation ponds to the SSP, it is a 500 mm in diameter asbestos-cement pipeline, built in the 80s, and runs under the river. It was planned to completely replace it, but it is impractical and difficult, since there are thickets of plants listed in the Red Book of the Kyrgyz Republic. Therefore, it is planned within the framework of the project to do only a section of the pipeline with a length of 150-200 meters passing under the river. But, as Mr. Putilov noted, this issue will be clarified according to the design. It is important that wastewater does not enter the river, so the 200 m section passing under the river is planned to be completely replaced with a new pipeline.

Mr. Sambaev B.A. - Chief Specialist of IKTDEP for Karakol City: where did the subproject for the wastewater receiving tank pass environmental examination, in Bishkek?

Mr. Putilov A.A. - Chief Design Engineer, DSC: the subproject for the wastewater reception tank has passed an environmental assessment in Issyk-Kul, geographically.

Mr. Zhundubaev K.Sh. – PMO Environmental Specialist: earlier, Mr. Putilov said incorrectly, it was a subproject for sewer networks that passed an environmental examination. The subproject for the wastewater receiving tank has not yet passed environmental examination. After the preparation of the DED for the tank in Pristan, including a detailed project for 200 meters of the discharge pipeline and 28 manholes on the head collector, the subproject will undergo an environmental examination.

Mr. Sambaev B.A. - Chief Specialist of IKTDEP for Karakol City: a request - during construction, the fertile layer of soil must be collected in order to use it later during restoration work.

Ms. Isabaeva A.A. – a resident of MTD-1: what is the construction period for the tank?

Mr. Putilov A.A. - Chief Design Engineer, DSC: the construction period is generally no more than half a year, since the tank will be factory-made.

Ms. Tailakova G.B. – Chief Sanitary Doctor for Karakol and IK oblast: when preparing a design and building, it is necessary to comply with the requirements of the Resolutions of the GoKR No. 128 and 98 on the protection of groundwater and undergroundwater. During the construction of this subproject, there should be no noise load, since the tank is located 300 m from the settlement. But the noise will affect the workers.

Mr. Karasartov A.E. – head of IKRDUPA: what will be the load on the pipeline passing under the river? Have soil surveys been carried out to study the effects of snow and rain? It is necessary to carry out survey work at the stage of preliminary design.

Mr. Putilov A.A. - Chief Design Engineer, DSC: soil surveys have already been carried out – there is no groundwater at the site of the planned tank, and there is standing water at the site of the 200-meter pipeline section. Geological surveys have been carried out. There is underground water and subsurface water under the river. The main issues will then be during construction, since the subsurface water cannot be pumped out, it will have to be diverted. Half of the river should be diverted, work in a dry riverbed, and then vice versa. The APC and ETC have not yet been prepared for a section of 200 m of pipeline under the river and 28 manholes on the main collector. And the APC and ETC have already been obtained for the tank in Pristan.

Mr. Zhundubaev K.Sh. – PMO Environmental Specialist: A Site-Specific Environmental Management Plan will be prepared (SSEMP), which will be included in the Bidding Document. It will contain all the environmental and social impacts and mitigation measures that a Contractor must perform.

In view of the discussion held the participants of the public hearing took note of the OVOS (EIA) and social safeguards during construction of a wastewater reception tank in Pristan village, construction of a 200 m discharge pipeline and modernization of 28 manholes at the main sewer collector in Karakol.

Chairman of the Public
Hearing:
Dzhanybekov A.K.

/signed/

Manager of Karakol PIO

Secretary of the Public
Hearing:
Zhumabekov M. K.

/signed/

PMO Social Safeguards and Resettlement
Specialist

Дискретизированный перечень объектов, связанных с ПООС и СЭП при строительстве объектов системы водоснабжения и канализации в г. Каракол, 20 и 21 апреля 2022 года

ФНО	Организация/должность	Подпись	Телефон
23	Жильцов Евгений	Житель МТУ №6	07007817078
	Житель МТУ №2		70-78
	Житель МТУ №1		07007817078
24	Житель МТУ №3		550765
25	Житель МТУ №6		070596
	Житель МТУ №3		5108
	Житель МТУ №6		050165
	Житель МТУ №6		1252
	Житель МТУ №6		0705
	Житель МТУ №6		393091
27	Житель МТУ №6		070358306
28	Житель МТУ №3		0701227009
25	Житель МТУ №26		070159674
20	Житель МТУ №2		0707951060
21	Житель МТУ №2		070029784
22	Житель МТУ №2		070471121
23	Житель МТУ №6		050579157
	Житель МТУ		
	Житель МТУ		
	Житель МТУ		
	Житель МТУ		

25 Мар, 15:00, 11 кв.



Дискретизированный перечень объектов, связанных с ПООС и СЭП при строительстве объектов системы водоснабжения и канализации в г. Каракол, 20 и 21 апреля 2022 года

Кредит L3742/101 Г0028 Проект "Управление стоковыми водами Иссык-Куля"

ЛИСТ РЕГИСТРАЦИИ участников общественного слушания по «Общему воздействию на окружающую среду и социальным нормам защиты при строительстве резервуара приема сточных вод в поселке Простая-Проклящая, протяженностью 200 м сборного трубопровода и модернизации 28 колодезь на главном канализационном коллекторе в г. Каракол» в рамках Проекта АБР «Управление стоковыми водами Иссык-Куля»

21 марта 2022 года, 15:00

Конференц-Зал Мэрии г. Каракол

ФНО	Организация/должность	Подпись	Телефон
АДП ПКРИКО – Региональное Агентство			
	Заместитель отдела регионального развития		
1	Николаева Ирина Юрьевна	Ген. специалист отдела регулирования	21.03.2022, 0552077036
ДРПВВ – Национальное Агентство			
2	Батыралиев Разманит Керематович	Кординатор ДРПВВ по РК области	072581166
3	Турдалиев Эпикос Сланымович	Специалист ДРПВВ по Жетысаяускому району	0701213007
Общественные организации в Мэрии г. Каракол			
4	Болосов Чынгыз Арстанбекович	Первый вице-мэр г. Каракол	070531414
5	Нияшпаев Аманжол Садырбекович	Зам. отдела эконом. развития и ЖКХ Мэрии г. Каракол	0701083333
6	Исаков Эманжол Артурович Р.С.	и.о. Начальника Департамента управления муниципальными учреждениями г. Каракол	0705069821
7	Самбаев Баймырза Аманжолович	Главный специалист ИКТ/УООС по г. Каракол	0701301283
8	Тийшалиев Гулдушкан Баймырза	Главный инженерный врач г. Каракол и ИК области	0701081835
9	Карасартов Азим Эманжолович	Начальник ИКРУТ А	0705631433
Городской Комитет г. Каракол			
	Джапаров Нурали Ногойбаевич	Председатель комиссии по ЖКХ	

Дискретизированный перечень объектов, связанных с ПООС и СЭП при строительстве объектов системы водоснабжения и канализации в г. Каракол, 20 и 21 апреля 2022 года

Консультант по проектированию и надзору – компания «Темусу Интернэшнл»

ФНО	Организация/должность	Подпись	Телефон
Консультант по проектированию и надзору – компания «Темусу Интернэшнл»			
10	Зинина Ольга Валерьевна	Специалист КИП по ООС	0705624222
11	Долган Юрий Юрьевич	Специалист КИП по социальным нормам	0501303740
12	Пунин Андрей Александрович	Главный инженер-проектировщик	0772252909
КП "Водокиант"			
	Ахмедов Фархад Аманжолович	Директор КП "Водокиант"	
13	Эмургалеев Жолан Кылыбайычи	Главный инженер, КИП "Водокиант"	0705630060
14	Зинина Ольга Валерьевна	Консультант по проекту КП "Водокиант"	0555040074
15	Аманжолов Курманбек Мунайтбаевич	Начальник ВООС г. Каракол, КП "Водокиант"	070184018
Проект "Управление стоковыми водами Иссык-Куля"			
16	Жулубаев Кылыбек Шарапович	Специалист ОУП по ООС	
17	Жумалиев Мезер Кадиралиевич	Специалист ОУП по СМЗ и заземлению	070460404
18	Джамбылов Акылбек Калдырович	Менеджер Проекта	055931850
19	Алиев Альмира	Офис-Менеджер/Переводчик	070141182
Муниципальные территориальные управления г. Каракол			
20	Элиев Арманат Эманжол	Председатель МТУ-1	0707550765
21	Абдыгабылова Мушара Баймырзаевна	Председатель МТУ-2	07010024974
	Болосов Аманжол Турмуралиевич	Председатель МТУ-3	
	Усупов Динчер Кылыбекович	Председатель МТУ-4	
	Касенов Тауанбек Баймырза	Председатель МТУ-5	
	Садирхан Качыбек Аманжолович	Председатель МТУ-6	
	Акунов Аманжол Жумалдырович	Председатель МТУ-7	
22	Дуналиев Максим Абдыгазылович	Председатель МТУ-8	0701281878

Loan L3742/Grant G0628 Issyk-Kul Wastewater Management Project

Minutes of the Public Participation Meeting

on environmental impact and social safeguards during construction of 28 manholes on the collector of Karakol WWTP and 200 m of pipe at the intersection with Karakol River, funded by ADB

July 25, 2023, 10:00-12:00

Conference hall of Karakol Mayor's Office

Attendees:

Rakhmadil K. Batyrkanov
Beishenbek A. Sambaev

Gulushkan B. Tailakova

Nurbek T. Asanaliev

A. Niyazova
Aimaz S. Imanaliev

Salambai K. Kiyanov

Olga V. Zinina
Iiuri I. Dolgov
Danil I. Battalov

Farhad Abdy-Khamitovich Alzhambaev
Olga I. Zavyalova
Kurmanbek M. Kazakbaev
Hurcan Canatan
Anara K. Bukarova

Damira A. Sharipova

Kylychbek Sh. Zhundubaev
Meder K. Zhumabekov

Almira Aliyeva
Arzymat E. Edikov

DDWSD Coordinator for Issyk-Kul Region
Chief Specialist of IKTDEP of MNRETS for Karakol City

Acting Chief Public Health Officer of Karakol Interdistrict Center of Disease Prevention and State Sanitary and Epidemiologic Surveillance
Head of the Population and Territory Protection Division of the regional department of MES
Chief specialist of Karakol Mayor's Office
Head of Economic Development and Housing and Utilities Department of Karakol Municipality
Chief specialist of Municipal Property Management in Karakol

DSC National Environmental Specialist
DSC Social Safeguards Specialist,
Representative of the DSC sub-consultant for design, Water Supply and Wastewater Engineer
Director, KE "Vodokanal"
Project Consultant of KE Vodokanal
Head of Karakol WWTP, KE "Vodokanal"
Site Manager of D&B Contractor of Karakol WWTP
Local Environmental Specialist of D&B Contractor of Karakol WWTP
Engineer of Technical and Engineering Department of KE "Vodokanal"
PMO Environmental Specialist
PMO Social Safeguards and Resettlement Specialist
PIU Karakol Office Manager/Translator
Chairman of municipal territorial administration -1

Brief shorthand notes:

Kylychbek Sh. Zhundubaev

Dear colleagues! On behalf of the Department of Drinking Water Supply and Sewerage Development, let me thank you for attending such a significant and important public participation meeting for our project.

The topic of public participation meeting is the environmental and social impact during the construction of the discharge pipeline 200 m of the Irrigation Pond slope and capital repair of 28 manholes on the sewage collector entering the Karakol WWTP.

I would like to note that on March 31, 2022 the same public participation meeting was already held to discuss the construction of 50 m³ tank in Pristan. Considering that all these works are one tender package, it is necessary to hold an additional public participation meeting this time based on the results of detailed design of additional works.

All structures as directed by the governor are engaged. the representatives of Mayor's Office, Vodokanal, implementing agency, environmental authority, sanitary and epidemiological inspection and the MES are present.

Then, Rakhmadil K. Batyrkanov, DDWSD Coordinator for Issyk-Kul Region, provided a welcoming speech.

Continuation of speech of K. Sh. Zhundubaev:

Dear colleagues, then we will organize the agenda for today as follows:

Now we will hear a presentation by Danil Ilurovich Battalov, representative of DSC's sub-consultant on design, he will inform about the design, then Olga V. Zinina, DSC's Environmental Specialist will provide her presentation, then we will hear a presentation by Iuri. I. Dolgov, DSC's Social Safeguards Specialist and then we will discuss have Q&A session.

Today we will additionally inform all participants about recent relocation of Central Asian frogs and other species of wild frogs from Karakol WWTP lagoons to nearby natural ponds of "Karakol Balygy" and water bodies to preserve their population in this region. The Central Asian frog is listed in the Red Book of Kyrgyzstan and the project takes all necessary measures to protect them..

Presentation by Danil I. Battalov (a copy of the presentation is attached to these Minutes).

Good afternoon dear members of the public participation meeting Today, I, as a representative of DSC's design subconsultant would like to present the design: "Reconstruction of the discharge pipeline (0.2 km) from WWTP and capital repair of 28 manholes on the collector delivering wastewater to the WWTP".

Detailed design was developed in accordance with the contract №02/2023, concluded between Kyrgyzgiprostroy OJSC and Geoconsult Ltd. The General designer is Temelsu International Engineering Services Inc., the sub-designer is Kyrgyzgiprostroy OJSC.

The project purpose is:

- installation of discharge pipe under the river in the flumes;
- construction of service chambers for valves;
- installation of two interchangeable pipelines for designed collector from PE 100 SDR26 Ø500 mm pipe with gate valves;
- increasing the height of the manholes installed on the sewage supply collector;
- provision of measures to prevent infiltration of rainwater into manholes.

The design document is divided into 2 volumes:

1. Reconstruction of discharge pipeline (0,2 km) from WWTP (Volume 2)
2. Capital repair of 28 manholes on the collector delivering wastewater to WWTP (Volume 3)

Administratively, the surveyed area of the site: "Reconstruction of the discharge pipeline (0.2 km) from the WWTP and capital repair of 28 manholes on the collector delivering wastewater to the WWTP" is located in Aksu district of Issyk-Kul region of the Kyrgyz Republic and is owned by Municipal Enterprise "Vodokanal" of Karakol city.

Slide 3-4 shows a site plan for the reconstruction of discharge pipeline (0.2 km) from the WWTP. The Commission recorded a necessity to install an inverted syphon as 2 interchangeable pipelines with shut-off valves to prevent an emergency.

During the design work, 9 points were taken into consideration, namely:

1. Wastewater flow rate is 480 m³/hour.
2. Reconstruction of this section will be in the form of the installation of a pipeline and inverted syphon.
3. For sewage disposal a sewerage network is provided, connected to the existing collector Ø 500 mm, passing near the river Karakol.
4. To prevent emergency situation the inverted syphon will be installed as 2 interchangeable pipelines with gate valves DN 500mm.
5. All gate valves will be installed in a chamber to ease installation and maintenance.
6. The average depth of groundwater at the site is 30cm, in this regard, it was decided to create a monolithic reinforced concrete chamber for maintenance of shut-off valves.
7. To prevent washing out and further deformation of the pipeline, a decision was made to install the inverted syphon in a prefabricated flume intended for the heating pipelines.
8. The places where the collector is at the ground surface level will be filled with local soil upto a height equal to at least the zero temperature penetration into the ground or insulate it to withstand the normative load on the collector
9. The river crossing section of the pipelines involves dry-bottom laying, i.e. conducting the works during the winter period.

Slide 5-6 shows the site plan of 28 manholes for the capital repair on the collector delivering wastewater to the WWTP.

The commission has recorded the inflow of melt and rain water into 28 manholes, located on the sewer collector with the length of 1905m.

Reconstruction is necessary to prevent rainwater and meltwater from entering the sewer manholes by an increase of manhole height;

During the design process it became clear that the height of 6 manholes located on the roadway could not be increased due to the possibility of obstructing traffic, therefore only 22 manholes are eligible for capital repairs.

Technical solutions adopted in the detailed drawings comply with the requirements of environmental protection, sanitary-hygienic, fire prevention and other regulations in force in the Kyrgyz Republic and ensure safe operation of the facility for life and health of people if the measures provided for in the detailed drawings are adhered to

Slide7 provides details of the construction cost.

Reconstruction of discharge pipeline (0,2 km) from WWTP

Cost of materials is 3,057,453 thousand soms (in current prices);

Construction and installation works amount to KGS 2,295.944 thousand (in current prices);

The total cost of reconstruction of the discharge pipeline (0.2 km) from the WWTP is 5,888.665 thousand KGS (in current prices), including cost escalation, contingencies, etc.

Capital repair of 28 manholes on the collector delivering wastewater to WWTP

Cost of materials is 731,646 thousand soms (in current prices);

Construction and installation works amount to KGS 919,226 thousand (in current prices);

The total cost of capital repair of 28 manholes amounts to KGS 1,815.937 thousand (in current prices), including including cost escalation, contingencies, etc.

Total construction will cost 7,704.602 thousand KGS (in current prices).

Presentation by Olga V. Zinina (a copy of the presentation is attached to these Minutes).

"Environmental and social impact assessment for the reconstruction of 28 manholes on the incoming collector at the Karakol WWTP and 200 meters of pipe at the intersection with the Karakol River "

Environmental Impact Assessment is based on the main legislative acts of the Kyrgyz Republic:

- Constitution of the Kyrgyz Republic (2010);
- Law of KR "On Environmental Protection" (1999);
- Law of KR "General Technical Regulation on Environmental Safety" (2009);
- Law of KR "On environmental expertise" (1999);
- Water Code (2005);
- Law of KR "On production and consumption waste" (2001);
- Law KR "On Protection and Use of Part World" (2001);
- Law "On Urban Planning and Architecture of the Kyrgyz Republic";
- Law "On Accession of the Kyrgyz Republic to the UNECE Convention on Access to Information, Public Participation in Decision-Making and Access to Justice in Environmental Matters (Aarhus Convention)" (2001).

Under ADB's Environmental Policy, the project is classified as Category B, which requires an initial environmental examination (IEE) and the development of an environmental impact assessment (EIA).

Project implementation will not cover Specially Protected Natural Areas (SPNA). This means that work in SPNA and areas that may have even an indirect impact on SPNA is not allowed.

The project will not cover cultural heritage sites. This means that work on or near such facilities, and in areas that may have even an indirect impact on them, is not allowed. In this case, it is also about objects that could potentially have such value

The project will not cover cultural heritage sites. This means that work on or near such facilities, and in areas that may have even an indirect impact on them, is not allowed. In this case, it is also about objects that could potentially have such value

The project will not cover forestry. This means that work near forests, and in areas that may have even an indirect impact on them, is not allowed.

Anticipated adverse impacts are minor or reversible, and preventive and mitigation measures will help prevent or reduce these impacts.

The Environmental Management Plan provides for implementation of recommended preventive actions and mitigating measures, which satisfies ADB's policy on safety measures and also the legislation of the Kyrgyz Republic.

The sequence of environmental actions and stakeholder participation.

First - it is an environmental survey in the area of construction - road of the object (Object Screening), pre-project survey accordingly;

The next step is the design development and the environmental assessment. Development of an environmental section and an environmental management plan.

Awarding the contract to the contractor. Incorporation of EMP and environmental requirements into contract documents

Next - Construction Phase. During the construction phase, all measures included in the environmental protection section and in the environmental management plan will be implemented.

The final result is the commissioning, i.e. the environmental condition of the site before the start of the construction works should remain the same after the completion of the construction works. Full restoration work must be executed.

Description of the work to be done:

- 28 manholes on the incoming collector at the Karakol WWTP
- 200 meters of pipe at the crossing with the Karakol River
-

The previous presentation already gave a detailed description of these works. It can only be added that 28 manholes already exist and no special environmental impact is expected there. The works to be undertaken at the Karakol River crossing are of greater concern. Since the river flows into Issyk-Kul and has a special status.

These works will impact on atmospheric air, surface and ground water, soil, flora and fauna and the social environment.

The more detailed information about each impact:

Atmospheric air. During construction activities, there will be impacts from heavy construction equipment through the release of exhaust fumes. As well as dust generation from excavation work. And noise impacts from heavy construction equipment are also anticipated.

So how can we eliminate these impacts? First of all, it is the use of serviceable equipment that excludes emissions of higher non-standardised pollutants into the environment.

It is obligatory to provide dust suppression during excavation works, which significantly reduces dust emission.

It is also necessary to monitor the operation of the machinery. That is, construction work should be carried out only during daytime hours and no more than two units of heavy construction equipment should be operated at the same time.

Surface and ground water. Mandatory compliance with the rules of surface water protection, as well as the rules of work in the water protection zone of the Karakol River, which is 50 m. Long-term parking of heavy construction machinery is prohibited within the water protection zone. It is also obligatory to install bio-toilets, which eliminates the ingress of sewage during the period of work and residence of workers on the site. All waste is stored outside the protection zone of the Karakol River. Fuel re-filling should be in defined places and since the site is located near Karakol city it is necessary to refuel machinery and vehicles at city petrol stations

Impacts to the soil environment include spills of fuel from construction machinery, as well as the generation of construction and domestic waste from construction workers' activities.

Mitigation measures: use of only serviceable equipment. If spillages of fuel and lubricants occur, this soil should be removed as a matter of urgency and remediated accordingly. Mandatory installation of rubbish bins and contracts with a waste disposal company.

Impacts on flora and fauna. Near the Karakol River there are sea buckthorn bushes. I have consulted with the Ministry of Natural Resources on procedures for cutting or replanting sea buckthorn bushes. If this happens, we will apply to the regional department of the Ministry of Natural Resources and cut down or replant sea buckthorn bushes. All of this is legally possible. Sea buckthorn is not included in the list of rare and specially protected plant species, which was confirmed to me by the Ministry of Natural Resources. The list of rare and specially protected plant species includes walnut and juniper species.

However, if the Ministry of Natural Resources insists, additional planting/replanting of sea buckthorn or compensation in consultation with the LSGs and the regional office of the MNRETS will be made mandatory.

No nearby houses were observed in the vicinity of the above properties during screening, however there are some farms. Therefore, mitigation measures are needed to reduce the impact on the social environment. This includes limits for construction work period, the works may be implemented until at most 6pm. Simultaneous operation of no more than two units of heavy construction machinery, fencing of the construction site, installation of warning signs. All workers must be provided with personal protective equipment (helmets, masks, gloves, footwear, and hearing protection, i.e. earplugs or headphones).

When these sites are commissioned, the first priority is to carry out planning and restoration measures that restore land disturbed during construction activities. Removal rubbish and debris and demolition waste from the construction site. The contractor shall restore the carriageway if it is damaged during the works.

Presentation by Iuri I. Dolgov *(a copy of the presentation is attached to these Minutes).*

Once again, I welcome you to a public participants meeting. We have met many times in this room and many people are aware that ADB, the financier of this project, has a policy of social and environmental safeguards. I will try to focus very briefly today only on the very basic requirements of this policy. Almost all projects have risks of environmental and social impacts. They have impacts on local communities and population groups. The Asian Development Bank's approach is to ensure that the project is socially and environmentally sustainable. That is, any impact on the environment or on the local community must be avoided at best. And if this is not possible, at least mitigate and minimise or compensate. The projects have impacts on groups of people, their property, various structures and may be land plots. There may be vulnerable households among the population. All risk factors that relate to them need to be considered in this project.

ADB's policy distinguishes between two types of environmental and population impacts. Permanent impact and temporary impact. Permanent impacts are land acquisition, demolition/dismantling of structures and payment of compensation. Temporary impacts are temporary use of the same land and it is also possible to resettle people temporarily. Once the civil works are completed, households return to their residential houses. That is, these impacts are also taken into account, but are assessed and acted upon in different ways.

You can see two plots on the plan. Today we have already talked about the crossing of the Karakol River (200 m.) and the reconstruction of 28 manholes. There is agricultural land near the road where 28 manholes are located. So there are risks that the road runs close to this land and there may be some appeals from the owners.

I would like to point out that the design is already approved and no land or structures are affected by the project and accordingly no losses are expected.

In any case, all of this should be recorded and monitored during the construction process. If there is an unforeseen situation related to impacts on agricultural land, such as soil dumps or damage to some fence or an irrigation canal, the project will need to restore all of that it is ADB's policy that all household losses are necessarily compensable regardless of legal status. That is, it does not matter if the owner is documented or undocumented, all structures affected by the project must be restored or compensated for.

Here it is necessary to pay attention that it is not necessary to quarrel with anyone, but on the contrary, to sort out the situation and make a decision. For this purpose, there are specialists who will advise and support the project.

I would like to point out an important thing about this project, which is the grievance redressal mechanism. Grievance redressal mechanism is in English. In our understanding it is not only complaints but also any appeals. That is, as I said earlier, there may be appeals from citizens when construction works are carried out. For example, the requests to excavate a trench, rehabilitate an irrigation channel, or provide some kind of assistance. That's not to say; don't pay attention to it at all. All appeals should be recorded formally and the response will be addressed far as possible. The answer can be either positive or negative. But all communications with local communities must be recorded and acted upon.

All appeals and complaints are dealt with at two levels: local and central. The Central level is the PIU, Vodokanal and the city of Karakol, and the Central level is the PMO and DCEI in Bishkek.

Of course, it cannot be excluded that people in case of some offences and complaints can go to court. It's an extreme measure. And to prevent this, a grievance redressal mechanism has been developed for this purpose.

The slide shows a scheme of the GRM. How it works: in the diagram below there are applicants - these are people who can apply both in writing and verbally. They can appeal to the mayor's office, PIU and even the president, it doesn't matter. In any case, this letter will be sent through the PIU to the Consultant at the local level. The PIU is the local focal point and does have a grievance mechanism through which issues are resolved. If there is an opportunity to address this issue, everything will be resolved quickly and expeditiously within 10-14 days. The scheme arrow shows that if a decision is made, a feedback response is sent to the same applicant

If at the local level it is not possible to solve a very complex issue, then it can be transferred to the central level. Then the issue will be reviewed and a judgement will be made. Further also by feedback the decision will be communicated to the applicant. Basically, it's very simple and feasible.

Again, not all complaints and appeals can be satisfied, because we need to proceed from real situations and possibilities. But here is this process of communicating with the community it's about improving the culture of communicating with the local community and conducting construction work. This is what the ADB requires of us. All our procedures will be monitored and included in a report to the relevant organisation. Contractor reports to the PIU and to the Consultant, Consultant reports to the PMO and ADB, PMO reports to ADB. All of these procedures are spelled out and all are followed.

Thanks for your attention.

Kylychbek Sh. Zhundubaev

Dear colleagues, we have heard presentations from the design engineer and environmental and social safeguards specialists.

Undoubtedly the project work has an impact on the environment and so I propose to devote fifteen minutes for discussions.

The consultant is taking minutes so that all questions and answers will be recorded. Please feel free to ask questions.

Summary of questions and answers:

Questions

Operation Department of Karakol CE Vodokanal Question for the design engineer. You said the six manholes will not be reconstructed, there will be no capital repairs. This is the first question.

And second question. You said that the Karakol River crossing will be 200 metres with a D500mm pipe, which means only 500 metres. The distance between the pipes is 80 cm.

Operation Department. What will the pipe material be - asbestos cement?

Operation Department. Question: And where are these 28 manholes located including six manholes of that will not be repaired?

Addition from the project consultant of KE Vodokanal. The 28 manholes are on what is known as "drunken road", where some drivers detour to enter the city through the mountains along the ponds. There are virtually no people there, no plantations and as such no road either. You show that these six manholes are on the carriageway, but there is no carriageway there. No cars go there, it's not a driveway. Perhaps this road will be used as a service road and then machinery will go there.

Director, KE "Vodokanal" Question. Where are these six manholes located and can you show them on a map now?

Question. Could you show me the map of the 200 m. crossing again, please? And clarify the layout.

Answers

Answer: The total length of the section is 200 metres, but where the culvert passes through, two strings are laid. Yes in flumes under the heating pipe and just under 400 m.

Addition from the project consultant of KE Vodokanal. For the current period there is an a/c pipe D300 mm. It was installed in 1980 and is very old. There may be a leak, but we can't see it as it runs along the bottom of the river. That's why we raised the question. This pipe needs to be replaced between the river banks. There are no any trees or bushes there.

Answer: Pipe material is polyethylene.

Answer: We can't exclude that heavy machinery will go there and then, taking into account the manholes' level increase, there are risks of their damages. Even a small brick height of 65 mm, then the brick simply will not withstand the load of heavy machinery.

And the second, if conditionally to take ready-made reinforced concrete products for example wall rings, the height of which is at least 30 cm, taking into account that there is a earth road it is necessary to raise the level and it is necessary to asphalt or concrete all A height of 30 cm is quite a large value. Of course, we considered all these issues. Considering these factors, it was decided that these six manholes will not be raised because they may cause problems in future road operation.

Answer: It's on the map here. These yellow dots are the manholes. A couple of the manholes here at the beginning already are on this road. So if we go further on this road we will notice that we have these manholes actually located on this road.

Answer: Returning to your question, right here you can see on the plan that the collector approaches the chamber at this point. In the chamber the pipeline will have two lines to be switched with a gate valve.

Here we designed shut-off valves for each pipeline so that in case of an emergency we can shut off one line. In the next chamber we

combine two polyethylene pipes and connect to the existing pipeline in the existing manhole.

Kylychbek Sh. Zhundubaev

Dear colleagues, the procedure for public hearings is as follows: 30 calendar days in advance, an announcement is published in the newspaper about the public hearings. There was an announcement in the *Karakol Pravda*. It was stated that all queries could be contacted at the telephone number given in the announcement. Why 30 calendar days are provided. To allow the public to view the EIA and engineering designs in a timely manner.

Question: How many buckthorn bushes will be cut down?

Answer: For the current period, I cannot say exactly how much shrubs and buckthorn shrubs will be cut. This will need to be determined at the time of commencement of construction work. The EMP is not ready yet. Now we do not know yet what kind of machinery will work, how the access roads and sites for turning the machinery will be organised.

If there is a need there, we will get involved with the regional office and determine what is needed and what is possible. There may be replanting, it won't be the growing season, it will be winter and the river level will be lower.

Question: Olga, please include these questions in the minutes, because we will prepare a Initial Environmental Examination for these additional works according to the bank's requirements. The issue regarding sea buckthorn bushes should definitely be recorded in IEE. When green areas are cut down, there is a special provision on the procedure of compensation for forestry production, agricultural production. There are regulations and they need to be followed. Because when the project is completed, law enforcement will check and raise all these issues.

Answer: When the design is ready we will go to a field and on the spot we will determine everything.

Dear colleagues, if there are no other questions, we will proceed to the next presentation. We have a separate presentation on the relocation of the Central Asian frog. But we would rather give you a short video which, after improvement and editing, will be sent as a report to the Asian Development Bank. And we will also disseminate through the media.

Video.

Dear colleagues for your information I would like to say that this work was carried out by the specialists of the Institute of Biology under the Academy of Sciences. Askar Davletbakov was the direct supervisor of this work

The work was carried out on the basis of a permit issued by the Ministry of Natural Resources and the conclusion of the Academy of Sciences. All necessary procedures have been followed. We would like to inform the participants that the consultant submitted the report to us, we have forwarded it to the bank for review and today we are editing the video, translating it into English and submitting it as a report. Very good work has been done, which deserves respect even at the international level.

The executing agency of the project (DDWSSD) will submit the Consultant's proposals for regulating the protection of Central Asian frog habitat to the Ministry of Natural Resources. These areas around WWTP Karakol are frequented by poachers. There is such a procedure of establishment of a natural reserve of local significance, which is declared a reserve with a special protection regime without land acquisition.

We will clarify this issue and contact the Ministry of Natural Resources and work out a set of measures. Let's increase the fight against poaching.

The Environmental specialist of D&B Contractor of Karakol WWTP: frogs may return to familiar habitats. The contractor will install fencing around the lagoons and we will recommend that these measures be considered. Conservation of this species will be carried out in the future.

CE Karakol: We are now develop actions for cleaning the lagoons of WWTP and where we will store the sludge. The location has already been determined, Contractor will carry out this work in accordance with an additional contract.

Dear colleagues, what other questions would you like to ask?

Questions

Question: Good afternoon, I represent the State Sanitary Inspectorate. I would like to clarify the distance of residential houses from the site of 28 manholes and pipeline 200 metres?

Answers

Answer. 28 manholes are located 500 metres or further away from residential houses. And also a 200 metre pipeline

Question: It is very good that you thoroughly examined impact factors and shifting. You mentioned noise loads. Who will take measurements and monitor these noise loads? You know, of course, that we have daytime and nighttime regulations.

Answer. Thanks for the question. The contractor will monitor. Either the contractor should buy a noise meter or contract a laboratory for such measurements. All this is described in the environmental management plan. We need to take measurements at the construction site.

Dear colleagues, I would like to consider today's public participation meeting be considered closed.

Signatures:

K.Zh. Zhundubaev
Chairperson

Dolgov I. I.
Secretary



Кредит L3742/Грант G0628 Проект "Управление сточными водами Иссык-Куля"

СПИСОК УЧАСТНИКОВ мероприятия по проекту «Управление сточными водами Иссык-Куля», финансируемого АБР
 Долбоор боюнча коомдук жолугушуулардын/консультациялардын/ иш-чаралардын КАТЫШУУЧУЛАРЫНЫН ТИЗМЕСИ
 Азия өнүктүрүү банкы тарабынан каржыланган «Ысык-Көл саркынды сууларын башкаруу» долбоору
 LIST OF PARTICIPANTS of the event within the framework of the Issyk-Kul Wastewater Management Project financed by ADB

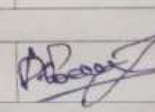
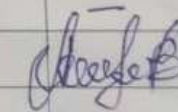
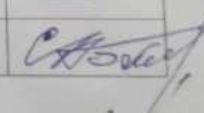
Тема/Subj.: общественное слушание по «Оценке воздействия на окружающую среду и социальным защитным мерам при строительстве 200 м сбросного трубопровода через р. Каракол и модернизации 28 колодцев на главном канализационном коллекторе в г. Каракол»/ Public Hearing on Environmental Impact Assessment and Social Safeguards during the construction of 200 effluent discharge pipeline across the Karakol river and the modernization of 28 manholes on the main sewer collector in Karakol city

Место проведения/Venue: конференц-Зал Мэрии г. Каракол/ Conference Hall of Karakol Municipality

Дата проведения/Date: "25" июля/July, 2023 10:00-12:00

Завершение/Completion date: "25" июля/July, 2023

Количество участников/Number of participants: всего/total 20, включая /including 7 женщины/women и/and 13 мужчин/men

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		М/ Э/ M	Ж/ А/ F			Телефон/ телефон номуру/ Tel.	Э.п. адрес/ электрондук дарек/e-mail	
Полномочное Представительство Президента КР в ИК области								
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#	Ф. И.О. Аты-жөнү Full Name	Пол Gender		Муниципалитет/ (шаардын аталышы) /City	Место работы/Должность Иштеген жери/ Кызматы Organization/Position	Контакты Байланыштар Contact Data		Подпись Кол коюу Signature
		М/ Э/ М	Ж/ А/ F			Телефон/ телефон номуру/ Tel.	Эл. адрес/ электрондук дарек/e-mail	
4	Тайлакова Гулушкан Бейшеевна		v	Каракол	и.о. главврача, Каракольский межрайцентр профилактики заболеваний и госсанэпиднадзора	0702097855 Пр. 40985	kargsen@mail.ru	
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	Аламанов Эсен Кулембекович	v		Каракол	Директор ОсОО «Караколбалыгы»	0558484554		—
Консультант по проектированию и надзору – компания «Темелсу Интернэшнл Инжиниринг Сервисес Инк.»								
6	Зинина Ольга Валерьевна		v	Бишкек	Специалист КПП по охране окружающей среды	0555475577	zinola@yandex.ru	
7	Долгов Юрий Юрьевич	v		Бишкек	Специалист КПП по переселению	0551903752	a_doc@mail.ru	
8	Батталов Данил Ильнурович	v		Бишкек	Представитель суб-консультанта КПП по проектированию, Инженер по ВСиВО			
КП "Водоканал"								
9	Алжамбаев Фархат Абды- Хамитович	v		Каракол	Директор	0559 055 829	karakolvodokanal@m ail.ru	
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13	Жумабеков Медербек Кадыралиевич	v		Бишкек	Специалист по социальным защитным мерам и переселению, ОУП	0555 01 05 57	resettlement@iwmp.k g	

Смета на реконструкцию участка очистных сооружений с установкой станций по очистке и обеззараживанию сточных вод, строительство 200 м канализационной сети и 20 колодезев на существующей канализационной сети. Каракол, 20 июня 2022 г.

#	Ф. И. О. Аты-жөнү Full Name	Пол Gender		Муниципалитет/ (шаардын аталышы) /City	Место работы/Должность Иштеген жери/ Кызматы Organization/Position	Контакты Байланыштар Contact Data		Подпись Кол коюу Signature
		М/ Э/ M	Ж/ А/ F			Телефон/ телефон номуру/ Tel.	Эл. адрес/ электрондук дарек/e-mail	
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19	Чечеманов Р.	✓		Каракол	Зав. опер. ком. ЗПИ ШКК.			
20	Козлов Р.К. Козлов Саламат Канатбекович			Каракол	м. спец. ШКК	0704494702		
			13 / 7					

Appendix 5: IBAT Report

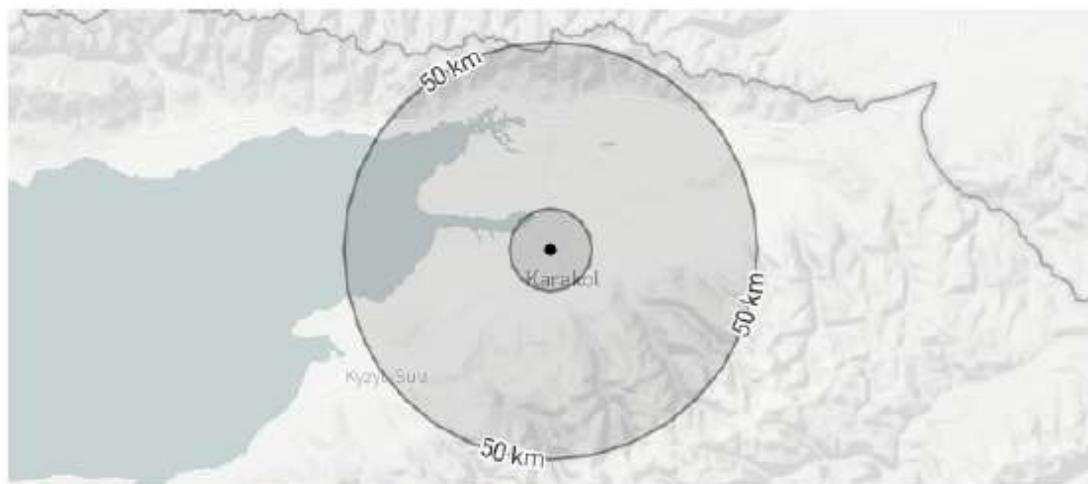


World Bank Group Biodiversity Risk Screen KARAKOL

- **Country:** Kyrgyzstan
- **Location:** [42.5, 78.4]
- **Created by:** Sultan Bakirov

Overlaps with:

Protected Areas	50 km: 6	10 km: 2	1 km: 1	9
World Heritage (WH)	50 km: 0	10 km: 0	1 km: 0	0
Key Biodiversity Areas	50 km: 0	10 km: 1	1 km: 0	1
Alliance for Zero Extinction (AZE)	50 km: 0	10 km: 0	1 km: 0	0
IUCN Red List				5
Critical Habitat				Likely



Displaying project location and buffers: 1 km, 10 km, 50 km



This report is based on IFC Performance Standard 6 (PS6) but applies to World Bank Environmental and Social Standard 6 (ESS6)





About this report

IBAT provides initial screening for critical habitat values. Performance Standard 6 (PS6) defines these values for critical habitat (PS6: para. 16) and legally protected and internationally recognized areas (PS6: para. 20). PS6 will be triggered when IFC client activities are located in modified habitats containing 'significant biodiversity value,' natural habitats, critical habitats, legally protected areas, or areas that are internationally recognized for biodiversity. References to PS6 and Guidance Note 6 (GN6) are provided to guide further assessment and detailed definitions where necessary. Please see <https://www.ifc.org/ps6> for full details on PS6 and GN6.

The report screens for known risks within a standard 50km buffer of the coordinates used for analysis. This buffer is not intended to indicate the area of impact. The report can be used to:

- Scope risks to include within an assessment of risks and impacts
- Identify gaps within an existing assessment of risks and impacts
- Prioritize between sites in a portfolio for further assessment of risks and impacts
- Inform a preliminary determination of critical habitat
- Assess the need for engaging a biodiversity specialist
- Identify additional conservation experts or organizations to inform further assessment or planning

WARNING: IBAT aims to provide the most up-to-date and accurate information available at the time of analysis. There is however a possibility of incomplete, incorrect or out-of-date information. All findings in this report must be supported by further desktop review, consultation with experts and/or on-the-ground field assessment as described in PS6 and GN6. Please consult IBAT for any additional disclaimers or recommendations applicable to the information used to generate this report.

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Priority Species

Habitat of significant importance to priority species will trigger critical habitat status (See PS6: para 16). IBAT provides a preliminary list of priority species that could occur within the 50km buffer. This list is drawn from the IUCN Red List of Threatened Species (IUCN RL). This list should be used to guide any further assessment, with the aim of confirming known or likely occurrence of these species within the project area. It is also possible that further assessment may confirm occurrence of additional priority species not listed here. It is strongly encouraged that any new species information collected by the project be shared with species experts and/or IUCN wherever possible in order to improve IUCN datasets.

IUCN Red List of Threatened Species - CR & EN

The following species are potentially found within 50km of the area of interest.

For the full IUCN Red List please refer to the associated csv in the report folder.

Species Name	Common Name	Taxonomic Group	IUCN Category	Population Trend	Biome
<i>Oxyura leucocephala</i>	White-headed Duck	AVES	EN	decreasing	Terrestrial, Freshwater
<i>Haliaeetus leucoryphus</i>	Pallas's Fish-eagle	AVES	EN	decreasing	Terrestrial, Freshwater
<i>Neophron percnopterus</i>	Egyptian Vulture	AVES	EN	decreasing	Terrestrial, Freshwater
<i>Aquila nipalensis</i>	Steppe Eagle	AVES	EN	decreasing	Terrestrial
<i>Falco cherrug</i>	Saker Falcon	AVES	EN	decreasing	Terrestrial, Marine, Freshwater

Restricted Range Species

There are no restricted range species to show for this report.



Biodiversity features which are likely to trigger Critical Habitat

Protected Areas

The following protected areas are found within 1 km and 10 km and 50 km of the area of interest. For further details please refer to the associated csv file in the report folder.

Area name	Distance	IUCN Category	Status	Designation	Recommendation
Issyk Kul	1 km	Not Applicable	Designated	UNESCO-MAB Biosphere Reserve	Assess for biodiversity risk
Issyk-Kul	10 km	Ia	Designated	State Nature Reserve	Assess for critical habitat
Karakol	10 km	II	Designated	Nature Park	Assess for critical habitat
Alma-Atinskiy	50 km	IV	Designated	Zakaznik	Assess for biodiversity risk
Dzhety-Oguz	50 km	IV	Designated	Wildlife Refuge	Assess for biodiversity risk
Ele Alatau	50 km	II	Designated	National Nature Park	Assess for critical habitat
Isyk-Kul State Reserve with the Lake Isyk-Kul	50 km	Not Reported	Designated	Ramsar Site, Wetland of International Importance	Assess for biodiversity risk



Area name	Distance	IUCN Category	Status	Designation	Recommendation
Sarychat-Ertash NR	50 km	Ia	Designated	State Nature Reserve	Assess for critical habitat
Teploklyuchinski	50 km	IV	Designated	Wildlife Refuge	Assess for biodiversity risk

Key Biodiversity Areas

The following key biodiversity areas are found within 1 km and 10 km and 50 km of the area of interest. For further details please refer to the associated csv file in the report folder.

Area name	Distance	IBA	AZE	Recommendation
Eastern Issyk Kul Lake	10 km	Yes	No	Assess for critical habitat

Species with potential to occur

Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
AVES	261	11	0	5	6	11	239	0
MAMMALIA	62	1	0	0	1	4	56	1
ACTINOPTERYGII	2	0	0	0	0	0	2	0
AMPHIBIA	1	0	0	0	0	0	1	0
INSECTA	16	0	0	0	0	0	15	1



Area Taxonomic group	Total assessed species	Total (CR, EN & VU)	CR	EN	VU	NT	LC	DD
MALACOSTRACA	2	0	0	0	0	0	2	0
BIVALVIA	2	0	0	0	0	0	1	1
GASTROPODA	10	0	0	0	0	0	9	1
REPTILIA	9	0	0	0	0	0	9	0
POLYPODIOPSIDA	1	0	0	0	0	0	1	0
MAGNOLIOPSIDA	21	0	0	0	0	0	20	1
LILIOPSIDA	33	0	0	0	0	0	33	0
AGARICOMYCETES	1	0	0	0	0	0	1	0



Recommended citation

IBAT PS6 & ESS6 Report. Generated under licence 1399-11592 from the Integrated Biodiversity Assessment Tool on 05 October 2020 (GMT). www.ibat-alliance.org

Recommended Experts and Organizations

For projects located in critical habitat, clients must ensure that external experts with regional expertise are involved in further assessment (GN6: GN22). Clients are encouraged to develop partnerships with recognized and credible conservation organizations and/or academic institutes, especially with respect to potential developments in natural or critical habitat (GN6: GN23). Where critical habitats are triggered by priority species, species specialists must be involved. IBAT provides data originally collected by a large network of national partners, while species information is sourced via the IUCN Red List and affiliated Species Specialist Groups. These experts and organizations are listed below. **Please note that this is not intended as a comprehensive list of organizations and experts. These organizations and experts are under no obligation to support any further assessment and do so entirely at their discretion and under their terms. Any views expressed or recommendations made by these stakeholders should not be attributed to the IFC or IBAT for IFC partners.**


Birdlife Partners

URL: <https://www.birdlife.org/worldwide/partnership/birdlife-partners>

Directory for Species Survival Commission (SSC) Specialist Groups and Red List Authorities

URL: <https://www.iucn.org/commissions/ssc-groups>

Appendix 6: Gosstroy order 140 for Grievance Redress Mechanism

<p>КЫРГЫЗ РЕСПУБЛИКАСЫНЫН МИНИСТРЛЕР КАБИНЕТИНЕ КАРАШТУУ АРХИТЕКТУРА, КУРУЛУШ ЖАНА ТУРАКЖАЙ- КОММУНАЛДЫК ЧАРЕБЕ МАМЛЕКЕТТИК АГЕНТТИГИ</p>		<p>ГОСУДАРСТВЕННОЕ АГЕНТСТВО АРХИТЕКТУРЫ, СТРОИТЕЛЬСТВА И ЖИЛИЩНО- КОММУНАЛЬНОГО ХОЗЯЙСТВА ПРИ КАБИНЕТЕ МИНИСТРОВ КЫРГЫЗСКОЙ РЕСПУБЛИКИ</p>	<p>13 of the Regulation on the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic (hereinafter referred to as "Gosstroy"), approved by Resolution of the Cabinet of Ministers of the Kyrgyz Republic dated 25.06.2022 #44, 1 order:</p>
<p>STATE AGENCY FOR ARCHITECTURE, CONSTRUCTION AND PUBLIC UTILITIES UNDER THE CABINET OF MINISTERS OF THE KYRGYZ REPUBLIC</p>			<p>1. To establish commissions to consider complaints and applications of citizens arising from the implementation of the IWMP of social and environmental safety measures and gender issues: - at the central level according to Annex #1; - at the local level, in the city of Karakol, according to Annex #2 - at the local level, in the city of Balykchy, according to Annex #3</p>
<p>ORDER</p>			<p>2. To approve the Regulation on the commissions for the consideration of complaints and applications of citizens subject to impacts within the framework of IWMP in accordance with Annex #4</p>
<p>31.12.2022 №140</p>	<p>Bishkek</p>		<p>3. Commissions should ensure timely consideration and adoption of appropriate decisions on complaints and applications of citizens of social and environmental safety measures and gender issues during the implementation of IWMP.</p>
<p>On the establishment of commissions to consider complaints and applications of citizens affected by the "Issyk-Kul Wastewater Management Project", funded by Asian Development Bank</p>			<p>4. Control over the execution of this order should be entrusted to the Deputy Director of Gosstroy M.A. Akmataliev.</p>
<p>With a view to ensuring coordinated interaction between public authorities and local self-government, as well as timely consideration of complaints and applications of citizens affected by the Issyk-Kul Wastewater Management Project (hereinafter referred to as "IWMP"), funded by Asian Development Bank (hereinafter referred to as "ADB"), in accordance with the Law of the Kyrgyz Republic "On the Procedure for Considering Citizens' Appeals" dated May 4, 2007 #67, the ADB's Safeguard Policy Statement, guided by paragraph 3 of subitem 3 of item</p>			<p>Director T. Satyshev</p>
<p>Annex №1 to the Order of the Gosstroy</p>		<p>Annex №2 to the Order of the Gosstroy</p>	
<p>31.12.2022 №140</p>		<p>31.12.2022 №140</p>	
<p>Composition of the Commission for the consideration of complaints and applications at the central level:</p>		<p>Composition of the Commission for the consideration of complaints at the local level in the city Karakol</p>	
<ol style="list-style-type: none"> 1. Deputy Director of the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic - Chairman of the Commission; 2. First Deputy Plenipotentiary Representative of the President of the Kyrgyz Republic in Issyk-Kul Oblast - Deputy Chairman of the Commission; 3. Deputy Director of the Department of Drinking Water Supply and Sewerage Development under the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic; 4. Head of the Drinking Water Supply and Sewerage Development Unit of the Department of Drinking Water Supply and Sewerage Development under the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic; 5. Representative of the Consulting Company of IWMP; 6. Environmental Specialist of the PMO IWMP; 7. Social Safeguard and Resettlement Specialist of the PMO IWMP. 		<ol style="list-style-type: none"> 1. First Vice-Mayor of Karakol – Chairman of the Commission (by agreement) 2. Head of the Municipal Property Department of Karakol city - Deputy Chairman of the Commission (by agreement); 3. Representative of the Karakol-Aksu Branch of the State Institution «Cadastre»; 4. Representative of the Issyk-Kul Territorial Department of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic; 5. Representative of the Issyk-Kul Regional Department for Urban Planning and Architecture of Gosstroy; 6. Head of the Boru-Bash Ayil Okmotu (by agreement); 7. Director of the ME «Vodokanal» (by agreement); 8. Isanov Sabyrbek Dolosovich – resident of Karakol city (by agreement); 9. Kaliev Bakhtiar Nazarbaevich – resident of the Karakol city (by agreement); 10. Representative of the Consulting Company of IWMP; 11. Manager of the Project Implementation Unit of IWMP. 	

<p style="text-align: center;">Annex №3 to the Order of the Gosstroy 31.12.2022 №140</p> <p style="text-align: center;">Composition of the Commission for the consideration of complaints at the local level in the city Balykchy</p> <ol style="list-style-type: none"> 1. First Vice-Mayor of Balykchy – Chairman of the Commission (by agreement); 2. Head of the Municipal Property Department of Balykchy – Deputy Chairman of the Commission (by agreement); 3. Representative of the Ton Branch of the State Institution «Cadastre» (by agreement); 4. Representative of the Balykchy Branch of the State Institution «Cadastre» (by agreement); 5. Representative of the Issyk-Kul Territorial Department of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic; 6. Representative of the Department for Urban Planning and Architecture of Balykchy city; 7. Director of the ME «Vodokanal» of Balykchy (by agreement); 8. Representative of the Consulting Company of IWMP; 9. Manager of the Project Implementation Unit of IWMP. 	<p style="text-align: center;">Annex №4 to the Order of the Gosstroy 31.12.2022 №140</p> <p style="text-align: center;">REGULATION on Commissions to consider complaints and applications of citizens affected by the Issyk- Kul Wastewater Management Project funded by Asian Development Bank</p> <p style="text-align: center;">Chapter I. General Provisions</p> <ol style="list-style-type: none"> 1. This Regulation on Commissions for the consideration of complaints and applications of citizens affected by the Project "Issyk-Kul Wastewater Management" (hereinafter referred to as "IWMP" funded by Asian Development Bank (hereinafter referred to as "ADB"), (hereinafter referred to as the "Regulation") regulates the procedure and organization of work of commissions for the consideration of complaints and applications of citizens affected by the IWMP (hereinafter referred to as the "Commission"). 2. Commissions are established at the central and local levels (in the cities of Karakol and Balykchy). Commissions are collegial bodies that carry out their activities on a periodic basis, on a voluntary basis. 3. In their activities, the Commissions are guided by the Constitution of the Kyrgyz Republic, laws and other regulatory legal acts of the Kyrgyz Republic, the ADB's Safeguard Policy Statement, the international treaties to which the Kyrgyz Republic is a party, international treaties entered into force in accordance with the procedure established by law, to which the Kyrgyz Republic is a party, and the Regulation.
<p style="text-align: center;">Chapter 2. Aim and Tasks of the Commissions</p> <ol style="list-style-type: none"> 4. The aim of the activity of the Commissions is to consider complaints and applications of citizens who fall under the impact of the IWMP. 5. The task of the Commissions is to consider applications and complaints of citizens on social and environmental safety measures and gender issues within the framework of the IWMP. <p style="text-align: center;">Chapter 3. Formation of the composition of the Commission at the central level</p> <ol style="list-style-type: none"> 6. The Commission at the central level consists of: <ol style="list-style-type: none"> 1. Deputy Director of the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic - Chairman of the Commission; 2. First Deputy Plenipotentiary Representative of the President of the Kyrgyz Republic in Issyk-Kul Oblast - Deputy Chairman of the Commission; 3. Deputy Director of the Department of Drinking Water Supply and Sewerage Development under the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic; 4. Head of the Drinking Water Supply and Sewerage Development Unit of the Department of Drinking Water Supply and Sewerage Development under the State Agency for Architecture, Construction and Public Utilities under the Cabinet of Ministers of the Kyrgyz Republic; 5. Representative of the Consulting Company of IWMP; 6. Environmental Specialist of the PMO IWMP; 	<ol style="list-style-type: none"> 7. Social Safeguard and Resettlement Specialist of the PMO IWMP. <p style="text-align: center;">Chapter 4. Formation of the composition of the Commission at the local level in the cities of Karakol and Balykchy</p> <ol style="list-style-type: none"> 7. The Commission of Karakol city consists of: <ol style="list-style-type: none"> 1. First Vice-Mayor of Karakol – Chairman of the Commission (by agreement) 2. Head of the Municipal Property Department of Karakol city - Deputy Chairman of the Commission (by agreement); 3. Representative of the Karakol-Aksu Branch of the State Institution «Cadastre»; 4. Representative of the Issyk-Kul Territorial Department of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic; 5. Representative of the Issyk-Kul Regional Department for Urban Planning and Architecture of Gosstroy; 6. Head of the Boru-Bash Ayil Okmotu (by agreement); 7. Director of the ME «Vodokanal» (by agreement); 8. Isanov Sabyrbek Dolosovich – resident of Karakol city (by agreement); 9. Kaliev Baktiar Nazarbaevich – resident of the Karakol city (by agreement); 10. Representative of the Consulting Company of IWMP; 11. Manager of the Project Implementation Unit of IWMP. 8. The Commission of Balykchy city consists of:

<ol style="list-style-type: none"> 1. First Vice-Mayor of Balykchy – Chairman of the Commission (by agreement); 2. Head of the Municipal Property Department of Balykchy – Deputy Chairman of the Commission (by agreement); 3. Representative of the Ton Branch of the State Institution «Cadastr» (by agreement); 4. Representative of the Balykchy Branch of the State Institution «Cadastr» (by agreement); 5. Representative of the Issyk-Kul Territorial Department of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic; 6. Representative of the Department for Urban Planning and Architecture of Balykchy city; 7. Director of the ME «Vodokanal» of Balykchy (by agreement); 8. Representative of the Consulting Company of IWMP; 9. Manager of the Project Implementation Unit of IWMP. <p style="text-align: center;">Chapter 5. Functions of Commissions</p> <p>9. To solve the assigned tasks, the Commissions perform the following functions:</p> <ol style="list-style-type: none"> 1) consider applications/complaints of citizens affected by the IWMP on gender, environmental issues and social protection measures, and resettlement; 2) monitor the implementation of decisions made by the Commissions. <p>10. Chairmen of the Commissions perform the following functions:</p> <ol style="list-style-type: none"> 1) preside over the meetings of the Commissions and organize its work; 	<ol style="list-style-type: none"> 2) have the right of a decisive vote when voting at the meetings of the Commissions; 3) approve the agenda of the meetings of the Commissions; 4) appoint the date, time and place of the meetings of the Commissions; 5) undertake control over the execution of the decisions of the Commissions. <p style="text-align: center;">Chapter 5. Rights of the Commissions</p> <p>11. Commissions have the right to:</p> <ol style="list-style-type: none"> 1) to hold meetings as soon as applications and complaints are received; 2) to check the materials (documents) on the received applications/complaints submitted for consideration to the Commissions; 3) in accordance with the established procedure, request and receive information from state bodies, local self-government bodies and organizations, regardless of their organizational and legal forms and forms of ownership; 4) if necessary, invite representatives of state bodies, local self-government bodies, civil society, as well as citizens who have filed an application/complaint to the meetings of the Commissions. <p>12. Members of the Commissions have the right to:</p> <ol style="list-style-type: none"> 1) declare self-recusal or inform the Chairmen of the Commissions about the existence of circumstances for recusal in respect of one or more members of the Commissions, if there are circumstances leading to a conflict of interests, if any have become known; 2) notify the Chairmen of the Commissions about the existence of an attempt to influence the result of the work of the Commissions by persons participating in the consideration of the application/complaint or other interested persons. 																								
<p style="text-align: center;">Chapter 6. Organization of the activity of the Commissions and the procedure for the consideration of complaints and applications under the Grievance Redress Mechanism</p> <p>13. Grievance Redress Mechanism</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Action level</th> <th>Process</th> <th>Term</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Decision of the Local Contact Person (LCP)</td> <td>- At the initial stage, the LCP listens to the affected person and tries to offer acceptable solutions. If the affected person is not satisfied with the decisions, he/she submits a complaint in writing to the local Commission for the Consideration of Complaints and Applications within 3 days.</td> <td>3 days</td> </tr> <tr> <td>2</td> <td>Decision at the local level</td> <td>- After receiving the written complaint, the LCP will review and prepare the case file for the local hearing and the Commission's decision. The official hearing will be held by the Commission on the day set by the LCP in agreement with the affected person. On the day of the hearing, the affected person must appear before the Commission and present evidence in support of his claim. The LCP will record the affected person's statements and</td> <td>14 days</td> </tr> </tbody> </table>	Step	Action level	Process	Term	1	Decision of the Local Contact Person (LCP)	- At the initial stage, the LCP listens to the affected person and tries to offer acceptable solutions. If the affected person is not satisfied with the decisions, he/she submits a complaint in writing to the local Commission for the Consideration of Complaints and Applications within 3 days.	3 days	2	Decision at the local level	- After receiving the written complaint, the LCP will review and prepare the case file for the local hearing and the Commission's decision. The official hearing will be held by the Commission on the day set by the LCP in agreement with the affected person. On the day of the hearing, the affected person must appear before the Commission and present evidence in support of his claim. The LCP will record the affected person's statements and	14 days	<table border="1"> <thead> <tr> <th>Step</th> <th>Action level</th> <th>Process</th> <th>Term</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td>document all the evidence. The decision of the majority of the Commission members will be considered final by the Commission and will be prepared by the LCP and signed by other members of the Commission. The case will be updated and the LCP will inform the affected person about the decision within 14 days. If the affected person is not satisfied with the decision, the LCP will file a complaint in writing to the Commission at the central level with an opinion and supporting documents prepared at the local level.</td> <td></td> </tr> <tr> <td>3</td> <td>Decision at the central level</td> <td>- After receiving a written complaint, the Chairman of the Commission at the central level will review and prepare the file of the case for hearing and resolution of the Commission. The official hearing will be held on the day agreed by the Chairman of the Commission and the affected person. The</td> <td>14 days</td> </tr> </tbody> </table>	Step	Action level	Process	Term			document all the evidence. The decision of the majority of the Commission members will be considered final by the Commission and will be prepared by the LCP and signed by other members of the Commission. The case will be updated and the LCP will inform the affected person about the decision within 14 days. If the affected person is not satisfied with the decision, the LCP will file a complaint in writing to the Commission at the central level with an opinion and supporting documents prepared at the local level.		3	Decision at the central level	- After receiving a written complaint, the Chairman of the Commission at the central level will review and prepare the file of the case for hearing and resolution of the Commission. The official hearing will be held on the day agreed by the Chairman of the Commission and the affected person. The	14 days
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16. The meetings of the Commissions are chaired by its Chairmen, and in their absence - by the Deputy Chairmen of the Commissions.

17. If there is no quorum at the meetings of the Commissions or if additional materials are required to resolve a disputed issue, or other measures are taken, the terms of consideration of the application/complaint by the Commission may be exceptionally extended, but not more than 25 calendar days.

18. The decisions of the Commission are adopted by open vote and are considered adopted if a majority of the members of the Commissions present voted for them.

19. Minutes are kept at the meetings of the Commissions.

14. The Commissions carry out their activities in the form of meetings.

15. The meetings of the Commissions are considered competent if at least half of its members are present at them, while the members of the Commissions participate in its meetings without the right of replacement.