Initial Environmental Examination

Project No.: 50176-002

May 2025

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KGZ: Issyk-Kul Wastewater Management Project, Construction of Additional Sewer Networks in Karakol City - IMP/ICB/CW-21/008

Prepared by the State Institution Drinking Water Supply and Sewerage Development (DWSSD) under the Water Resources Service under the Ministry of Water Resources, Agriculture and Processing Industry of the Kyrgyz Republic for the Asian Development Bank (ADB).

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ACRONYMS

ACM	Asbestos Containing Materials
ADB	Asian Development Bank
DWSSD	State Institution Drinking Water Supply and Sewerage Development under the Water Resources Service under the Ministry of Water Resources, Agriculture and Processing Industry of the Kyrgyz Republic
DPMDCH	Department on Preservation, Monitoring and Development of Cultural Heritage
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMoP	Environmental Monitoring Program
GKR	Government of Kyrgyz Republic
MACHCS	Ministry for Architecture, Construction, Housing and Communal Services
GRM	Grievance Redress Mechanism
IBA	Important Bird Area
IBR	Issyk-Kul Biosphere Reserve
GDIBR	General Directorate of Issyk-Kul Biosphere Reserve
IEE	Initial Environmental Examination
ISDP	Issyk-Kul Sustainable Development Project
ITA of MNRETS	Issyk-Kul Territorial Administration of MNRETS
KR	Kyrgyz Republic
MAC	Maximum Allowable Concentration
MASL	Meters above sea level
MNRETS	Ministry of Natural Resources, Ecology and Technical Supervision
MLSSM	Ministry of Labor, Social Security and Migration
MPC	Maximum permissible concentration
NGO	Non-Governmental Organization
NSC	National Statistics Committee
LSG	Local Self-Government
OOS Section	Russian acronym for EIA Section in the detailed designs
OVOS	Russian acronym for EIA Report
PCRs	Physical Cultural Resources
SEE	State Ecological Expertise
PIU	Project Implementation Unit (Karakol)
PMO	Project Management Office
REA	Rapid Environmental Assessment
Cadastre	State organization under the Ministry of Agriculture
SAEPF	State Agency for Environmental Protection and Forestry
SSEMP	Site Specific Environmental Management Plan
IWMP	Issyk-Kul Wastewater Management Project
SPS 2009	ADB Safeguard Policy Statement 2009
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. This Initial Environmental Examination (IEE) report assesses the potential environmental, health, safety, and social impacts of the proposed “Construction of Additional Sewer Network Project in Karakol City, Kyrgyz Republic”. The project aims to expand the wastewater collection networks, complementing existing initiatives to improve wastewater systems in Karakol city, thereby enhancing health, hygiene, and sanitation standards.

2. **Project Background and Purpose** The project proposes an additional 12.24 km of sewer network in Karakol City, funded by the Asian Development Bank (ADB) under the "Issyk-Kul Wastewater Management Project" (Loan Approval Number: 3742/0628). The construction approach will remain consistent with previous phases, without changes in technology. This IEE was prepared by the State Institution Drinking Water Supply and Sewerage Development under the Water Resources Service under the Ministry of Water Resources, Agriculture and Processing Industry of the Kyrgyz Republic (DWSSD) in accordance with ADB's Safeguard Policy Statement (SPS 2009) and relevant Kyrgyz Republic laws and regulations. The project is categorized as "B" for environmental safeguards by ADB, meaning potential adverse environmental impacts are site-specific, largely reversible, and can be readily mitigated. The report aims to identify and assess potential impacts and recommend mitigation and enhancement measures.

3. **Legal and Regulatory Requirements**. The legal and regulatory framework[1] for the project includes national laws and international treaties relevant to environmental protection, sustainable development, and occupational health and safety. Key legislation includes the Law on Ecological Expertise, the Law on Sustainable Development of Environmental-Economic System of Issyk-Kul, and various environmental standards for air quality, water quality, and noise levels. The project also complies with ADB’s environmental assessment requirements, which classify the project as Category B, indicating that potential adverse environmental impacts are site-specific, few if any are irreversible, and mitigation measures can be readily designed

4. **Project Description**. The project description details the installation of sewer networks using double-layer corrugated sewer pipes, construction of manholes, and road restoration works. The sewer networks are designed to convey domestic wastewater to the Karakol WWTP. The implementation schedule proposes completion within 18 months from the date of signing the contract between the Contractor and the PMO.

5. **Baseline Environment**. Karakol is the fourth-largest city in Kyrgyzstan, situated in the eastern part of Issyk-Kul Lake. Located approximately 380 km from Bishkek, Karakol serves as the administrative center of the Issyk-Kul Region. The city occupies 44 km² at an altitude of 1,770 m above sea level, nestled in the foothills of the Teskey Ala-Too Mountains. The

[1] The Kyrgyz Republic's legal framework, including the Constitution and various laws such as the Law on Environmental Protection (1999), Law on Ecological Expertise (1999), and Law on Sustainable Development of Environmental-Economic System of Issyk-Kul (2004), establishes principles for natural resource and environmental management. The country is also a signatory to international environmental conventions relevant to the project, including the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity.

region's physiography is marked by high mountains, deep glacial valleys, and the Issyk-Kul Lake basin, making it a hotspot for ecological and climate studies. The topography consists of rugged mountains, river basins, and steppe plains, with elevations ranging from 1,800 m to 5,000 m. The region has diverse land use patterns, including agriculture (wheat & potatoes), pastoralism (sheep & cattle grazing), urban infrastructure supporting tourism, and protected areas like Karakol Nature Park.

6. Karakol experiences cold, moderate climatic conditions year-round, with an average annual temperature of 2.2°C. January is the coldest month (-10.8°C), while July is the warmest (14.3°C). The annual precipitation is 830 mm, with May being the wettest month (106 mm). The region's humidity fluctuates between 60% and 71%. The air quality generally ranges between "Good" (0–50 AQI) and "Moderate" (51–100 AQI), with PM2.5 levels averaging 7.3 μg/m³ and PM10 between 12.8–72 μg/m³, remaining within acceptable limits. The city maintains relatively low ambient noise levels, with moderate noise pollution index (42.86), though areas near the Karakol International Airport experience occasional disruptions due to air traffic.

7. Karakol is part of the Tien Shan bioregion, recognized for its global biodiversity significance, hosting 2,500 plant species and providing key habitats for migratory birds, endemic fish, and endangered species like the snow leopard (Panthera uncia). The vegetation type varies across urban, steppe, and highland environments. Karakol Nature Park covers 38,095 ha, protecting 700 plant species including fox-and-cubs (*Pilosella aurantiaca*), bonnet bellflower (*Codonopsis lanceolata*), poplar, birch, maple, and willow trees. The wildlife in karakol city consists of urban-adapted animals, domestic livestock, and migratory species.

8. Karakol's population was 80,733 as of 2022, with a slightly higher female population (51.4% female, 48.6% male). The city's workforce comprises working-age adults (60%), seniors (7%), and children (33%). Ethnic diversity includes Kyrgyz (majority), Russians (~17%), Uyghurs (~3.9%), and other minority groups. The economy is driven by tourism, agriculture, trade, and emerging renewable energy industries. Karakol boasts rich cultural heritage, shaped by East-West interactions. Notable landmarks include Holy Trinity Cathedral (1895), Dungan Mosque (1907-1910), Russian Quarter & Gingerbread Houses, Przhevalsky Museum, and Karakol History Museum.

9. **Analysis of Alternatives**. The analysis of alternatives considers the "Without Project Option" and the "With Project Option." The former would result in no significant adverse impacts but also no improvements in sanitation, while the latter involves temporary construction impacts but long-term benefits for health and sanitation.

10. **Environmental Assessment**. The anticipated environmental impacts and mitigation measures section identifies potential impacts during the construction and operation phases, such as changes in air quality, noise, water resources, soil, and community safety. Mitigation measures include dust suppression, noise control, waste management, and safety protocols. During the environmental assessment, no significant adverse and irreversible environmental impacts were noted due to the expected volume of construction work. The overall impact of the project is anticipated to be very positive compared to existing conditions, provided that potential negative impacts are effectively mitigated.

11. The IEE includes an Environmental Management Plan (EMP) and an Environmental Monitoring Plan (EMoP). The EMP outlines detailed actions for mitigating impacts during pre-construction, construction, and operation phases, with specific roles and responsibilities assigned to various stakeholders, including contractors, PMO, and environmental specialists. The environmental management budget estimates the costs for implementing the EMP. A Site-Specific Environmental Management Plan (SSEMP) must be developed by contractors prior to construction, incorporating environmental concerns from the IEE and EMP. No civil works can commence without an approved SSEMP. Mitigation measures will be implemented during pre-construction, construction, and operational phases, aligning with ADB's SPS 2009 and Kyrgyz Republic laws.

12. **Information disclosure and stakeholder consultation** are integral to the project, ensuring transparency and community involvement. Public consultations were held on January 31, 2025 at Karakol City to inform and involve local communities and stakeholders, and a Grievance Redress Mechanism (GRM) has been established to address complaints and feedback from affected persons

13. **Conclusion**. The proposed activities focus on expanding the existing sewerage network and improving sanitary conditions in Karakol, aiming to enhance the quality of life and the environment. The document recommends ensuring compliance with the EMP and conducting post-construction audits to verify that all necessary measures have been followed. The successful implementation of the project will not only provide infrastructure but also contribute to the preservation of the environment within the framework of sustainable development.

1 INTRODUCTION

1.1 Background

14. Recognizing the significant environmental value of the Lake Issyk-Kul and its region, the Government is currently implementing reforms in the water supply and sanitation sector, which have included the formulation of the National Development Strategy of the Kyrgyz Republic for 2018-2040 and the Program for the Development of Drinking Water Supply and Sewerage in Settlements of the Kyrgyz Republic until 2026 (Resolution of the Government of the Kyrgyz Republic dated June 12, 2020 No. 330). Previously, ADB has assisted to improve environmental management and urban services in the region through the first Issyk-Kul Sustainable Development Project (ISDP-1), and other external assistance continues to be provided.

15. The proposed Issyk-Kul Wastewater Management Project (IWMP) complements these initiatives by further improving wastewater systems in the two cities of Balykchy and 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 both cities by rehabilitating the existing dilapidated WWTPs, expanding the wastewater collection networks, and strengthening institutional capacity.

16. Under the Project Number 50176-002, the sewer network covering 12.65 km in Karakol city and 10.66 km in Balykchy city are successfully completed. To extend the benefits to the locals in Karakol, additional sewer network of 12.24 km has been proposed, which will be funded by the ADB under “Issyk-Kul Wastewater Management Project (Loan Approval Number: 3742/0628)”. The approach for the construction of the sewer network, will remain same (as that of packages W2 Lot 1and Lot 2 in Karakol City) and there is no inclusion of any change in technology. In view of this, as per the ADB SPS 2009 requirements, the Executing Agency (State Institution "Department of Drinking Water Supply and Sewerage Development (DDWSSD) " under the Water Resources Service under the Ministry of Water Resources, Agriculture and Processing Industry of the Kyrgyz Republic) have prepared this Initial Environmental Examination (IEE).

17. Safeguard categories of the project have been set by ADB for environment as “B” (Refer Appendix 1- REA Checklist). According to ADB safeguards policy, Environmental Safeguard Category B projects have been considered as their potential adverse environmental impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination (IEE), including an EMP, is required for Environmental Safeguard Category B projects.

18. The purpose of this IEE Report is to assess the potential environmental, health, safety and social impact of the proposed sewerage network project. During the environmental assessment, due to the expected volume of construction work, no significant adverse and irreversible impacts on the environment were noted. This IEE Report includes an Environmental Action Plan and an Environmental Monitoring Plan (EMP).

1.2 Purpose of the Report

19. This IEE therefore forms part of preparations for the project (expansion of additional sewer network in Karakol). It has been prepared in accordance with ADB's Safeguard Policy Statement of June 2009 (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, physical 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 have provided the basis for IEE preparation.

1.3 IEE Structure

20. This IEE is structured in accordance with SPS 2009 specifications[2]. It consists of an executive summary, ten chapters, and annexures. It has been prepared based on Detailed Designs prepared by the technical team; primary surveys and secondary data collection and analyses carried out by environmental, biodiversity, hydrogeology, and social experts; and public and stakeholder consultations. The structure of the IEE is as follows

Executive Summary

Chapter 1 – Introduction

Chapter 2 – Policy, Legal and Institutional Framework

Chapter 3 – Project Description

Chapter 4 – Description of the Environment

Chapter 5 – Analyses of Alternatives

Chapter 6 – Anticipated Environmental and Mitigation Measures

Chapter 7 – İnformation Disclosure, Consultation and Participation

Chapter 8 – Grievance Redress Mechanism (GRM)

Chapter 9 – Environmental Management Plan (EMP)

Chapter 10 – Conclusions and Recommendations

[2] As specified in the Annex to Appendix 1, pg. 41-42 (Approach to IEE Preparation).

2 POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

2.1 Legal and Regulatory Framework

2.1.1 Constitution

21. The supreme legislative instrument in the Kyrgyz Republic (KR) 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[3] 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.

2.1.2 Natural Resources and Environment Legislation

22. 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 2007a). 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.

23. 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 labour and occupational health and safety, and cultural heritage protection.

[3] 1. The Constitution may be adopted by initiative of at least 300,000 voters or the President, or two-thirds of the Jogorku Kenesh Deputies at a referendum appointed by the President.
2. Amendments and additions to the provisions of I, II, and V sections of the Constitution may be adopted by initiative of at least 300,000 voters or of the President or two-thirds of the Jogorku Kenesh Deputies at a referendum appointed by the President.
3. Amendments and additions to the provisions of III and IV sections of the Constitution are adopted by the Jogorku Kenesh by initiative of the President or two-thirds of Jogorku Kenesh Deputies.
The Jogorku Kenesh adopts a law on amendments and additions to the Constitution no later than six months from the day the draft law submission to the Jogorku Kenesh for consideration.
A law on amending the Constitution shall be adopted by the Jogorku Kenesh by a majority, at least two-thirds of the total number of deputies after at least three readings with a break of two months between readings.

24. The Constitution and legal framework of Kyrgyzstan offers protections for workers, stipulating that they are entitled to labour conditions in which basic requirements for safety and hygiene in the workplace are met. The Ministry of Labour and 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 Labour Code of the Kyrgyz Republic, 2004, and individual regulatory norms. The KR joined the International Labour 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).

25. 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 Education and Science 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 **Table1.**

Table 1: Relevant Environmental Legislation

Regulation	Year adopted/ edited	Purpose/Content
Law "On Environmental Protection"	1999 (2002, 2003, 2004, 2005, 2009, 2013, 2014, 2015,2016, 2018, 2020)	Establishes state policy and basic principles for the use of natural resources and environmental protection, including environmental impact assessment, the establishment of environmental standards and legal regimes for protected areas.
The concept of the Kyrgyz Republic on environmental safety	2018	Establishes the basic principles of environmental policy and defines global, national and local environmental problems, priorities in the field of environmental protection at the national level, as well as tools for ensuring environmental safety.
Law "On Ecological Expertise"	1999 (2003, 2007, 2015)	Provides a legislative framework for conducting and approving an EIA. Identifies (in general) projects requiring environmental assessment and SEE.
Law “On the sustainable development of the ecological and economic system “Issyk-Kul”	2004 (2013,2017, 2020)	Provides a framework for regulating the conservation, use and sustainable development of Lake Issyk-Kul, including controls on natural resource use and economic development such as a ban on capital construction within 100-m of the shoreline.
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 recreation areas.
Law on Biosphere Territories, No. 48	1999 (2018-,2020)	Defines legislative norms regarding biosphere territories in order to preserve, restore and use natural territories with a rich natural and cultural heritage; support for long-term sustainable economic and social development, including recreation areas, restoration of natural resources, long-term environmental control, monitoring and education.

Regulation	Year adopted/ edited	Purpose/Content
Law on the protection and use of flora	2001 (2003, 2007, 2009, 2010, 2016,2020)	Regulates the use, protection, and reproduction of flora. Key principles include the conservation of biodiversity and the growth of wild plants and ecosystems; restoration and conservation of rare, endangered, and endemic species; and the use and restoration of natural plant resources based on scientific principles.
Law on Aquaculture, Fishing and Protection of Aquatic Biological Resources	1997 (1998, 2008, 2013)	Regulates commercial fishing to conserve and develop fish stocks, develop aquatic cultures and meet the needs of the population in fish products.
Law on wildlife	1999 (2003, 2014, 2015, 2016, 2020)	Establishes that the animal world is the property of the national state. Regulates the protection of wildlife in the design and construction of infrastructure, including habitats for fauna species, migration routes, and nesting and breeding areas. Provides definitions of wildlife, rare and endangered species, wildlife protection, and wildlife use.
Law on Water Resources	1994 (1995, 2012, 2013, 2016,2017, 2018, 2019)	Regulates relations in the field of use and protection of water resources, including the prevention of negative impacts, and seeks to improve cooperation and compliance with the law. Regulates the quantity and quality of water discharged into the environment and prohibits the discharge of industrial, domestic and other wastes into water bodies. Provides water protection zones where activities that can adversely affect water quality are prohibited.
Law on drinking water	1999 (2000, 2003, 2009, 2011, 2012, 2014)	Regulates the availability of drinking water and its quality.
Water code	2005 (2012, 2013, 2016)	Creates a unified legal framework governing the use, protection and development of water resources to ensure sufficient and safe water supply and preserve the environment.
Rules for the protection of surface waters	2016 (2017)	Provides a legislative framework for setting quality standards for water bodies used for fisheries and irrigation, and for enforcing regulations regarding discharges to water bodies.
Law on Air Protection	1999 (2003,2005, 2013, 2015,2016)	Regulates ambient air quality and quality management
Law on the Protection and Use of Historical and Cultural Heritage	1999 (2014, 2015, 2017,2020)	Establishes a system for the protection of objects of local, state, and international historical or cultural significance. Contains definitions of basic terms and types of protected objects.
Law on Labour protection	2003 (2009,2013, 2016)	Provides a framework for regulating working conditions, including workplace safety, workplace safety procedures, and workplace hygiene.
EU Council Directive, 91/271/EEC, Urban Wastewater Treatment Plants-UWWTP directive		Wastewater treatment shall meet effluent quality discharge Standard according to European Council Directive 91/271/EEC on Urban Wastewater Treatment Plants (UWWTP), but phased in by compared the developing regulations and conditions in Kyrgyzstan. Plant design shall meet EU Member State Standards (comparable with the smallest settlement/treatment plant size category), which are.

Regulation	Year adopted/ edited	Purpose/Content
		Parameters **Max. Effluent Standards** BOD5, biochemical oxygen demand……25 mg/l COD, chemical oxygen demand …… 125 mg/l TSS, total suspended solids …… 35 mg/l TN, total Nitrogen ……15 mg/l TP, total phosphorus …… 2 mg/l
EU Council Directive, 98/83/EC, Drinking Water Standards		Water quality sampling must be conducted to meet the frequency and methods stipulated in European Council Directive 98/83/EC and article 7(monitoring) and the related Annexes, e.g. Annex Iı, Table A (parameters to be analysed) and Table B1 (minimum frequency of sampling and analysis for water intended for human consumption supplied from a distribution network). The treated water should comply with the EU Directive 98/83/EC, and parameters are below: **Parameters** **Council Directive** Aluminium (only if used as flocculent.....0.2 mg/l Ammonium …… 0.5 mg/l Colour (Record observation) Clostridium perfringens (if water from surface water)……..0 per 250 ml Escherichia coli ……,,,,,0 per 250 ml Hydrogen ion concentration ……6 – 9 Iron (only if used as flocculent) ……..0.2 mg/l Nitrite (only when chlorination is used as a disinfectant)……0.5 mg/l Odour (Record observation) Taste (Record observation)
Resolution No. 201 of the Kyrgyz Government	2016 (2017, 2018, 2019)	Provides sanitary, sanitary-epidemiological rules and regulations, hygienic standards in the field of healthcare

2.1.3 Regulations

26. There are over 19 regulations in place to support the above-mentioned laws. 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'.[4] Species

[4] *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.

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.

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

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).

28. 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 Labour Code of the Kyrgyz Republic, as well as other regulatory norms.

2.1.4 Standards

29. Environmental standards that are relevant to the Karakol WWTP modernization and Karakol sewerage extension, are identified 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. (No. 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 SPZs varies depending on the type and size of facilities.

e. Council Directive of EC of 21 May 1991. Urban Wastewater Treatment (91/271/EEC). This Directive concerns the collection, treatment and disposal of urban wastewater as well as the treatment and disposal of wastewater from certain industries. The purpose of this Directive is to protect the environment from the harmful effects of aforementioned wastewater discharges.

f. *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.

g. *Instruction for Establishing Maximum Permissible Discharges of Pollutants into Water Bodies (MNRETS Instruction, Dec 8 1993),* which specifies MACs for wastewater treatment plants based on an assessment of existing water quality and other conditions.[5]

h. *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.

i. *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.

j. 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

k. *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.

l. 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 in the following tables.

m. Sanitary Regulations and Standards SanPiN 2.1.7.573-96 Hygienic requirements for use of wastewaters and sludges for irrigation and fertilization

5 These assessments have not yet been performed for the two Project wastewater treatment plants, so the IETPD refers to the CMEA standard when undertaking wastewater effluent monitoring.

Table 2: Ambient Outdoor Noise Standards in Kyrgyzstan

Activities / category[6]	Leqv[7]		Lmax[8]	
	Day	Night	Day	Night
Areas in immediate vicinity of hospitals and health centres	35	25	50	40
Areas in immediate vicinity of residential buildings, clinics, medical centres, care centres, recreation centres, 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 centres	45	35	60	50
Recreation zones in the territory of micro-districts and groups of residential houses, holiday homes, resorts, schools, care centres, etc.	45		65	

Table 3: Ambient Air Quality Standards in Kyrgyzstan

Pollutant	Maximum Permissible (mg/m^3)	Average Daily Concentration (mg/m^3)
Particulate Material: With silica content> 70%	0.15	0.05
Particulate Material: 70–20% (cement, coal, clay, etc.)	0.3	0.1
Particulate Material: <20 % (dolomite, etc.)	0.5	0.15
Cement dust (Calcium oxide> 60% and silica >20%)	0.5	0.05
Sulphur Dioxide SO_2	0.5	0.05
Carbon monoxide 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 4: Standards of Water Quality in Kyrgyzstan

Pollutants	Quality standards for fisheries (mg/dm^3)	Quality standards for irrigation water (mg/dm^3)
pH	6.5-8.6	6.5-8.4
Temperature	5-20°C	15-35 °C
Mineralization	192 before 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
Nitrites	0.08	0.5

6 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.

7 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.

8 L_{Max} = maximum sound level.

Pollutants	Quality standards for fisheries (mg/dm^3)	Quality standards for irrigation water (mg/dm^3)
Ammonium	0.5	0.1
Total iron	0.1	2
Zink	0.01	1
Copper	0.001	1
Phosphates	0.05-0.2	10

30. In April 2023 Issyk-Kul Regional Department of the Ministry of Natural Resources, Ecology and Technical Supervision approved the monitoring program for designing, construction and operation of wastewater treatment plant in Karakol. In accordance with the program, the monitoring will be carried out during the post-construction period and operation of Karakol WWTP to determine the justification of requirements for water body water which receive treated wastewater and requirements for irrigation water established in Rules for Surface Water Protection, as well as the possible effects of wastewater treated in experimental sites on human health, crops and flora and fauna, the environment in accordance with the standards of Council Directive (91/271/EEC) of May 21, 1991 on the treatment of urban wastewater for sensitive / vulnerable areas.

2.1.5 International Treaties and Obligations

31. The Kyrgyz Republic is a party to a number of international treaties and conventions (**Table 5**). Fulfilment 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[9]). 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. International Environmental Conventions and treaties signed and ratified by the Kyrgyz Republic is relevant and applicable for the project purposes.

Table 5: Kyrgyz Republic participation in international conventions relevant to the Project

Convention	Adopted / in force	KR Signed	Main objectives
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.
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;

[9] Adapted from IMF Country Reports and Article IV Consultations on the Kyrgyz Republic (e.g., IMF 2012; IMF 2023). See IMF Kyrgyz Republic publications and Climate Change Adaptation Report for thematic alignment

Convention	Adopted / in force	KR Signed	Main objectives
			- 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
United Nations Convention to Combat Desertification	1994/ 1996	1996	Reverse and prevent desertification and land degradation in affected areas in order to support poverty reduction and environment sustainability.
United Nations Convention on Biological Diversity	1992/ 1993	1999	Conservation of biodiversity, sustainable use of its components and equitable sharing of the benefits.
Convention on the Conservation of the World Cultural and Natural Habitats	1972/ 1975	1995	Protection of natural and cultural heritage.
Convention on the Conservation of Migratory Species	1979/ 1983	2014	Global platform for the conservation and sustainable use of migratory animals and their habitats.
Ramsar Convention	1971	2002	Conservation and wise use of all wetlands through local and national actions and international cooperation to achieve sustainable development.
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.
Convention on EIA in a Transboundary Context	1991/ 1997	2001	Integrating environmental assessment into state plans and programs at the earliest stages – so as to help to lay the groundwork for sustainable development.

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

2.1.6 Protected Areas

32. The Kyrgyz Republic legal framework provides for nine 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. **Nationally designated protected areas (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;

2.1.7 Territorial structure and IBA zoning

33. In accordance with the Law of the Kyrgyz Republic "On Biosphere Areas in the Kyrgyz Republic" and in accordance with international standards, the Issyk-Kulbiosphere area is divided into zones with different regimes of protection and use.

- The core zone with a total area of 141,022 hectares includes the following areas:
- wetlands of international importance as a habitat for waterfowl (Ramsar Convention) within the boundaries of the territory and water area of the Issyk-Kul reserve, 19,842 hectares, including the coastal zone 3,164 hectares and water area of the Issyk-Kul Lake 16,678 hectares;
- the reserve zone of Kara-Kol National Natural Park with an area of 8,600 hectares, represented by slope ecosystems of the forest belt of Terskey Ala-Too Ridge;
- the territory of Sarychat-Ertash state nature reserve with an area of 72,080 hectares, represented by ecosystems of the syrt uplands;

- the territory of the subalpine, alpine and nival belts of the Terskey Ala-Too ridge with an area of 59 thousand hectares;
- northern - on the northern slopes of the Terskey Ala-Too ridge above the boundaries of the state forest fund from the Djilisuu summit (3,985 m) on the watershed of the upper reaches of the Chon-Kyzyl-Suu and Kichine-Kyzyl-Suu rivers to the Tekele pass on the watershed of the Djety-Oguz and Karakol rivers;
- eastern - along the watershed of the Karakol and Djety-Oguz rivers from the Tekele pass to the Terskey Ala-Too peaks (5216 m) and further to the boundaries of the Sarychat-Ertash state nature reserve;
- western one - from the top of Djilisuu along the watershed of the Chon-Kyzyl-Suu and Kichine-Kyzyl-Suu rivers to the top of Terskey Ala-Too Kyzyl-Suu (4590) and the border of Sarychat-Ertash state nature reserve;
- southern - northern border of the Sarychat-Ertash state nature reserve.
- The buffer zone with a total area of 3,501,516 hectares includes the following areas:
    - the protected zone of the Issyk-Kul state nature reserve, excluding settlements, sanatoriums and arable lands;
    - the basin area of Lake Issyk-Kul, excluding the 1-kilometer zone near the ports and berths of sanatoriums;
    - the territory of the state forest fund on the Terskey-Ala-Too and Kyungei-Ala-Too ridges;
    - the territory of the state land reserve and farmland located above the state forest fund to the peaks of the Kyungei-Ala-Too and Terskey-Ala-Too ranges;
    - the territory of the Issyk-Kul oblast southeast of the Terskey-Ala-Too ridge to the state border of the Kyrgyz Republic, excluding settlements, industrial lands, lands of energy and areas with mineral deposits.
    - Transitional zone with a total area of 688540 hectares, including agricultural land and land for industry, transport, communications, defense and other purposes, as well as the territories of settlements, sanatoriums and the rest of the Issyk-Kul basin, which was not included in the buffer zone.
    - Remediation zone, including anthropogenically disturbed territories requiring regeneration and reclamation measures (mineral deposits, tailing dumps, highway strips, settlements, degraded lands, cattle-driving tracks and cattle-stopping areas).

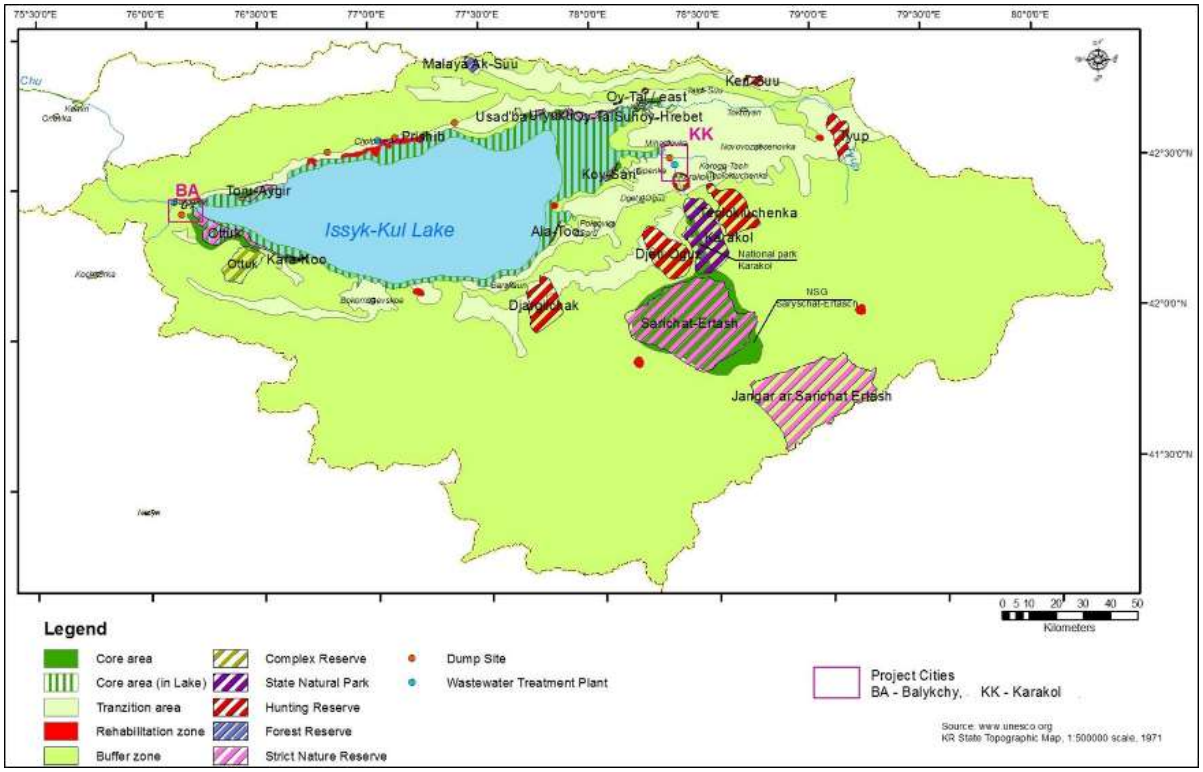


Figure 1: Zoning Map of Issyk-kul Biosphere Reserve

2.2 Relevant Policy and Institutional Framework

2.2.1 Sustainable Development and Environmental Policy

34. The main document setting out government policy for current and future development within the Kyrgyz Republic is the National Strategy for Development for the Period 2018-2040. The strategy notes the necessity of linking economic and environmental factors to achieve sustainable development. It recognizes that current economic growth in the nation is based mostly on natural resource-intensive development, and identifies the following significant consequences of this 'brown development': (i) environmental problems and depletion of natural capital (climate change, pollution, loss of biodiversity, degradation of agricultural land, desertification, lack of water for irrigation and domestic use); (ii) increases in poverty; (iii) threats to food security; (iv) threats to energy security; and (v) social inequality. The strategy affirms that sustainable development requires the inclusion of environmental factors as economic development indicators and states the GKR's intention to formulate and consistently implement uniform state policy within a framework of environmental security and protection, covering all aspects of ecosystem sustainability "green development". The principles of this environmental policy include:

a. Minimization of adverse environmental consequences of economic growth by assessing the environmental impact of planned commercial and other development projects.

b. A fee basis for the use of nature and reimbursement of damages inflicted on the environment as a result of violations of environmental legislation.

c. Accessibility and openness of environmental information.

d. A gradual shift to a system of strategic sustainable development planning of economic, social and environmental activities, irrespective of their form of ownership; and

e. Participation of all interest groups in decision making on environmental protection and rational use of nature, at both national and local levels

2.2.2 Relevant Environmental Management Institutions

35. The MNRETS has the primary responsibility for environmental management in the Kyrgyz Republic. The MNRETS receives its mandate through the Law on Environmental Protection (1999). The main objectives of the MNRETS are to:

a. Develop and implement fundamental directions in environment and biodiversity protection, forest ecosystems, and protected areas;
b. Promulgate the rational use of natural resources, sustainable development, and the implementation of mechanisms for environmental protection; regulate nature use; ecological control and
c. Formulate environmental legislation.

36. The MNRETS is responsible for reviewing environmental assessment documents for projects of national significance. The review and approval of less significant projects are delegated to the territorial level departments. The organizational structure of MNRETS is presented in **Figure 2**. The MNRETS has two departments responsible for environmental management within the Issyk-Kul basin. These are the Issyk-Kul Territorial Department for Environmental Protection (ITDEP), which has a regional office in Cholpon-Ata, and the Issyk-Kul Biosphere Reserve General Directorate (IBRGD), which has its office in Karakol.

37. The following tasks are in the scope of Biosphere Reserve in accordance with its functions:

- Ensure long-term preservation of biological and landscape diversity of the region as well as protection of the unique ecosystem and Issyk-Kul Lake;
- Ensure cooperation with local and national environmental authorities in planning and management to create favourable conditions for people's lives;
- Develop and introduce environmentally advanced new technologies of nature management to form a model of harmonious coexistence of nature and man, considering the region-specific local, economic, cultural and ethnic peculiarities;
- Facilitate and ensure the participation of local residents and representatives of stakeholder groups in making environmentally important decisions in the planning and management of natural resource use and economic development;
- Develop an interdisciplinary research base, especially for projects that address local problems, including restoration of degraded ecosystems, soil and water protection;
- Protection and control over the observance of natural resource use regimes in accordance with the zonal division of the biosphere area and the management structure are carried out by state and public control services.
- However, the most tasks are implemented by Territorial Department of MNRETS.

Source: Website of the Ministry of Justice of the Kyrgyz Republic http://cbd.minjust.gov.kg/act/view/ru-ru/158726?cl=ru-ru (Resolution of the Cabinet), 2022

Figure 2: Organizational structure of MNRETS

38. Although these two organizations have different mandates, they have some overlapping duties. The ITDEP is responsible for monitoring producers of waste for compliance with environmental regulations and providing the environmental component of project approvals and environmental reviews (State Ecological Expertise) when projects are reviewed at the oblast level. Depending on the severity of the proposed environmental impacts, the MNRETS and/or the ITDEP are responsible for subsequent environmental monitoring and protection. The ITDEP laboratory conducts periodic monitoring of water quality in Issyk-Kul Lake and incoming rivers. The IBRGD received related laboratory equipment and training support through Phase I of the ISDP. The IBRGD has the mandate to manage and support environmental protection and sustainable development within the Issyk-Kul Biosphere Reserve, which includes all of the Project's proposed sites of activity. IBRGD activities include awareness-raising, scientific research and conservation activities. The IBRGD is financed from the state budget and other sources, and since 2005 has been considered to be financially independent. The Issyk-Kul Territorial Administration of the MNRETS executes the functions of the Ministry within Issyk-Kul Oblast and carry out state ecological inspection of all entities in Issyk-Kul Oblast. The MNRETS imposes fines for illegal disposal of waste and monitors landfills in Issyk-Kul Oblast.

39. Other government agencies with environmental management responsibilities include:

a. **Ministry of Health (MoH)**, which is responsible for health and safety, standards for pollutants in air, water and food, and noise and vibration standards. The State Sanitary and Epidemiological Service (SSES) under the MoH implements sanitary,

hygiene and anti-epidemic activities; improvements to working and recreation environments; and disease prevention. It operates through a network of regional offices.

b. **Ministry of Labour, Social Welfare and Migration (MLSD)**, which oversees the development of long-term programs on occupational health and safety and contributes to occupational health and safety services at other ministries, agencies, enterprises and organizations. Policy is implemented through its local *oblast* level departments.
c. **Ministry of Emergency Situations (MES)**, which is responsible for emergency response and natural hazards. Its subsidiary agency, Kyrgyz Hydromet, is responsible for meteorological services and ambient air and water quality monitoring.
d. **Ministry of Water Resources, Agriculture and Processing Industry (MoA)**, which is responsible for agricultural lands and pastures as well as for recommendations how to use WWTP sludge for (a) disposal and (b) re-use in agriculture.
e. **Ministry of Energy (MoE)**, which is responsible for exploration, regulation, control and protection of subsurface resources.
f. **State Enterprise "Cadastre" under the State Agency for Land Resources of the KR Ministry of Agriculture**, which acts as a land registry and undertakes systematic registration of properties in urban and municipal areas.
g. **Rayon State Administrations (RSAs)**, whose responsibilities include allocation of land plot for use including transfer of land plots established in the Land Code, public hearings, and information disclosure.
h. **Organs of Local Self-Governance (OLSG)**, known also as *aiyl okmotu*, which are responsible for social issues, and the allocation of lands for stockpiles, asphalt plants, construction camps, etc. (ADB 2014).

40. The powers of the above state bodies and municipal bodies are determined in accordance with the Regulations or Charters about them, which are approved by the Government of the Kyrgyz Republic or higher local government bodies.

2.2.3 Environmental Monitoring Capacity

41. The MNRETS has the main responsibility for environmental monitoring. The MNRETS's central laboratory is located in Bishkek, within the Environmental Monitoring Administration. The laboratory (i) undertakes water sampling and analytics, (ii) exercises control over industry wastewater permits, (iii) provides assistance when state control inspectors need help to collect samples or analytical services, and (iv) takes part in trans-boundary water quality studies and monitoring. There are also MNRETS laboratories under oblast-level Territorial Environment Protection Monitoring Departments. The ITD of MNRETS laboratory undertakes periodic monitoring of water quality in Issyk-Kul Lake and the rivers in its watershed, as well as conducts sampling and analysis of influent and effluents of Karakol WWTP every quarter on a contractual basis.

2.3 Kyrgyz Republic Environmental Assessment Requirements

42. The Construction of Additional Sewer Networks in Karakol City is subject to the environmental assessment requirements of the Kyrgyz Republic. This section describes the Kyrgyz Republic requirements.

2.3.1 Legal Basis

43. The primary legal basis for environmental assessment in the Kyrgyz Republic is the Law on Environmental Protection, 1999, which prohibits financing and implementation of projects without a positive statement of State Ecological Expertise[10] (SEE). The Law on State Environmental Expertise specifies the requirements for the preparation of the SEE and provides supporting instructions. The Kyrgyz Republic is also a signatory to the Aarhus Convention, and its requirements, together with the Law on State Environmental Expertise, provide the legislative framework for requiring public participation in environmental decision-making through the process of Public Ecological Expertise (PEE).[11]

Table 6: Key KR environmental assessment laws

Legislative Instrument	Requirements
Law on Environmental Protection, 1999 (amended 2002, 2003, 2004, 2005, 2009, 2013, 2014, 2015, 2016)	Defines the policy and regulates the legal relations applicable to natural management and environmental protection in the KR.
Article 17: Environmental requirements related to location, design, construction, reconstruction and commissioning of enterprises, structures and other facilities	Defines EIA requirements.
Article 22: Environmental Protection from Harmful Physical Effects	Forbids exceeding the maximum allowable standards for noise, vibrations, electromagnetic fields and other harmful physical effects on human health and environment.
Article 10: Environmental Impact Assessment	Requires an EIA when preparing the feasibility evaluations for: - Concepts, programs and plans of sectorial and territorial socioeconomic development. - Plans of integrated usage and protection of natural resources. - Master plans of towns and settlements as well as other town-building documentation. **New construction, reconstruction, expansion and re-equipment.**
Article 3: Objects (Facilities) of State Environmental Expertise	Requires SEE for construction, reconstruction, expansion, technical upgrading, temporary closing and liquidation of objects (facilities).
Regulation on Order of Environmental Impact Evaluation approved by	Provides detailed screening lists of projects requiring an environmental assessment.

[10] Concerning '*expertise*'- If read without an understanding of the specific context, *expertise* has little meaning as translated. It is grammatically incorrect and confusing since sometimes it refers to an agency, sometimes to a process and at others to a decision. It most often is used for environmental assessment.

[11] The Aarhus Convention establishes a number of rights of the public (individuals and their associations) with regard to the environment, including (i) access to environmental information; (ii) public participation on environmental decision-making; and (iii) access to justice regarding environmental decisions made without regard to the first two rights or in contravention of environmental law. The Parties to the Convention are required to make the necessary provisions so that public authorities will honour these rights.

Legislative Instrument	Requirements
Resolution of the Kyrgyz Government of 13.02.2015 no. 60	

2.3.2 Environmental Process

44. Beginning with the initial application, the environmental assessment and permitting process in Kyrgyz Republic follows a prescribed set of steps. These are presented and described below in **Table 7**. Under the project, the section “Environmental protection” and the design of sanitary protection zone had been developed, which passed the state environmental expertise procedure and received positive conclusions.

Table 7: Environmental assessment and permitting process

Step	Actions
1	Project proponent submits application to appropriate local government authority (e.g. city mayor’s office), and authority forwards application to State Enterprise "Cadastre" under the State Agency for Land Resources of the KR Ministry of Agriculture and the local Department of Environmental Protection (MNRETS)
2	State Enterprise "Cadastre" under the State Agency for Land Resources of the KR Ministry of Agriculture reviews issues of land use and ownership and issues Land Allocation Statement (LAS) Local Department of Environmental Protection (MNRETS) reviews LAS (land allocation statement) to scope environmental issues, and screens project against list of project types automatically requiring an EIA in *Instruction on Environmental Impact Assessment Performance Procedures in the Kyrgyz Republic* Regulation on Order of Environmental Impact Evaluation approved by Resolution of the Kyrgyz Government
3	Application package is sent to Territorial department for Urban Planning and Architecture. Territorial department for Urban Planning and Architecture consults with local agencies to consider issues of location and design (e.g., land suitability; environmental impact; public health; architecture and landscape; fire risk; and availability of electricity and other services), and consults with the relevant *rayon* administration(s)
4	If conclusions of the Stage 1 review are positive, a relevant body of local self-governance makes decision on entitlement and allocation of a land plot. State Enterprise "Cadastre" under the State Agency for Land Resources of the KR Ministry of Agriculture issues register the title for the land lot (by State Act) for intended use.
5	Preliminary engineering designs are developed, geotechnical/geological and other surveys are conducted and service provision is investigated.
6	Designs are reviewed by Gosarkhitectura
7	OVOS Report is developed at the stage of detailed design. Upon approval from stakeholders (PMO, ADB), public consultations should be conducted. Section “Environment Protection (OOS)” is developed at the stage of detailed design as a part of the design and estimate documentation; approvals from State Enterprise "Cadastre" under the State Agency for Land Resources of the KR Ministry of Agriculture, Gosarkhitectura and other local agencies; and should be submitted for review of state ecological expertise in the regional department of MNRETS

Step	Actions
8	MNRETS appoints a SEE committee and instigates the SER process. The project may be approved, rejected or sent for re-examination.
9	If the SEE conclusion is positive, the relevant territorial department of Gosarkhitectura issues the Construction Permit.
10	The relevant territorial department of Gosarkhitectura considers the final project designs (including any amendments made during construction) and if there are no objections, issues the Operation Permit.
11	The local (Oblast level) Environmental Protection Department undertakes inspections and monitoring of environmental impacts during operation.
	a. The EIS should be prepared by a licensed and certified EIA professional hired by the project proponent, and must cover: (i) description of the project or planned activity; (ii) possible alternatives for the project or planned activity; (iii) description of the existing environment; (iv) types and degree of impacts on environment and population; (v) possible changes in environmental quality; (vi) description of socio-economic and ecological consequences; (vii) findings from public consultations; and (vii) actions to prevent environmental damage or mitigate the level of ecological risk. b. The proponent will be required to conduct public consultations as a matter of course, and include the findings in the EIS. In addition, the project may also go through an independent PEE review. PEE may be initiated by citizens, local administrations or public associations, and is meant to inform interested parties about a proposed project, identify probable adverse environmental and social impacts, and search for solutions to avoid or limit adverse impacts. The PEE process can include public meetings, workshops, public opinion surveys, dissemination of newsletters and bulletins, and information sharing via press and TV. The conclusions of the process should be summarized in a PEE Declaration, which will be submitted to the state expert commission conducting the project SER. The PEE Declaration is a supplement to the SER and is considered to be of a recommendatory nature. It may be published in the mass media and passed to local state administrations and local councils, the project proponent, and other stakeholders. PEE is typically only undertaken for large scale controversial projects. c. The SER duration depends on the complexity of the project, but should not exceed 3 months.

2.4 Applicable ADB Policies and Environmental Assessment Requirements

2.4.1 Environmental Assessment Requirements

45. The major applicable ADB policies, requirements and procedures for Environmental Assessment are the SPS 2009; *ADB Operations Manual for the SPS* (OM Section F1, 2010); and *Environmental Safeguards – A Good Practice Sourcebook* (2012). The SPS 2009 promotes good practice as reflected in internationally recognized standards such as the World Bank Group's Environment, Health and Safety Guidelines. The Operations Manual underpins the policy statement, and the Sourcebook provides practical guidance on SPS 2009 implementation. The guidelines shared in the Environmentally Responsible Procurement (https://www.adb.org/documents/environmentally-responsible-procurement-reference-guide-better-practices) shall be adopted during the course of the project implementation

46. The SPS 2009 establishes an environmental review process to ensure that projects are environmentally sound, are designed to operate in line with applicable regulatory requirements, and are not likely to cause significant environmental, health, social, or safety hazards. ADB assigns proposed projects to one of four categories, described in detail in SPS 2009. Category A requires a full-scale EIA, Category B an IEE[12] while C requires no document, although effects are reviewed and recorded. Issyk-Kul Wastewater Management Project has been classified by ADB as Category "B" and requires the preparation of an IEE. All applicable environmental requirements in the SPS 2009 are covered in this IEE.

47. Besides the environmental assessment requirements, good practice guidance for the management and control of ACM and various COVID-19 guidance notes prepared by ADB need to be considered within the project's environmental impact assessment.

48. The purpose of Good Practice Guidance for the Management and Control of Asbestos is to increase awareness of the health risks in the workplace and provides recommendations on managing the risks of exposure. It contains high-level recommendations on the following: duties of employers, workers and asbestos contractors and sellers:

- Training requirements for work with asbestos; projects/employers.
- Identification of asbestos.
- Safe work with asbestos.
- Management of incidents connected to asbestos finding.
- Management for safe removal of asbestos,
- Management of asbestos waste as well as management of asbestos waste occurred as results of natural disasters.

2.4.2 Information Disclosure and Public Consultation

49. Information disclosure involves delivering information about a proposed project to the general public and to affected communities and other stakeholders, beginning early in the project cycle and continuing throughout the life of the project. Information disclosure is intended to facilitate constructive engagement with affected communities and stakeholders over the life of the project. In order to make key documents widely available to the general public, the SPS 2009 requires submission of a finalized IEE for Category B projects to ADB for disclosing it on their website.

50. ADB's Access to Information Policy (AIP)[13], which went into effect on 1 January 2019, reflects ADB's ongoing commitment to transparency, accountability, and participation by stakeholders. The policy, led by a new overarching principle of clear, timely, and appropriate disclosure, contains principles and exceptions to information sharing with external stakeholders. Details of policy implementation and disclosure requirements are provided in ADB's *Operations Manual* (OM L3). ADB's website is the primary medium for disclosure. Where necessary, more appropriate means of information dissemination will be used that

[12] The IEE is also detailed environmental investigation as an EIA; the main differences relate to administrative procedures for the loan.
[13] ABDs information disclosure policy is available at https://www.adb.org/documents/access-information-policy.

considers such things as literacy level, geography, infrastructure, and popular mass media for reaching project-affected people.

51. Meaningful consultation is defined under the SPS 2009 as a process that (i) begins early in the project preparation stage and is carried out on an ongoing basis throughout the project cycle; (ii) provides timely disclosure of relevant and adequate information that is understandable and readily accessible to affected people; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) is gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) enables the incorporation of all relevant views of affected people and other stakeholders into decision making about such matters as project design, mitigation measures, the sharing of development benefits and opportunities, and implementation issues (ADB 2009c). As part of the project management for complaint handling the guidelines suggested in the ADB website shall be adopted https://www.adb.org/sites/default/files/publication/29678/grievance-mechanisms-critical-component.pdf.

3 PROJECT DESCRIPTION

3.1 Background

52. Under the ADB finance (project number 50176-002), the sewage networks covering 12.65km in Karakol city was successfully completed and now it is in operation. In order to extend the sewage networks an additional 12.24 km has been included in the Karakol City. The site layout of the sewage network is shown in Figure 3. The anticipated environmental impacts based on the proposed sewer networks are temporary (mostly related to construction works), however the project also address potential negative impacts which will be mitigated through either avoidable design and construction planning, or with proven and established mitigation measures. This is the focus of this updated IEE.

Figure 3: Sewage Network – Additional Areas in Karakol

3.2 Description of the project implementation in Karakol

53. The project aimed to install sewer networks using double-layer corrugated sewer pipes TU2248-001-73011750-2013 as per the Terms of Reference. The minimum depth within the city was determined based on the requirements of SN KR 30-01 2020, which stated that the minimum distance between the water supply line and the sewer line had to be 200 mm if the sewerage network was installed below the water supply line.

Table 8: Proposed additional sewer networks in Karakol city

Sl.no	Sections	Street Name	Length of Sewerage line installation (m)
1.	Section 1	Zhusaeva Street. from Bektenov Street. to Przhevalsky Street	562.20
2.	Section 2	Asanaliev Street. from Karasaev Street. to Korolkov Street	195.50
3.	Section 3	From Irada orphanage (Brick Factory) to Checherin Street. along Zhamansarieva Street.	745.00
4.	Section 4	Tyupskaya Street. from Udilov Street. to Portovaya Street., from Tyupskaya along Portovaya to Valikhanov Street	1540.00
5.	Section 5	Zhamansarieva St. from Bektenov Street. to Przhevalsky Street	443.20
6.	Section 6	Kharkovskaya Street. from Karasaev Street. to Toktogul Street	1683.00
7.	Section 7	Alybakova Street. from Gagarin Street. to Kyshtobayev Street	375.00
8.	Section 8	Alybakova Street. from Akhunbaev Street. to Rakhmanov Street	234.00
9.	Section 9	Orozbekov Street. from Krutikov Street. to Akhunbaev Street., from Akhunbaev to Derbishev Street	507.00
10.	Section 10	Aldashev Street. from Naberezhnaya Street. to Chkalov Street., section from Chkalov Street. to Bektenov Street., and from Bektenov to Torgoev Street. along Bektenov Street	700.00
11.	Section 11	Lenin Street. from Akhunbaev Street. to Dyusheev Street., from Lenin to Zhusaeva via Dyusheev Street	791.50
12.	Section 12	From Karasaev Street. along Shopokov Street. to Kurochkin Street., from Kurochkin to Toktogul School, across the school grounds to the existing sewer manhole	1484.00

Sl.no	Sections	Street Name	Length of Sewerage line installation (m)
13.	Section 13	From Mukhtar Street. along Ippodromnaya Street. to Yntymak Street., from Yntymak to the boiler house, from the boiler house between houses No. 11 and No. 8 to the tuberculosis hospital, from the tuberculosis hospital to Zhantoshev Street. via Michurin Street	1762.00
14.	Section 14	Geological section[14]: gravity line pressure line	813.00 404.00
	Total length		**12239.4**

54. The major scope of works proposed for the additional sewer networks in Karakol city are

- Excavation and removal of existing pipelines (if any)
- Laying, jointing, pressure testing of new pipelines, followed by backfilling and trench compaction
- Construction of manholes
- Road restoration works

55. These sewer networks were designed to convey domestic wastewater to the Karakol WWTP. Corrugated HDPE pipes with diameters ranging from D150 to D300 mm were used.

56. Sewer networks are designed to convey wastewater from the city to Karakol WWTP. Domestic wastewater will flow through the designed pipelines. The pipe material will be corrugated HDPE having diameters of D150-300 mm.

57. During the design, hydraulic characteristics were considered as per SNiP 2.04.03-85 “Sewerage. External networks and structures”, clause 2.33, to ensure adequate flow coverage for future block developments near the sewer network. The sewer depth was planned to allow proper connection from surrounding neighborhoods, with an average depth of up to 3 meters

58. Pipeline slopes were determined based on terrain, permissible wastewater flow rates, other underground utilities, and standard slope values. Pipeline filling capacity was restricted to no more than 0.7 times the pipe diameter, in accordance with clause 2.40 of SNiP 2.04.03-85

59. Manholes were designed for collection and inspection—located on both sides of streets, at street intersections, and route changes. Precast reinforced concrete modular manholes were constructed, with diameters between 1 to 1.5 m and heights from 1.4 to 4.5 m, including flume components and protective hatches.

[14] Due to topography, Section No. 14 (Geological) cannot be connected to the intended connection point via gravity. A subsurface sewage pump station is planned for this section. It will be a watertight plastic tank mounted inside a precast reinforced concrete manhole. The pressure pipeline from the pump station will be made of two PE pipes according to GOST 18599-2001, diameter 50 mm. For cases of emergency in the pressure section, a K-262 manhole will be installed with shut-off and control valves for switching the pressure lines

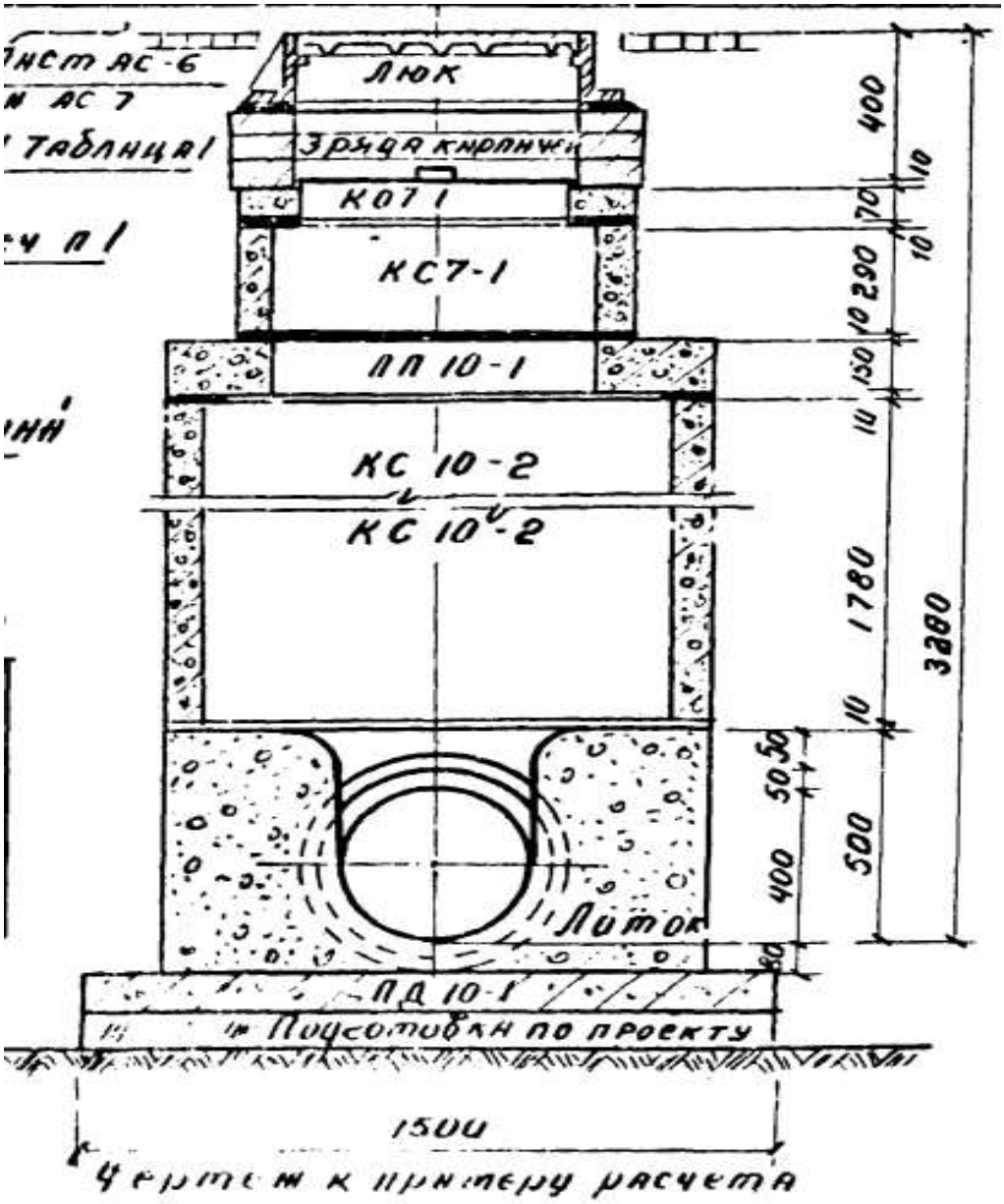


Figure 4: Typical Cross-section of Manhole

3.3 Implementation schedule

60. The project is proposed to be completed within 18 months from the date of signing the contract between the Contractor and the PMO.

4 DESCRIPTION OF THE ENVIRONMENT

4.1 Location

61. 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 2023. 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.

4.2 Physical Environment

4.2.1 Physiography

62. The physiography of Karakol oblast (Issyk-Kul Region) is a striking combination of high mountain ranges, deep glacial valleys, and the unique Issyk-Kul Lake basin. It reflects both natural beauty and complex geological processes, making it a vital region for tourism, ecology, and climate study in Central Asia

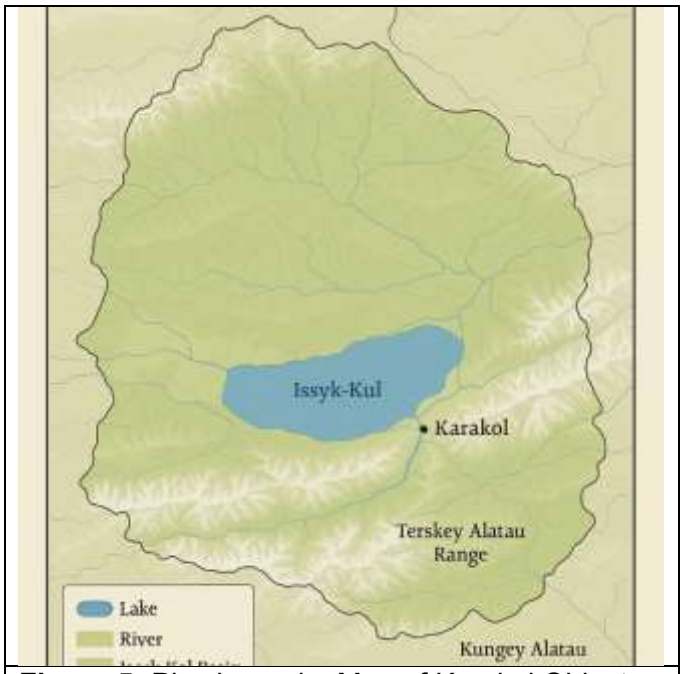


Figure 5: Physiography Map of Karakol Oblast

4.2.2 Geography, Topography, Land Use, and Soils

63. The topography consists of rugged mountains, deep valleys, and alpine meadows, with elevations ranging from 1,800m to 5,000m. The region is characterized by glacial formations, river basins, and steep slopes, making it a significant area for ecological and geological studies. The key Altitudinal zones are:

- Lowlands & lake basin (~1,600–2,000 m): flat to gently rolling plains.
- Foothills (~2,000–2,500 m): undulating terrain with river valleys.
- High mountains (>2,500 m): steep slopes, peaks exceeding 5,000 m

64. Land use in Karakol is influenced by its mountainous terrain and proximity to Issyk-Kul Lake. The primary land use includes:

- Agriculture: Limited to valley areas where crops such as wheat and potatoes are cultivated.
- Pastoralism: Sheep and cattle grazing are common in the high-altitude meadows.
- Urban Development: Karakol city serves as the administrative center, with infrastructure supporting tourism and trade.
- Protected Areas: Conservation zones like Karakol Nature Park preserve biodiversity and natural landscapes.

65. The soils in Karakol vary based on altitude and climate. The Mountain Soils are thin and rocky, often found at higher elevations (>2,500m). The Chernozem (Black Earth) are fertile soils available in lower valleys, which supports agriculture and horticulture. The Alluvial Soils are found along the riverbanks, which is rich in minerals and suitable for farming.

4.2.3 Climate

66. Karakol, experiences a cold and moderate climate throughout the year. Even in the driest months, the city receives a significant amount of precipitation. The Average annual temperature is 2.2°C (36.0°F). The Coldest month is January, with temperatures around -10.8°C (12.5°F) and the Warmest month is July, with an average temperature of 14.3°C (57.7°F).

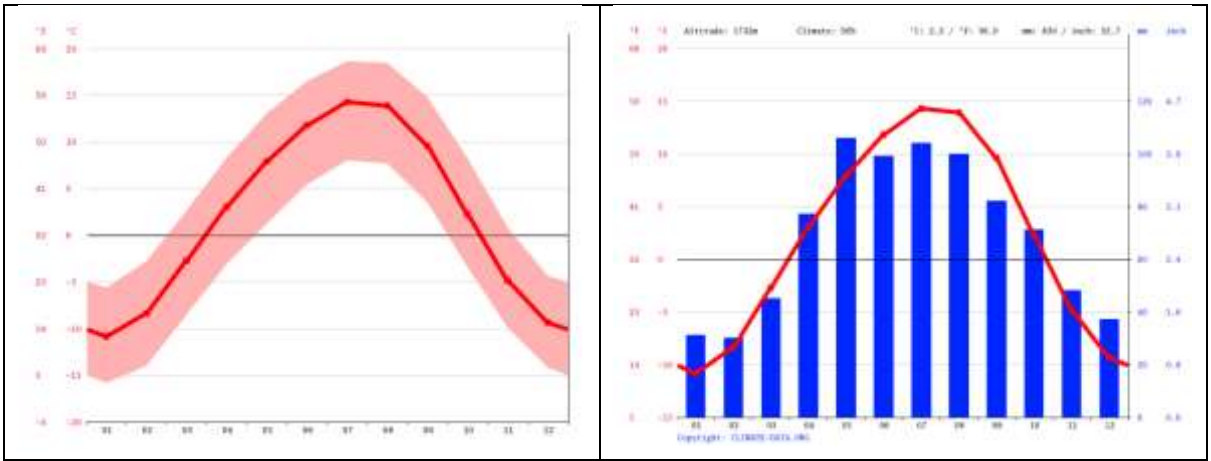


Figure 6: Average Temperature and Climate graphs for Karakol

67. The Annual precipitation is 830 mm (32.7 inches). The Driest month is February, with only 30 mm (1.2 inches) of rainfall and the Wettest month is May, receiving around 106 mm (4.2 inches). The Humidity ranges between 60% to 71%, with the highest in November.

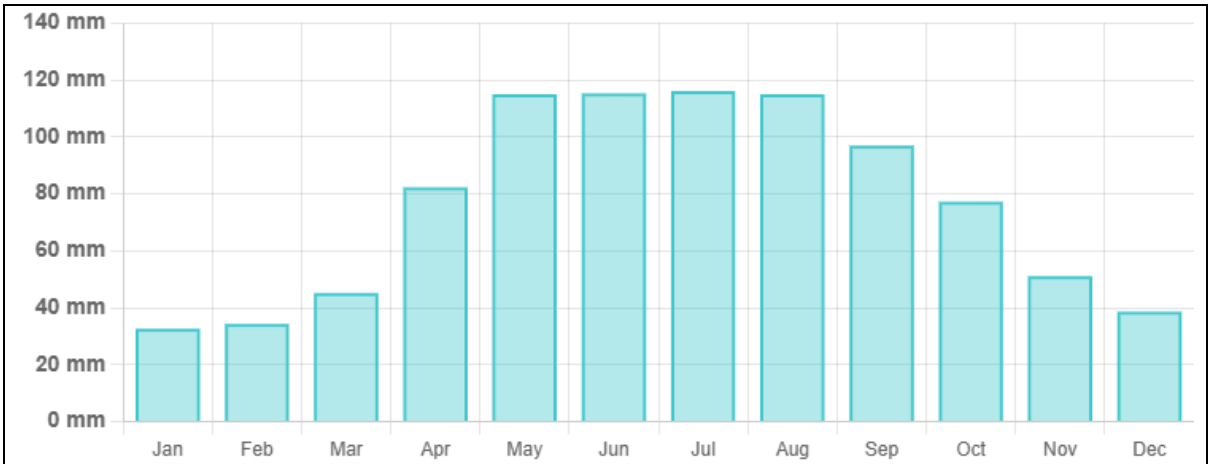


Figure 7: Mean monthly precipitation over the year, including rain, hail and snow

4.2.4 Water Resources

68. **Issyk-Kul lake**. Issyk-Kul lake and the adjacent region located in the eastern part of the Kyrgyz Republic are a valuable economic and cultural asset. The lake is 180 km long, 60 km wide and has a surface area of 6,200 km^2, it is of a lenticular form and is the second largest

alpine lake in the world. The Issyk-Kul Lake basin includes a total of 118 rivers and streams; however, most rivers are heavily used for irrigation. The lake is replenished mainly by river waters from the east, where the hydro-network is denser, reflecting more intense rainfall in the area. Glaciers are an important source of water for the river network, and the basin has 834 glaciers ranging from 0.1 km^2 to 11 km^2, covering about 650 km^2, equivalent to 3 percent of the total area of the basin.

69. **Karakol River**. 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 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 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 sum 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 runoff, i.e. groundwater. This period is characterized by small discharges, which decreases 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

4.2.5 Water Quality

70. The recent water quality indicators (Refer Table 9) for the Karakol River spanning assessments from 2022 to early 2023 suggest that the river maintains high ecological integrity typical of alpine glacial systems. Physical parameters such as turbidity (<5 NTU) and temperature (4–10°C) reflect clear, cold conditions conducive to aquatic biodiversity, while dissolved oxygen levels (8–10.5 mg/L) support a robust aquatic ecosystem, including cold-adapted species like trout and endemic amphibians. Chemical markers such as pH (7.0–8.5) and moderate conductivity (100–250 µS/cm) point to natural mineralization and buffering capacity, with low nitrate and phosphate concentrations indicating limited agricultural runoff and minimal anthropogenic influence upstream. Variability in microbiological indicators particularly total coliforms appears localized and seasonal, with elevated levels downstream during peak tourism or post-rainfall. Overall, the Karakol River qualifies as a low-impact freshwater system with excellent conservation potential, though continued seasonal monitoring is advised to track microbial loads and nutrient influx near populated or recreational zones.

Table 9: Indicative Water Quality Summary – Karakol River (2022–Early 2023)

Parameter	Observed Range	Units	Typical Source or Influence	Remarks
Temperature	4 – 10	°C	Glacial melt, seasonality	Lower in upper reaches
Turbidity	< 5	NTU	Minimal sedimentation, upstream glacial input	High clarity
Dissolved Oxygen (DO)	8 – 10.5	mg/L	Cold water, aeration from flow dynamics	Supports diverse aquatic biota
pH	7.0 – 8.5	—	Natural buffering capacity, low anthropogenic input	Neutral to slightly alkaline
Nitrates (NO_3^-)	< 1.5	mg/L	Agricultural runoff, seasonal variation	Generally within acceptable limits
Phosphates (PO_4^{3-})	< 0.2	mg/L	Tourist and livestock activity downstream	Minor concern in populated areas
Total Coliforms	Variable (<1000)	CFU/100 mL	Downstream livestock, campsites, urban runoff	Elevated post-rainfall or tourism season
Conductivity	100 – 250	µS/cm	Mineral content from geological substrate	Indicative of natural mineralization

Source: Issyk-Kul Territorial Environmental Department field bulletins (2021–2022), SAEPF internal summaries, and extrapolated alpine river data

4.2.6 Ambient Air Quality

71. Throughout 2024 and into 2025, Karakol's air quality has generally ranged between the "Good (0–50)" and "Moderate (51–100)" categories[15]. Typical AQI values have fluctuated between 30 and 90, indicating relatively clean air conditions. The average $PM_{2.5}$ concentration have been around 7.3 µg/m³, occasionally rising to 29 µg/m³. The PM_{10} concentration ranges between 12.8 µg/m³ and 72 µg/m³. These levels are within acceptable limits.

4.2.7 Ambient Noise Level

72. According to data from Numbeo, Kyrgyzstan has a moderate noise and light pollution index of 42.86. This suggests that Karakol offers a relatively quieter environment, especially when compared to more densely populated urban areas. While Karakol is generally quieter, certain areas, especially those near the newly reconstructed Karakol International Airport[16], might experience increased noise levels due to air traffic.

4.3 Ecological Resources

4.3.1 Habitat types.

73. The Issyk-Kul region is part of the Tien Shan bioregion, which is considered a place of global biodiversity, with over 2,500 plant species. Within the Tien Shan bioregion, the Issyk-Kul Basin (Refer Appendix 3) is especially important for migratory birds, endemic fish species and endangered mammals such as the snow leopard (*Panthera uncia*). The biodiversity richness of a basin is a function of the wide variety of aquatic and terrestrial habitats available there. The main types of habitats are:

[15] Sources: (i) AQI.in – Karakol Dashboard, (ii) IQAir – Karakol Air Quality and (iii) Air Matters – Karakol Report
[16] https://en.wikipedia.org/wiki/Karakol_International_Airport?utm_source=chatgpt.com

- Desert areas, found mainly in the west and northwest, where rainfall is low and plant colonization is limited by harsh conditions. The flora consists mainly of drought and salt tolerant shrubs and grasses.
- Pastures cover most of the lake floodplain, intermontane regions and foothills. The steppes of this region are part of a vast rangeland habitat covering most of southern Russia and Central Asia, stretching from Ukraine to China.
- Subalpine meadows cover large areas at higher elevations above the tree line. The flora in these areas has been greatly influenced by human activities, in particular agriculture in the lower elevations and grazing in the higher elevations.
- Alpine meadows are found at higher altitudes and include species that are more resistant to the cold.
- Forest is a relatively small habitat type, covering only 3 percent of the landmass, but ranges from tall conifers to coastal forests (ADB 2009b).
- Aquatic and wetland habitats are found along many of the region's rivers, and of course in and around Issyk-Kul Lake, which dominates the basin. The network of rivers flowing into the lake provides rich coastal habitats, especially in the wetter eastern region.

4.3.2 Vegetation

74. In Karakol city itself—distinct from the surrounding mountain ecosystems. The vegetation reflects a mix of urban landscaping, agriculture, and natural steppe influence. Here’s a breakdown of the main types of vegetation you'll find within the city limits.

75. Karakol's vegetation is shaped by its mountainous terrain and proximity to Lake Issyk-Kul, creating a diverse ecological landscape. The Karakol Nature Park plays a crucial role in preserving local flora, covering 38,095 hectares and featuring forests, alpine meadows, and unique plant species. Common plants in Karakol city include:

- Fox and cubs (*Pilosella aurantiaca*), thrives in meadows with vibrant orange-red flowers.
- Bonnet bellflower (*Codonopsis lanceolata*), a scrambling plant with striking blue tubular flowers.
- Weeping willow (*Salix babylonica*), often found near water bodies, contributing to the city's greenery.
- Honeyberry (*Lonicera caerulea*), a cold-resistant shrub producing edible blue fruits.
- Wild carrot (*Daucus carota*), a delicate flowering plant native to the region.

76. The Karakol Gorge is another important ecological zone, home to 700 plant species, including 80 types of trees and shrubs. Conservation efforts focus on protecting these species while balancing tourism and recreational activities.

77. Common trees observed in Karakol City are (i) Poplar (*Populus spp.*) commonly planted for shade and windbreaks, (ii) Birch (*Betula spp.*) valued for their aesthetic and resilience, (iii) Willow (*Salix spp.*) often found near water bodies and (iv) Maple and elm in older districts. The Shrubs & Ornamentals plants include (i) Lilac, rose bushes, spirea, honeysuckle and (ii) Seasonal flowers like marigolds, tulips, petunias in public parks,

78. Based on the assessment of 14 sections under the proposed construction of additional sewer networks in Karakol city, implementation will require selective disassembly and restoration of road surfaces to facilitate pipe-laying works. Roadside tree removal is necessary in Sections 1, 2, 4, 6, 7, 9, 11, 12, and 13, with the highest number of uprooted trees recorded in Section 13 (9 trees), followed by Section 6 (8 trees) and Section 4 (7 trees) amounting to a total clearance of 24 trees. The majority of the affected species are Populus spp. (Poplars). Sections 3, 5, 8, 10, and 14 do not currently indicate any tree removal or pavement restoration needs, suggesting comparatively lower ecological and surface level impacts. All works will be executed in full compliance with the approved SSEMP, ensuring minimization of tree clearance, incorporation of compensatory afforestation measures, and reinstatement of road surfaces to their original design specifications.

4.3.3 Fauna

79. Karakol's faunal population is diverse, shaped by its mountainous terrain and proximity to Lake Issyk-Kul. However, the fauna population in Karakol city consists mostly of urban-adapted wildlife, domestic animals, and some species that move between the urban and nearby natural areas. While the city itself isn't a biodiversity hotspot like the surrounding mountains, it supports a notable mix of animals due to its location near forests, mountains, and Lake Issyk-Kul.

80. Domestic and Feral Animals includes (i) Dogs, both owned and stray populations; strays are common in some areas, (ii) Cats, widespread, especially around homes and food establishments, and (iii) Livestock (in peri-urban areas) including goats, cows, sheep, and horses (especially on the outskirts and in household compounds).

81. Small Mammals including (i) Squirrels are particularly noted/observed in the city parks and near forested patches, (ii) Hedgehogs are more often seen at night in gardens and outskirts, (iii) Rodents including field mice and rats (especially near food sources or waste areas), and (iv) Bats are active during summer evenings near buildings and rivers.

82. Urban and Semi-Urban Birdlife includes (i) Magpies (*Pica pica*), intelligent and highly adapted to urban life, (ii) Crows and ravens often seen scavenging, (iii) Swallows are seen common during warmer months, nesting on buildings, (iv) Finches, warblers, and great tits in green spaces, (v) Owls and hawks are occasionally spotted near the city edges, especially at night or early morning, and (vi) Pigeons and sparrows are typical city birds, often found in parks.

83. Reptiles & Amphibians (in warmer seasons) including (i) Lizards, like the steppe agama or sand lizard, found in rocky or dry areas, (ii) Frogs and toads are observed around wet zones like riverbanks or irrigation ditches, (iii) Snakes are rare in the city center, but species like the dice snake may be found near water bodies

4.4 Socio-Economic Environment

4.4.1 Population

84. According to the Population and Housing Census conducted by the National Statistical Committee of the Kyrgyz Republic, the population of Karakol city was 80,733 as of March 25,

2022. This figure positions Karakol as the fourth-largest city in the country, following Bishkek, Osh, and Jalal-Abad. The male population is 39,271 and the female population is 41,462. This indicates a gender ratio of approximately 48.6% male and 51.4% female, reflecting a slightly higher number of females in the city's population. Based on the age distribution (i) Children (0–14 years): 26,677 (approximately 33%), (ii) Working-age (15–64 years): 48,727 (approximately 60%), and (iii) Seniors (65+ years): 5,329 (approximately 7%). The ethnicity Composition of Karakol city is (i) Kyrgyz (Majority), (ii) Russians (approximately 17%), (iii) Uyghurs (approximately 3.9%), and (iv) Other groups (Including Dungans, Uzbeks, and Kazakhs).

4.4.2 Economy and Employment

85. Karakol's economy is shaped by its strategic location near Lake Issyk-Kul and its role as a regional hub for tourism, agriculture, and trade. Key economic sectors include:

- **Tourism**: Tourism is a cornerstone of Karakol's economy. The city's proximity to Lake Issyk-Kul and the Terskey Alatau mountains makes it a year-round destination for activities like skiing, trekking, and cultural tourism. The Karakol ski resort is among the top five in the CIS countries, attracting both domestic and international tourists. This sector supports a range of businesses, including hotels, guesthouses, restaurants, and tour operators
- **Agriculture & Food Processing**: Karakol is known for honey production, animal breeding, and dairy farming, supporting local businesses. Agriculture remains vital, focusing on organic farming and livestock. The surrounding areas produce fruits, vegetables, dairy, and honey, which are processed locally. Innovations in sustainable farming practices are enhancing productivity and employment in this sector.
- **Renewable Energy**. Renewable energy is an emerging industry in Karakol, with investments in solar and wind power projects. The sector is expected to grow as Kyrgyzstan invests in sustainable energy solutions, creating jobs in engineering, project management, and technical services
- **Trade & Services**: The city serves as a commercial center for surrounding districts, with hotels, restaurants, and retail businesses driving employment.
- **Transport & Logistics**: Karakol benefits from international transport links, including connections to Kazakhstan, Uzbekistan, and China

86. As of October 1, 2018, Karakol had 1,732 registered economic entities, including private businesses, state-owned, and municipal enterprises. Approximately 14,890 individuals were employed, with 4,931 registered as unemployed. Around 20% of the workforce engages in remote or freelance jobs, particularly in tech, marketing, and design sectors.

4.4.3 Cultural Heritage and Historical Environment

87. Karakol has a rich cultural heritage, shaped by its history as a crossroads between East and West. Some of its physical cultural resources include:

- **Holy Trinity Cathedral**: Built in 1895, this wooden church showcases traditional Russian Orthodox architecture with its green domes and ornate iconostasis. Despite

periods of closure during the Soviet era, it remains an active place of worship and a testament to the Russian influence in the region

- **Dungan Mosque**: Constructed between 1907 and 1910 by Chinese artisans for the Dungan Muslim community, this mosque is renowned for its distinctive Chinese architectural style, built entirely without nails. The structure features intricate wooden carvings and vibrant colors, symbolizing the harmonious blend of Islamic and Chinese design elements.
- **Russian Quarter & Gingerbread Houses**: A district featuring intricately carved wooden houses, remnants of Karakol's Russian merchant history.
- **Przhevalsky Museum**: Located near the city, this museum commemorates Russian explorer Nikolay Przhevalsky. It features personal belongings, maps, and documents related to his Central Asian expeditions, providing insight into 19th-century exploration.
- **Karakol History Museum**: Housed in a pre-revolutionary mansion, the museum offers exhibits on local history, ethnography, and archaeology. Highlights include artifacts from the Bronze Age, traditional Kyrgyz garments, and a photography collection by Swiss explorer Ella Maillart.

5 ANALYSIS OF ALTERNATIVES

5.1 Evaluation of Without Project Option and With Project Options

88. Under the “Without Project Option”, the project will not be implemented, hence there will be no impact on the components of the environment and social environment during the construction period. But at the same time, the positive, lasting effect from the construction of sewer networks will not be realized.

89. Under the “With Project Option”, the expansion of the sewerage network in Karakol / Construction of a new sewerage network will be implemented. During the construction of a sewage network, the following impacts on environmental components may occur

- **Atmospheric air/ ambient air quality**. The impact on the air quality is predicted only at the time of construction, especially during the trenching works, earthmoving (excavation, grading), concrete cutting, grinding, demolition activities, unpaved roads and material handling
- **Noise and vibration**. The source of noise and vibration in the construction site are from the (i) heavy machineries (including excavators, bulldozers, jackhammers, cranes, etc), (ii) Power tools (Concrete cutters, drills etc), (iii) Vehicle traffic: Trucks delivering materials or hauling waste, and (iv) Demolition activities (Breaking concrete, tearing down structures)
- **Soil**. The impact on soil is expressed in damage of the soil top due to the destruction of the road and going out of vehicles beyond easement area.
- **Flora and fauna**. The impact on flora and fauna will be minor. However, during the site clearance, it involves cutting or uprooting trees, shrubs, and grasses, which can lead to loss of native species and habitat fragmentation.

90. Potential negative impacts can be avoided either through design and construction planning or through proven and established mitigation measures. Very few potential negative impacts can be considered long-term in nature, and they have ready-made, easy solutions. It is important to note that in all cases, planned project activities should be carried out on existing sites that are currently problematic both ecologically and socially, or because of what they do not do (i.e. ensure safe, efficient and environmentally friendly wastewater disposal services) or because of what happens there (i.e. the discharge of virtually untreated wastewater directly into fields, pastures, streets and surface water bodies). Overall, the impact of the Project - provided that the identified potential negative impacts are effectively mitigated - are likely to be very positive relative to existing conditions. To prevent or minimize potential negative impacts, a number of specific mitigating measures are recommended to address the identified negative impacts. These mitigation proposals are being carried forward for inclusion in the project's Environmental Management Plan (EMP).

6 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

91. Based on the site assessment and ADB SPS 2009 (refer REA checklist – appendix 1), the Project has been classified as Category "B" for environment,[17] 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.

92. 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.

93. 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), without the approval of the SSEMP, the contractor shall not initiate the construction activities in the project site.

6.1 Assessment of Environmental Impact

94. The proposed assessment will use a matrix for determining the significance of impact. Significance is therefore a function of the value or sensitivity of the receptor being

Table 10: Matrix for Determining the Significance of Environmental Impacts

	International/ Extreme	National/ High	Regional/ Moderate	Local/Low
Major	HIGH	HIGH	MEDIUM	LOW
Moderate	HIGH	MEDIUM	MEDIUM	LOW
Minor	MEDIUM	MEDIUM	LOW	NS
Negligible	NS	NS	NS	NS

95. The impact assessment has utilised the following semantic definitions of the significance terms i.e. High, Medium and Low. They are based on the terminology used in international principles and guidance and on the geographical context of the effect:

- High – An environmental effect that has importance at international or national level and is irreversible or unprecedented.
- Medium – An environmental effect that has importance at a regional scale and/or one that can be readily reversed with intervention and is limited to the site boundary and immediate surrounding area.

[17] 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.

- Low - An environmental effect that is only important in a local context, which is readily mitigated, and it occurs only within the boundary of the project; and
- NS – An environmental effect that is considered non-significant

96. Significant adverse effects occur where valuable or sensitive receptors, or numerous receptors, are subject to impacts of considerable magnitude and duration. Some effects will be temporary, others are permanent in nature, and these will be stated in the assessment.

Table 11: 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	• Development and implementation of Chance Findings Procedure as a part of the EMP.	Low

Table 12: 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	• 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	• 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
AQ03	Fugitive dust emissions from works, construction traffic causing dust soiling and increase in $PM_{2.5}$ and PM_{10}	Local population health	National/High	Average	• Construction traffic speed limit when passing through populated areas • Water of dusty-unpaved roads and populated areas	Low

Table 13: 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	• 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	• 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. • 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	Low

Impact ID	Description	Type of impact	Significance/ sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
CS03	Damages to utilities by excavation and temporary access cut-off to properties	Local population health	National/High	Average	• 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 14: 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	• 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 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 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.	Low

Impact ID	Description	Type of impact	Significance/ sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					• 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	• 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	• 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 15: 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	Environmental Protection	Regional/ Moderate	Low	• 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	Low
WM02	Inappropriate management and disposal of waste during construction affecting water courses	Water courses - water quality	Regional/ Moderate	Low	• EMP to include appropriate waste management protocols • Location of appropriate waste storage facilities at all work sites	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					• 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	
WM03	Poor waste management practices resulting in direct and indirect effects on project area environment	Environmental Protection	Regional/ Moderate	Low	• 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. • 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. • Indroduction 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	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					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 16: 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	• Contructor to conduct construction works strictly within the allowed bounderies • 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	• Store all liquid/solid waste properly above ground to avoid spills/ leaks; Store Haz-Mat, 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;	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					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	• Procure construction material (sand, gravel, aggregate, etc) only from government approved existing quarry sites; Minimize extraction of construction materials from rivers and stream beds; Maintain a material entry log book at the site indicating material, source and quantity	Low
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 17: 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	• 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.	Low

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
					• 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	

Table 18: 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	• 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 19: 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	• 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

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
SG02	Potential damage or loss of soil resource due to erosion or improper handling.	Soils	Regional/ Moderate	Low	• 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 20: 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	A total of 24 trees, predominantly belonging to Populus spp. (Poplars), are slated for removal within the designated RoW of the proposed sewer network	Local/Moderate	Low	• 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

Impact ID	Description	Type of impact	Significance/sensitivity level	Sig. before mitigation	mitigation measures	Sig. after Mitigation
TE02	Loss of habitat, and indirect impacts such as noise, lighting, visual disturbance during construction	Breeding birds	Local	Low	• Do not conduct vegetation clearance during breeding season of species present Monitor nesting activity during noisy construction procedures near to nesting habitats • 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	Low
TE03	Introduction of invasive species and predators	Functioning of ecosystem	National	Average	• 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
TE04	Increase in hunting pressure, predators etc.	Functioning of ecosystem	National	Average	• 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 21: 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 Karakol will receive an adequate access to centralized sewerage system.	Local incomes	Regional/ Moderate	Average	Consider development of sustainable community tourism plan.	Positive - Medium

Table 22: 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
AQ01	Localised changes in ambient air quality (odour) due to operation of sewer networks.	Local population health	National/High	Average	Adhere to operation rules.	Low

6.2 Additional Impact Assessment Requirements

97. The Contractor and ME Karakol Vodokanal shall be responsible for obtaining all required National and Local Permits for the implementation of the “Construction of Additional Sewer Networks in Karakol City”. 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.

6.3 Environmental Reporting Requirements

98. The contractors must 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.

99. 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.

100. 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’s and EA’s project websites.

6.4 Conclusion

101. 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.

7 İNFORMATION DISCLOSURE, CONSULTATION, AND PARTICIPATION

7.1 Stakeholder Consultation Approach

102. The public consultation process for the Karakol Sewerage Expansion Project includes stakeholders' participation and consultation to help DDWSSD achieve public approval for the project. The main goal of the public consultation is to attract a wide range of participants representing APs, leaders of local communities, civil society, NGOs and government officials. Public consultations with stakeholders were conducted in Karakol on January 31, 2025. Refer to Appendix 2 for the meeting minutes

103. Dissemination of information and consultation with affected persons and institutions involved will reduce the potential for conflicts and reduce the risk of delays in project implementation. In addition, this approach will enable the Project to develop a resettlement and rehabilitation program that meets the needs and priorities of the affected people and thus potentially increases the economic and social benefits of the investment. The objectives of the public awareness campaign and public consultations are as follows:

- Fully share information with Household (HH) on the proposed components and project activities.
- Receive information on the needs and priorities of HH, as well as information on their reactions to the proposed principles and activities.
- Ensure that HHs can make fully informed decisions that will directly affect their income and quality of life, and that they could participate in activities and make decisions on issues that will have a direct impact on them;
- Ensure the maximum level of cooperation and participation of HHs and local communities in the activities necessary for planning and implementing resettlement.
- Ensure transparency in all activities related to land acquisition, compensation, resettlement and rehabilitation.

8 GRIEVANCE REDRESS MECHANISM

104. 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.

105. ADB SPS 2009 requires the Executing Agency (EA) to establish a GRM to receive and facilitate the resolution of affected persons concerns and complaints about the project's environmental performance during both the construction and operation phases of the project. The GRM should be scaled to the risks and adverse impacts of the project; should address affected persons concerns and complaints promptly using an understandable and transparent process; should be readily accessible to all sections of the community at no cost and with retribution; and should not impede access to the KR9s judicial or administrative remedies

106. Grievance Redress Group (GRG). During the project implementation period, by 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 (Refer Appendix 4) 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.

107. 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.

108. 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.

109. GRG covers issues related to social, environmental and other safety issues in accordance with ADB safety conditions and the legislation of the Kyrgyz Republic

Table 23: Grievance Procedure

Step	Impact level	Process	Time
1	LFP decison	At the initial stage, LFP listens to the affected personand tries to propose acceptable solutions. If the affected personis not satisfied with the decisions, he/she submits complaints in writing to the local GRG within 3 days.	3 days
2	Decision at local level	Upon receipt of the written complaint, the LFP will conduct a review and prepare a case file for local hearing and decision by the GRG. A formal hearing will be held with the GRG on a date determined by the LFP in agreement with the affected person. On the day of the hearing, the affected personmust appear before the GRG and present evidence in support of his claim. LFP will record the affected person's statements and document all evidence. The decision of the majority of group members will be considered final by the GRG and will be prepared by the LFP and signed by the other GRG members. The case will be updated and the MK will communicate the decision to the affected personwithin 14 days. If the aggrieved person is not satisfied with the decision, the LFP will submit a complaint in writing to the central GRG in Gosstroy with a conclusion and supporting documents prepared at the local level.	14 days
3	Decision at central level	Upon receipt of a written complaint, the Chairman of the central GRG will review and prepare a case file for hearing and resolution by the GRG. The formal hearing will be held on a date agreed upon by the GRG Chair and the affected person,. GRG members will contact the applicant and visit his/her village. The PIU specialist will record the affected person's statements and document all evidence. The decisions of the majority of members will be considered final by the central GRG and will be prepared by the chairman and signed by the other members. The case will be updated and the PIU specialist will communicate the decision to the affected personwithin 14 days of filing.	14 days

110. 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.

111. .

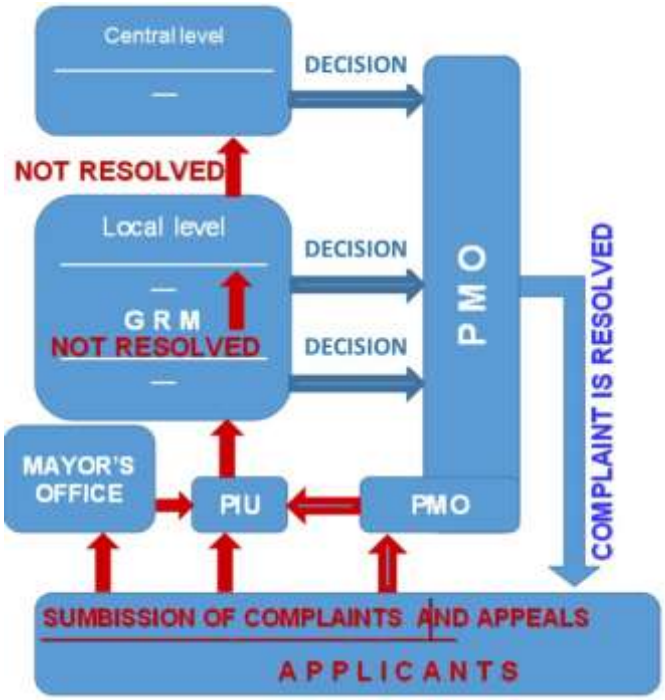


Figure 8: Grievance Redress Steps

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

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

113. The committee chairman will perform the following functions:

(i) Presides over the meetings of the committee and organizes its work.
(ii) Has a casting vote at meetings of the committee.
(iii) Approves the agenda for the committee meetings.
(iv) Appoints a date, time and place of committee meetings.

114. The committee has the right to:

(i) Hold meetings when appeals and complaints are received.
(ii) Check the materials (documents) related to the received appeals/complaints submitted for consideration by the committee.
(iii) 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.
(iv) 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.

115. Members of the committee have the right to:

(i) 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.
(ii) 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.

116. The committees carry out their activities in the form of meetings.

(i) 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.
(ii) The chairmen of committees preside at the meetings of the committees, and, in their absence, the deputy chairmen of the committees shall preside.
(iii) 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.
(iv) 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.
(v) Minutes of the committee's meetings should be recorded.

117. 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.

118. The public will be informed about the GRM during the public consultation, as well as through regional newspapers and on websites and by PMO.

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

(i) First Vice Mayor of Karakol - Chairman of the Committee.
(ii) Head of the Municipal Property Department of Karakol - Deputy Chairman of the Committee (by agreement).
(iii) Representative of Karakol Branch of the State Enterprise "Cadastre".
(iv) Representative of the Issyk-Kul Territorial Department of the Ministry of Natural Resources, Ecology and Technical Supervision of the Kyrgyz Republic.
(v) Representative of Karakol Department of Urban Planning and Architecture of the State Construction Committee.
(vi) Head of Boru-Bash ayil okmotu.
(vii) Director of Karakol Vodokanal.
(viii) Isanov Sabyrbek Dolosovich - resident of the city of Karakol.
(ix) Kaliev Baktiyar Nazarbekovich - resident of the city of Karakol.

(x) Representative of IWMP's Consulting Company.
(xi) Manager of IWMP Implementation Unit (PIU).

120. Composition of Grievance Redress Committee at central level:

(i) 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.
(ii) First Deputy Plenipotentiary Representative of the President of the Kyrgyz Republic in Issyk-Kul region - Deputy Chairman of the Committee.
(iii) 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.
(iv) 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.
(v) Representative of IWMP's DSC
(vi) PMO Environmental Specialist, IWMP.
(vii) PMO Social Safeguards and Resettlement Specialist.

9 ENVIRONMENTAL MANAGEMENT PLAN (EMP)

121. 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.

9.1 Environmental Mitigation and Monitoring Actions

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

9.1.1 EMP Tables

123. The impacts identified during the analysis presented in this report are listed as line items in EMP, which appears in Table 25 to Table 27 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 Karakol Vodokanal, Municipal and National government entities, and Project staff.

124. 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.

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

- Air quality and Dust Suppression Plan: Includes a schedule for spraying water on transport and access roads leading to the construction site, and details of the equipment to be used, and dust abatement measures.

- Waste management Plan: that provides for regular collection and disposal of waste in a hygienic manner, as well as the proposed disposal sites for different types of waste (e.g. household waste, worn tires, etc.), collection and storage locations should comply with the relevant regulations
- Management plan for tree felling and soil contamination: Management plan for tree felling is necessary to minimize the cutting of trees along the sewerage route. This will include route selection in the design of sewerage networks that protect particularly valuable trees that provide protection and shade, as determined by local communities. Part of the soil management plan should detail the measures that need to be taken to minimize the impact of wind and water erosion on the topsoil and excess materials; measures to reduce degradation of the topsoil; terms; transport routes; places of unloading and disposal of surplus materials. The plan must be approved by the Local Self-Administration and SAEPF.
- An emergency response plan (in the event of spills, emergencies, fires, etc.) must be submitted prior to commencement of work for the main construction facilities.
- Health and safety management plan; To protect the health and safety of workers and residents of nearby homes, the following information is provided: (1) nearby medical facilities (including a first aid kit) at construction sites; (2) training and education of all construction workers in basic sanitation and health issues, general health and safety issues and the specific hazards of their work; (3) personal protective equipment for workers, such as safety boots, helmets, gloves, protective clothing, goggles and ear protection in accordance with the legislation of the Kyrgyz Republic; (4) clean drinking water for all workers; (5) safety measures for the public, including safety barriers and hazardous area markings; (6) safe access for people through construction sites, whose households and access are temporarily closed by road construction; (7) sanitary facilities and dumpsters at the construction site, which will be regularly cleaned when filled by contractors to prevent disease outbreaks
- Asbestos Management Plan: a structured approach to managing asbestos-containing materials (ACMs) in sewer pipelines, ensuring safety and compliance with regulations.
- Archaeological Chance Finds Protocol/Plan: approach to managing unexpected discoveries of archaeological materials during construction or development projects. It ensures compliance with heritage conservation laws and minimizes disruption while preserving historical artifacts
- Water Course Protection Management Plan: outlines strategies to safeguard watercourses from pollution, erosion, and ecological degradation
- Construction Camp Management Plan: ensures that temporary worker camps are safe, environmentally responsible, and compliant with regulations
- Construction management plan: outlines how a construction project will be executed, monitored, and controlled. It ensures efficiency, safety, and compliance with regulations

126. The contractor must submit an SSEMP for DSC approval, which will reflect all the above activities. If additional environmental risks are identified, the Contractor should develop additional management plans to mitigate adverse impacts beyond the plans listed above

9.1.2 Pre-Construction Phase

127. Impacts arising in the pre-construction phase typically involve land acquisition and resettlement of displaced people because of infrastructure sitting decisions. Although conventional land acquisition or resettlement will not be required for construction of “Additional Sewer Networks in Karakol City”. The sewer network pipelines will be installed on the land already owned by the Karakol 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’s Site -specific Environmental Management Plan during construction planning. It will be ensured that all design related measures of the EMP are included in 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 the 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.

9.1.3 Construction Phase

128. 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 Karakol Vodokanal land, and in this project the impact on households is excluded. 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 on January 31, 2025, 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.

129. 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.

9.1.4 Operating Period

130. Impacts with potential to be experienced in the operating phase are odour related. The odour impacts are associated with community disturbances during sewer maintenance. 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.

9.2 Environmental Management Plan (EMP)

Table 24: Environmental Management 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	• Appointing Environmental, Health and Safety (EHS) Supervisor to ensure EMP implementation • Submission of updated EMP/ SSEMP • 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	• 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 • 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)	PMO costs for project approvals
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	• Obtain all necessary consents, permits, clearance, NOCs, etc. prior to awarding civil works. • Ensure that all necessary approvals for construction to be obtained by contractor are in place before start of construction • Acknowledge in writing and providing report on compliance all obtained	Contractor, PMO	PMO costs for project approvals Contractor cost for construction approvals

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		consents, permits, clearance, NOCs, etc.		
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
Chance finds	Damage / disturbance to artifacts	Contractor to follow these measures in conducting any excavation work • Create awareness among the workers, supervisors, and engineers about the chance finds during excavation work • Stop working immediately to allow further investigation if any finds are suspected.	Contractor	Contractor cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		• 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 the 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	• 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. • Develop ACM management plan/protocol for compliance with asbestos policies of major international agencies[18] 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	Contractor	Contractor cost

[18] 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
		• Conduct training of workers on ACM during orientation / induction		

Table 25: 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.	Damage/disturbance to artifacts	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 • Stop working immediately to allow further investigation if any finds are suspected. Inform Ministry of Culture, Information, Sports, and Youth Policy 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.	DSC, Contractor, PMO	Contractor Costs
Earthworks	Instability due to Earthworks Trench Collapse Impact upon structures and houses Slip hazard due to long and unattended trench	• 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	Contractor/ DSC	Contractor Costs

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
	Slope failure Disturbance to existing customs, movements and way of life of local people in the different sections of subproject alignments.	• Implement all other applicable site-specific mitigation measures as indicated in the respective SSEMPs		
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;	• Excavated materials will be directly loaded to dump truck / disposal vehicle and will take time to teorary disposal sitesNo 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:	The decision to close a particular street and divert the traffic should involve the following steps: • 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 on the detours where the road is diverted during the construction. • determining 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.	Supervision by DSC Implementation by Contractor	Included in overall project cost; Assume: meetings with residents before construction, during construction and after construction.
	Increased risk of road traffic accidents due to construction traffic movements	• Actively enforce speed limits for Project vehicles. • Awareness program for local population prior to work commencing, including visits to local schools • Development of Traffic management Plan as part of the SSEMP	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		• 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 the 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 • Providing signages, guardrails or barriers, metal planks as walkways or cover for vehicles, night lighting etc.		
	Impacts on health of dust and noise emissions	• 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. • 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.	Supervision by DSC Implementation by Contractor	Included in overall project cost
Community Socioeconomics	Positive effect short-term employment of local people, this can offset some of the disturbance experienced by people living near construction sites.	• Develop plan for local recruitment of workers for project - train as required • Employ at least 30% of the 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	• 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	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
	stationary equipment burning fossil fuels.	• No equipment shall be left idling if not in use.		
	Emissions from mobile and stationary equipment on sewer lines, affecting local air quality standards	• 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	• Construction traffic speed limit when passing through populated areas • Water of dusty unpaved roads and populated areas		
	Transportation of construction materials	Dust suppression by water tankers with sprinkling systems are to be deployed along regularly trafficked routes. 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. Precautions will be taken to avoid inconvenience to the local community due to movement of materials. Dry materials to be covered to avoid dust blow.	Contractor with approval of DSC/PMO/PIU	Contractor Costs
Noise and Vibration	Noise disturbance due to equipment and construction activities.	• Awareness program for 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 DSC/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 avoid 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	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		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.		
Occupational Health and Safety	Poor quality housing and hygiene standards resulting in injury or sickness	• Contactor to ensure that workers' accommodation and rights are in line with the FIDIC Pink Book requirements • Contract documentation to include the 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	• Contractor shall develop Method Statements for all major activities and include health and safety risk assessment for each of these activities • Contractors should 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 • The 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) • The contractor will train and assign a specialist as Health and Safety officer as the person responsible 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	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		will organize polymerase chain reaction test (PCR) which detects genetic material from a specific organism, such as COVID-19.		
Hazardous and Non-hazardous waste management including Asbestos Containing Materials (ACM)	To manage all hazardous and non-hazardous waste as per international best practices.	• A waste management plan will be developed prior to the start of construction, including an Asbestos Management Plan in accordance with good international practices and protocols on handling and disposing ACM. This plan will cater to sorting hazardous and non-hazardous materials prior to disposal, placing 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 a 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)	• 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. • 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, the location of campsites will be restored to its previous state by undertaking clean-up operations.	Supervision by DSC Contractor with approval of DSC	Contractor Costs

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	• 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 their 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	• Include appropriate waste management protocols • Location of appropriate waste storage facilities at all work sites • Worker induction and regular toolbox 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
	Poor waste management practices resulting in direct and indirect effects on project area environment	• All hazardous waste containers to be labelled clearly with a waste hazard identification label. • The 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.	Supervision by DSC Implementation by Contractor	Included in overall project cost

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		• Contractors 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. • Contractors 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.		
	Disposal of demolition debris	• Conduct pre-demolition waste audit to estimate debris types and volumes. • Segregate materials at source: concrete, bricks, metals, wood, glass, plastics, hazardous waste. • Store debris safely in covered, impermeable containers away from sensitive zones. • Use licensed transporters with covered vehicles; maintain trip logs and manifests. • Prioritize recycling and reuse through authorized facilities; dispose of residuals at approved landfills. • Route hazardous waste to certified treatment centers per national and MDB standards. • Document disposal activities with daily logs, manifests, and site photos for SEMR inclusion.	Supervision by DSC Contractor with approval of DSC	Contractor Costs

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		• Coordinate with Karakol municipal authorities for permits and compliance oversight. • Restore site post-demolition with dust suppression and erosion control measures.		
	Cleaning work sites and waste disposal	• All operational areas (office/storage area, work force camps) will be cleaned up and restored to their previous state soon after operations are complete. • All construction waste will be disposed of in approved Karakol Vodokanal/municipal dump sites, after receiving permit for construction waste disposal from the Karakol Vodokanal/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.	• Contractor to conduct risk assessments on all activities near to water courses and apply appropriate controls. • No refuelling of vehicles or equipment to take place within riverbeds or within 25 metres of the edge of the water course. • Works in the water protection zone of the river are to be carried out with the special requirements that will be reflected in the SSEMP.	Supervision by DSC Implementation by Contractor	Included in overall project cost
Biodiversity	Potential impacts on trees/vegetation adjacent to work sites (34 trees belonging to Populus spp. (Poplars) will be removed)	• Contractor to develop a tree protection plan as part of the SSEMP. 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 cleared; use vegetation inventory to identify appropriate local plant species to be used for revegetation. Trees will not be cut off unless justified in 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 the same species for each tree that is cut for construction. • Planting of trees from species agreed with the city administration	Supervision by DSC Implementation by Contractor	Included in total project costs (a number will be confirmed during SEMP preparation)

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Soil and Ground Water	Accidental spillage of hydrocarbon affecting local ground water	• 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 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.	Supervision by DSC Implementation by Contractor	Included in overall project cost
	Potential damage or loss of soil resources due to erosion or improper handling.	• 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) on or before end ofJanuary and July each year. Final EMR will include post-construction environmental audit and will be submitted one month after the project's physical completion.	Implementation by Contractor, DSC, PIU and PMO	Included within management costs

Table 26: Operating Phase Environmental Mitigation Plan for Sewerage Networks

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
Community disturbances during maintenance of manholes and sewer pipelines	Contamination caused by accidental spills	• 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	Karakol 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	Karakol Vodokanal	Included in maintenance budget of Vodokanal
	Noise	All parts used in mechanical equipment in the sewerage systems must be tightly secured	Karakol 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	Karakol 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	Karakol Vodokanal and stakeholders	Included in maintenance budget of Vodokanal
Operation and maintenance of sewerage system	Blocks, overflows, system malfunction, occupational health and safety	• Establish regular maintenance program, including: • 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	Karakol Vodokanal and stakeholders	OPEX

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		is warranted where an overflow is currently occurring or for urgent problems that may cause an imminent overflow (e.g. 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 conduct preventative maintenance, rehabilitation, or replacement of lines as needed. • 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		

Draft Activity/Issue	Potential Environmental Impacts	Proposed mitigation measures	Responsibility	Cost/activity
		• 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.		

9.3 Environmental Monitoring Plan (EMoP)

131. Environmental monitoring is an important aspect of environmental management during the design phases of construction and work, which guarantees environmental protection. During construction, environmental monitoring will ensure that the embankment is protected from potential soil erosion, and will monitor the location of working areas, community relations and compliance with safety precautions. Monitoring of noise, air quality and surface water levels will be an important parameter in the monitoring program during the production of the work. The parameters to be monitored are outlined in the following plan

Table 27: Environmental monitoring plan for Construction of Additional Sewer Networks in Karakol City

Project Activity and Potential Impact	Objective of Monitoring	Monitoring parameters	Measurements:	Location	Frequency	Responsibility
Preconstruction Phase Monitoring Requirements – Before commencement of Civil works						
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

Project Activity and Potential Impact	Objective of Monitoring	Monitoring parameters	Measurements:	Location	Frequency	Responsibility
Workers camp/on-site – water quality monitoring (drinking water)	To determine water quality to ensure workers' safety and health[19]	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
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
Safety precautions by Safety workers	To prevent accidents for workers and public	Number of near miss events and accidents taking place	Visual inspections	Sites	On weekly basis	Contractor
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
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
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 weekly basis	Contractor

[19] If bottled or canned water is intended for potable use, the manufacturer's details and compliance with relevant Kyrgyz regulations will be verified to ensure potability. In such cases, water quality monitoring may not be required; the necessity for such monitoring will be determined by the Design and Supervision Consultant (DSC).

9.4 Implementation Arrangements

9.4.1 Environmental Requirements to be Implemented

132. 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 SSEMP. On-the ground mitigation actions will dominate during the construction period, as contractors apply the measures specified in the SSEMP 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.

9.4.2 Implementation arrangement

133. 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 SSEMP, 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 SSEMP 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

SSEMP, monitoring and control to ensure Contractors' compliance with the norms and requirements of national environmental legislation and ADB Safeguards Policy

d. **Authorized state bodies and their territorial divisions**:

i. Ministry of Architecture, Construction and Housing and Communal Services of the Kyrgyz Republic (MACCHS),

ii. State Institution of Drinking Water Supply and Sewerage Development (SIDWSSD),

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.

9.5 Environmental Management Budget

134. 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. Following Table 23 shows the environmental management costs of this project. The duration for implementing the works is short and so EM costs are relatively low.

Table 28: Contractor's Cost for Environmental Management

	Item	Unit	Quantity	Rate (in figures) US $	Total
A.	**Personnel**				
1	Appointment of a dedicated full-time Environment, Health and Safety (EHS) Specialist 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

	Item	Unit	Quantity	Rate (in figures) US $	Total
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
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

	Item	Unit	Quantity	Rate (in figures) US $	Total
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**

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusions

135. In view of the above, it can be concluded that the project 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 there. It is therefore recommended that a Project based on the preferred alternative identified in this report and including an Environmental Protection Management Plan be put forward for implementation.

136. The Environmental impact assessment / Environmental Management Plan / Environmental Monitoring Plan requirements and activities must be complied with by the Contractor as part of the contract documents. Accordingly, the Contractor will require all its subcontractors to also comply with the Environmental Protection Action Plan and similar conditions must also be specified in the contracts with the subcontractor, which will be reviewed by the Engineer (or Design Supervision Consultant).

137. The proposed Environmental Management and Monitoring Plans will ensure that good quality of surface water, air and noise is maintained in the common area, especially during the construction phase. The assessment should avoid (especially during the design phase), reduce (during construction), and mitigate or compensate (including during construction) environmental and / or social impacts. A public consultation was held to familiarize with the project, and information on environmental and social impacts was provided. The results of additional public meetings are included in Appendix 2 of this IEE Report.

10.2 Summary and Recommendations

138. The environmental impacts of the sewerage network construction have been assessed and described in Chapter 6 of this document. Potential negative impacts have been identified for the design, placement, construction and operation of the sewerage network. Mitigation measures have been developed to be finalized in the detailed design stage, to be implemented during the construction phase and then during the operation phase, to reduce all negative impacts to an acceptable level.

139. According to the assessment in this IEE report, the proposed sewerage project is unlikely to cause any adverse environmental impacts, due to the fact that:

- The proposed project activity focuses on expanding the existing sewerage network and improving the sanitary conditions in Karakol, aims to improve the quality of life and quality the environment of the surrounding areas including lake Issyk-Kul.
- Potential negative impacts associated with the design, construction and operation of the proposed activities will be temporary in nature and will be localized in volume and mitigated to an acceptable level.
- There is no project work that would result in permanent or temporary loss of income and / or livelihood. Rather, it contributes to a possible increase in

household incomes in connection with the possible employment of the local population in construction.

- An institutional framework has been developed to define procedural requirements and responsibilities to ensure environmentally sustainable implementation, that is, with the participation of PMO (DDWSSD), DSC and Contractor.
- All construction and operational activities will be monitored and reported to the DDWSSD (through the recruitment of DSC) in accordance with the environmental monitoring plan.

140. In order to ensure environmental and social guarantees, the following recommendations are considered in the IEE Report:

- Designers should pay due attention to the IEE section (Environmental Management Plan, Environmental Monitoring Plan) and the monthly monitoring reports should be prepared in a timely manner.
- The functions of tree caring should be transferred to local communities until the trees reach the age of 8 years old and no longer require careful maintenance.
- Shortly after the start of the operation period, the DSC and the contractor conduct a warranty compliance review to ensure that the contractor has followed all the necessary measures.

141. This IEE report will be updated as necessary, taking into account all environmental requirements, and all significant changes will be discussed and agreed with the ADB.

142. It is important that the Contractor and his Subcontractor (if any) understand that successful implementation entails not only the provision of infrastructure, but also the preservation of the environment within the framework of sustainable development.

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, Construction of Additional Sewer Networks in Karakol City - IMP/ICB/CW-21/008

Sector Division: Water and other urban infrastructure and services

Screening Questions	Yes	No	Remarks
B. PROJECT SITING IS THE PROJECT AREA…			
▪ DENSELY POPULATED?		☒	Population in the project area is sparsely populated
▪ HEAVY WITH DEVELOPMENT ACTIVITIES?		☒	Not envisaged
▪ ADJACENT TO OR WITHIN ANY ENVIRONMENTALLY SENSITIVE AREAS?	☑		The IWMP comes under the Issyk-Kul Lake surrounding region, which is a nationally valuable environmental, economic and cultural asset.[20] 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[21], where sustainable economic development is allowed. Hence with exemption to construction related impacts (which is temporary in nature and will exists till the completion of the construction activities), no other major impacts which are irreversible has been envisaged
▪ CULTURAL HERITAGE SITE		☒	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	☑		The whole project area, under the IWMP (including this subproject) comes under the Issyk-Kul Biosphere Reserve (IKBR)

[20] The lake's rich environmental, archaeological and cultural resources are renowned internationally

[21] 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
			classification, however, this subproject on the additional works (Capital repair of 28 manholes, replacement of the pipeline under the Karakol River) comes under IKBR Transition Zone[22], where sustainable economic development is allowed.
▪ WETLAND	☑		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)
▪ MANGROVE		☒	Not envisaged
▪ ESTUARINE		☒	Not envisaged
▪ BUFFER ZONE OF PROTECTED AREA	☑		Please refer to the remarks given under Protected area
▪ SPECIAL AREA FOR PROTECTING BIODIVERSITY	☑		Please refer to the remarks given under Protected area
▪ BAY		☒	Not envisaged
A. POTENTIAL ENVIRONMENTAL IMPACTS WILL THE PROJECT CAUSE…			
▪ impairment of historical/cultural monuments/areas and loss/damage to these sites?		☒	Please refer to the remarks given under Cultural heritage site
▪ interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?		☒	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.
▪ dislocation or involuntary resettlement of people?		☒	Not envisaged
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		☒	Not envisaged, as per the prepared and disclosed Project Data Sheet (PDS), this project is classified as "C" as per the SPS 2009
▪ impairment of downstream water quality due to inadequate sewage treatment or release of untreated sewage?		☒	The subproject is 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.
▪ overflows and flooding of neighboring properties with raw sewage?		☒	Not envisaged. The proposed sewerage system is an extension of the existing underground sewage system (UGSS), which is securely insulated to prevent any leakage, overflow, or flooding
▪ environmental pollution due to inadequate sludge disposal or		☒	Not envisaged. As this is an underground sewerage system (UGSS), unauthorized

[22] The transition zone focuses on sustainable economic development. Economic activities are permitted but are regulated to ensure sustainable use of ecosystems.

Screening Questions	Yes	No	Remarks
industrial waste discharges illegally disposed in sewers?			industrial wastewater discharge or illegal disposal into the system is not feasible
▪ noise and vibration due to blasting and other civil works?		☒	Not envisaged. The additional works, which propose a 12.24 km extension to the existing sewer network in Karakol City, involve minimal construction activities and do not necessitate the use of heavy machinery. Accordingly, blasting operations are not anticipated.
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?		☒	As indicated in the earlier response, the proposed construction activities under this subproject are very minimal and hence physical, chemical, and biological hazards are not envisaged
▪ discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		☒	Not envisaged
▪ inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances, and protect facilities?		☒	Not envisaged,
▪ road blocking and temporary flooding due to land excavation during the rainy season?		☒	Not envisaged, construction works will be halted during the rainy season.
▪ noise and dust from construction activities?	☑		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.
▪ traffic disturbances due to construction material transport and wastes?		☒	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.
▪ temporary silt runoff due to construction?		☒	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
▪ hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?			Not envisaged. Please refer to the remarks given under “overflows and flooding of neighboring properties with raw sewage?”
▪ deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		☒	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?”

Screening Questions	Yes	No	Remarks
▪ contamination of surface and ground waters due to sludge disposal on land?		☒	Same as above
▪ 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?		☒	Not envisaged, Toxic gas and hazardous materials are not envisaged in this subproject.
▪ large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		☒	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
▪ social conflicts between construction workers from other areas and community workers?		☒	As indicated in the previous remarks, local labours shall be engaged in the construction works and hence social conflicts is not envisaged
▪ 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?		☒	Not envisaged
▪ 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?		☒	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, Construction of Additional Sewer Networks in Karakol City - IMP/ICB/CW-21/008

Sector: Water and other urban infrastructure and services

Subsector:

Division/Department:

Screening Questions		Score	Remarks[23]
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, hydrometeorological 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

[23] 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 (12.24 km extension to the existing sewer network in Karakol City), 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: Prepared by the State Institution Drinking Water Supply and Sewerage Development (DWSSD) under the Water Resources Service under the Ministry of Water Resources, Agriculture and Processing Industry of the Kyrgyz Republic for the Asian Development Bank

Appendix 2: Public Consultation for Additional Sewer Networks in Karakol City

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

Minutes #25 of the Public Consultation
On environmental impact assessment and social safeguards during the construction of additional 10 km sewer networks in Karakol city within the framework of the ADB-financed Issyk-Kul Wastewater Management Project

31 January 2025, 15:00 **Conference-Hall, Karakol Municipality**
The list of participants is attached.

Agenda:
1. Environmental impact assessment (OVOS) and social safeguards (SS) during construction of 10 km sewer networks in Karakol city.
2. Discussion and summing up of the public consultation.

Mr. Dzhanybekov A.K. - Karakol PIO Manager introduced the participants and the agenda of the Public Consultation. Welcoming addresses were made by representatives of the Karakol Municipality, PMO, who noted the importance of the implementation of this subproject for Karakol city. Mr. Alzhambaev F.A. – Mayor of Karakol city noted that the work on the subproject must be carried out efficiently and on time, and also during the construction of the SN, cases should be provided for connecting subscribers to sewer networks without destroying the roadway.

Mr. Omurkanov S.A. – PMO Director provided brief information about the subproject: 12.7 km of sewage networks have already been built in Karakol as part of the IWMP. Under this subproject, 11.5 km of sewer networks are planned to be built in Karakol, including Geolog village. The design is carried out by Encon LLC. Theky were financial resources foreseen within the framework of the IWMP for land acquisition and resettlement. Since there will be no resettlement, these funds will be used for the construction of additional sewer networks in Karakol and Balykchy cities.

Mr. Pyatkin V. – Engineer of Encon LLC made a presentation: Construction of additional sewage networks in Karakol city, Issyk-Kul region". The sewage networks of Karakol were designed at 13 sites in Karakol and 1 site in Geolog village with a total length of 11526 m:
Section # 1 Zhusaeva Street from Bektenova Street to Przhevalskiy Street, 467.5 m.
Section # 2 Asanalieva Street from Karasayeva Street to Korolkova Street, 172.5 m.
Section # 3 from Irada orphanage Brick Plant to Checherina Street along Zhamansarieva Street, 661.0 m.
Section # 4 Tyupskaya Street from Udilova Street to Portovaya Street, from Tyupskaya Street along Portovaya Street to Valikhanov Street, 1466.0 m.
Section # 5 Zhamansarieva Street from Bektenova Street to Beishenalieva Street, 412.0 m.
Section # 6 Kharkovskaya Street from Karasaeva Street to Toktogula Street, 1683.0 m.
Section # 7 Alybakova Street from Gagarina Street to Kyshtobaeva Street, 363.0 m.
Section # 8 Alybakova Street from Akhunbaeva Street to Rakhmanova Street, 200.0 m.
Section # 9 Orozbekova Street from Krutikova Street to Akhunbaeva Street, from Akhunbaeva Street to Derbisheva Street, 507.0 m.
Section # 10 Aldasheva Street from Naberezhnaya to Chkalova Street, section of Chkalova street to Bektenova Street, from Bektenova Street to Torgoeva Street along Bektenova Street, 700.0 m.
Section #11 Lenina Street from Akhunbaeva Street to Dyusheeva Street, from Lenina Street to Zhusaeva Street along Dyusheeva Street, 729.0 m.

Section #12 from Karasayeva Street along Shopokova Street to Kurochkina Street, from Kurochkina Street to Toktogul lyceum, along the lyceum territory to the existing sewer manhole, 1484.0 m.
Section #13 from Mukhtara Street along Ipodromnaya Street to Yntymak Street, from Yntymak Street to the boiler room, from the boiler room between houses No. 11 and No. 8 to the Tuberculosis Hospital, from the Tuberculosis Hospital to Zhantosheva Street along Michurina Street, 1766.0 m.
Section # 14 Geolog section with 511.0 m gravity line, and 404.0 m pressure line in two lines.
The total length of the construction of sewer networks will be 11,526 m.

When laying the SN, a polyethylene sewer corrugated pipe will be used. Sewage manholes will be installed on the SN in every 50 m from prefabricated reinforced concrete and in places where the SN direction changes. The depth of the SN laying will be in accordance with the requirements of KR Building Standards 40-02 2023.

Due to the terrain features, Geological site No. 14 does not reach the connection point in gravity mode. Geolog village and the WWTP are approximately at the same level. An underground sewage pumping station is planned to be arranged at this site. The pressure line from the SPS will be made of PE pipes with a diameter of 50mm in 2 lines. A K-262 manhole will be installed on the pressure section of the SPS in case there will be any accidents, inside of which shut-off valves will be located for switching pressure network lines.

Ms. Zinina O.V. – DSC National EP Specialist made a presentation on environmental impact assessment and social safeguards during construction. Any human activity affects the environment and the social environment. The impact is regulated by the relevant laws of the Kyrgyz Republic. Also, during the implementation of the subproject, it is necessary to comply with the ADB environmental policy. The work will be carried out primarily in accordance with the legislation of the Kyrgyz Republic and the general technical regulations for ensuring environmental safety. A positive conclusion of the State Ecological Expertise will be obtained, without which construction cannot be started. All work will be carried out on the territory of Karakol city. The subproject will not cover any cultural, historical sites or forestry.

Under ADB's policy, the project is classified under category "B", requiring only a partial environmental assessment, since the expected adverse impacts are minor or reversible, and preventive and mitigating measures will help prevent or reduce these impacts. The environmental management plan provides for the implementation of recommended preventive actions and mitigation measures. There is a sequence of environmental actions to be performed. Appropriate environmental protection measures are carried out at each stage.

OVOS reflects the background state of the environment prior to construction. The impact of construction work on atmospheric air, surface and groundwater, soil, flora and fauna, and the social environment will be monitored.

The greatest impact during construction will be on the atmospheric air. A contractor will manage the SDW at the site. Since it is planned to cut down trees on the sites, the contractor will conclude a contract with ME Zelenkhoz for the restoration of trees 1:3 or 1:5. There will be no negative impact from construction work on the animal world, except for noise from machinery, but urban animals are accustomed to background noise from the urban environment.

Mitigation measures will be taken to mitigate environmental impacts, such as work of construction machinery, excavation, and construction workers' activities: usage of only technically sound machinery, construction works will be carried out from 08.00 – 18:00, arrangement of a construction camp, installation of sanitary toilets and waste containers on the construction site, watering of construction sites, compliance with and ensuring the safety of workers and residents, provision of access to houses, new trees planting, etc. It is also necessary to ensure the safety of workers: PPE, respirators during excavation work. After the construction is completed, a screening of the environment state will be carried out, the sites should be restored to a better condition or as before the start of work.

Discussion

Mr. Mukhamedzhanov R. K. – Head of Aksakals Council of MTD-7: when will the construction of the SN begin?

Mr. Abdyraev Zh. M. - PMO Wastewater Infrastructure Engineer: The construction of SN will be divided into two lots and will begin in 2025 after the engagement of a contractor.

Ms. Zavyalova O.I. – KVE Project Consultant: The Department of Architecture is currently considering a project to change the SN route. The Municipality decided that the route would shift away from the projected line towards the residents, which could lead to the impact of the subproject on the residents' plots. According to the requirements of the ADB, in this case, the damage to residents must be compensated. It is better that the SN route passes without causing damage to residents.

Mr. Omurkanov S.A. – PMO Director: Network tracing should be done by the Designer with KVE and Architecture Department to minimize the impact of the subproject.

Mr. Abdyraev Zh. M. - PMO Wastewater Infrastructure Engineer: In order to complete the construction in a timely manner, the PMO requests that the route of the sewer networks proposed by the designer be agreed upon. If the routes are moved to areas where house plots and buildings of various purposes are located, due to the failure to complete demolition and dismantling before the start of construction work, there will be a risk of delaying the construction period, therefore, the Municipality of Karakol city should bear all responsibility for the timely completion of dismantling work.

Mr. Kashimbekov E.T. - Head of the Karakol Urban Development and Architecture Department: The SN route should be moved closer to houses to avoid damage to asphalt on roads where asphalt has already been laid and where it will be laid soon. The relocated route will still run on municipal land. The Municipality of Karakol city, the Karakol city Municipal Property Management Department and the Department of Architecture will work with the population that the population dismantles itself all illegal buildings or plantings from municipal land. In connection with the future construction of mortgage houses, it is necessary to foresee their connection to the central sewerage system, which is planned to be built within the framework of the IWMP, therefore the diameter of the pipeline on the site will be increased and the direction of the SN route will change.

Mr. Supataev T.A. - a resident of Geolog village: Residents are not glad that the funds originally allocated for resettlement have been redirected to the construction of other facilities within the framework of the project, and the resettlement has been canceled. Starting from 2018, all project activities must be checked to see where to the funds provided for resettlement have gone. Residents do not need the implementation of 6 social tasks in Geolog village, compensation is needed.

Residents of Geolog village left the PC.

Mr. Dzhanybekov A.K. - Karakol PIO Manager: Today, a completely different issue is being considered, not resettlement, but OVOS and SS during the construction of additional SN in Karakol. It is also planned to build 850 m SN in Geolog village within the framework of the project. IWMP works within the framework of the legislation of the Kyrgyz Republic. With the construction of SN, the value of real estate in the city will increase. The SPZ of the new WWTP does not reach households in Geolog village, and therefore households in it are not subject to resettlement and compensation. For

Geolog village, 6 social issues are being addressed within the framework of the Memorandum of Cooperation, including 4 issues within the framework of the IWMP.

Ms. Abdyrazakova Yryskul - a resident of MTD-2: will there be a SN built along #12 Abaya Street to Przhevalskaya Street and a junction with the river?

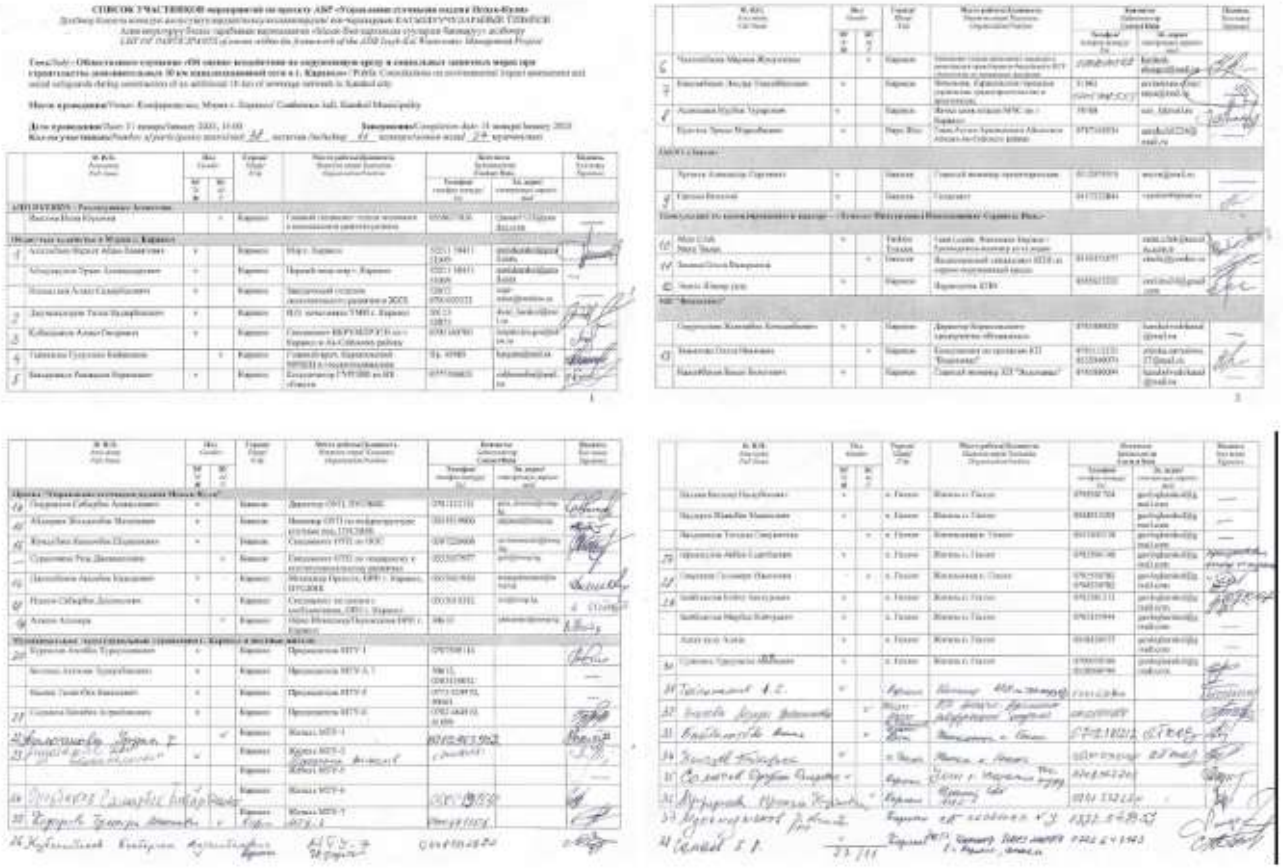
Mr. Dzhanybekov A.K. - Karakol PIO Manager: within the framework of this subproject, SN will not be laid on your site, but in the future SN will cover the entire city.

The participants noted the importance of the public consultation. PMO and PIO expressed gratitude to the Municipality for the support provided in the implementation of the project.

In view of the held discussion, the participants of the public consultation took note of OVOS and social safeguards during the construction of additional 10 km of SN in Karakol city.

In the process of preparing these Minutes, residents of Geolog village Mr. Yryskulov Aibek and Mr. Koichuev Toichubek applied to Karakol PIO on 06 February 2025 with a request to expand the SN in Geolog village to their households (about 120 m and 50 m, respectively), which was viewed and agreed on-site by specialists of the Contractor - Encon LLC, KVE and Karakol PIO on 07 February 2025.

Mr. Alzhambaev F.A.	/signed/	Mayor of Karakol city
Ms. Zavyalova O.I.	/signed/	KVE Project Consultant
Mr. Omurkanov S.A.	/signed/	PMO Director
Mr. Abdyraev Z. M.	/signed/	PMO Wastewater Infrastructure Engineer
Mr. Zhundubaev K.Sh.	/signed/	PMO EP Specialist
Mr. Pyatkin V.	/signed/	Engineer of Encon LLC
Ms. Zinina O.V.	/signed/	DSC National EP Specialist
Mr. Dzhanybekov A.K.	/signed/	Karakol PIO Manager
The Minutes were taken by		
Mr. Isanov S.D.	/signed/	PIO Karakol Community Liaison Officer, IWMP
Ms. Alieva A.	/signed/	Office Manager/Translator PIO Karakol, IWMP



Appendix 3: IBAT Report

IBAT

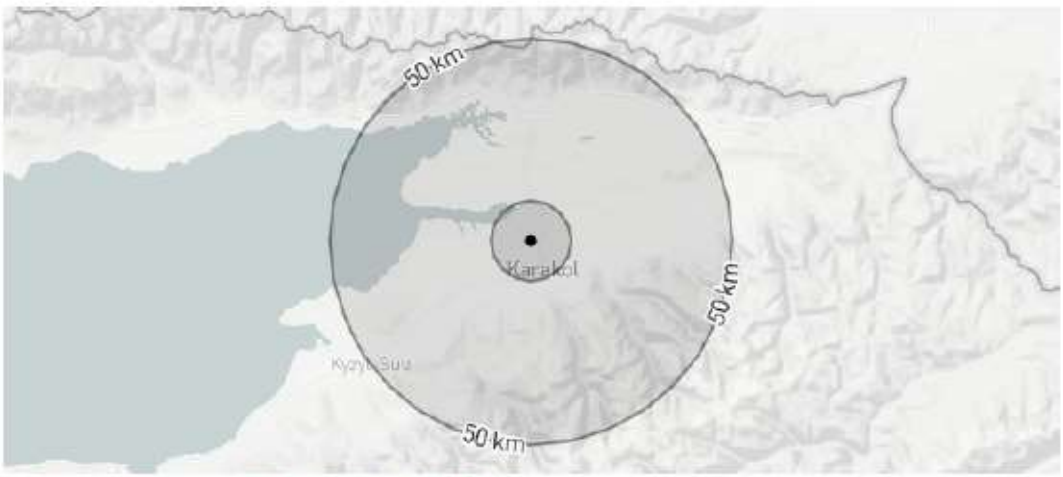
World Bank Group Biodiversity Risk Screen

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

WORLD BANK GROUP

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

KNOW YOUR ENVIRONMENT

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 knownor 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
Oxyura leucocephala	White-headed Duck	AVES	EN	decreasing	Terrestrial, Freshwater
Haliaeetus leucoryphus	Pallas's Fish-eagle	AVES	EN	decreasing	Terrestrial, Freshwater
Neophron percnopterus	Egyptian Vulture	AVES	EN	decreasing	Terrestrial, Freshwater
Aquila nipalensis	Steppe Eagle	AVES	EN	decreasing	Terrestrial
Falco cherrug	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

CV

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 4: Gosstroy order 140 for Grievance Redress Mechanism

КЫРГЫЗ РЕСПУБЛИКАСЫНЫН МИНИСТРЛЕР КАБИНЕТИНЕ КАРАШТУУ АРХИТЕКТУРА, КУРУЛУШ ЖАНА ТУРАК ЖАЙ-КОММУНАЛДЫК ЧАРБА МАМЛЕКЕТТИК АГЕНТТИГИ

ГОСУДАРСТВЕННОЕ АГЕНТСТВО АРХИТЕКТУРЫ, СТРОИТЕЛЬСТВА И ЖИЛИЩНО-КОММУНАЛЬНОГО ХОЗЯЙСТВА ПРИ КАБИНЕТЕ МИНИСТРОВ КЫРГЫЗСКОЙ РЕСПУБЛИКИ

STATE AGENCY FOR ARCHITECTURE, CONSTRUCTION AND PUBLIC UTILITIES UNDER THE CABINET OF MINISTERS OF THE KYRGYZ REPUBLIC

ORDER

31.12.2022 №140 Bishkek

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

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 13 of the Regulation on the State Agency for Architecture, Constructio and Public Utilities under the Cabinet of Ministers of the Kyrgy Republic (hereinafter referred to as " Gosstroy"), approved by Resolutio of the Cabinet of Ministers of the Kyrgyz Republic dated 25.06.202 #44, **I order:**

1. To establish commissions to consider complaints an applications of citizens arising from the implementation of the IWMP o 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

2. To approve the Regulation on the commissions for th consideration of complaints and applications of citizens subject t impacts within the framework of IWMP in accordance with Annex # 4

3. Commissions should ensure timely consideration and adoptio of appropriate decisions on complaints and applications of citizens o social and environmental safety measures and gender issues during th implementation of IWMP.

4. Control over the execution of this order should be entrusted t the Deputy Director of Gosstroy M.A. Akmataliev.

Director **T. Satyshev**

Annex №1 to the Order of the Gosstroy

31.12.2022 №140

Composition of the Commission for the consideration of complaints and applications at the central level:

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.

Annex №2 to the Order of the Gosstroy

31.12.2022 №140

Composition of the Commission for the consideration of complaints at the local level in the city Karakol

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.

Annex №3 to the Order of the Gosstroy

31.12.2022 №140

Composition of the Commission for the consideration of complaints at the local level in the city Balykchy

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.

Annex №4 to the Order of the Gosstro

31.12.2022 №14

REGULATION
on Commissions to consider complaints and applications of citizens affected by the Issyk-Kul Wastewater Management Project funded by Asian Development Bank

Chapter 1. General Provisions

1. This Regulation on Commissions for the consideration c 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 an organization of work of commissions for the consideration of complain and applications of citizens affected by the IWMP (hereinafter referr to as the "Commission").

2. Commissions are established at the central and local levels (the cities of Karakol and Balykchy). Commissions are collegial bodi that carry out their activities on a periodic basis, on a voluntary basis.

3. In their activities, the Commissions are guided by th Constitution of the Kyrgyz Republic, laws and other regulatory legal ac of the Kyrgyz Republic, the ADB's Safeguard Policy Statement, th international treaties to which the Kyrgyz Republic is a part international treaties entered into force in accordance with the procedu established by law, to which the Kyrgyz Republic is a party, and th Regulation.

Chapter 2. Aim and Tasks of the Commissions

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.

Chapter 3. Formation of the composition of the Commission at the central level

6. The Commission at the central level consists of:

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 PM IWMP.

Chapter 4. Formation of the composition of the Commission at the local level in the cities of Karakol and Balykchy

7. The Commission of Karakol city consists of:

1. First Vice-Mayor of Karakol – Chairman of the Commissio (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 Stat Institution «Cadastre»;
4. Representative of the Issyk-Kul Territorial Department of th Ministry of Natural Resources, Ecology and Technica Supervision of the Kyrgyz Republic;
5. Representative of the Issyk-Kul Regional Department fo 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 (b agreement);
9. Kaliev Baktiar Nazarbaevich – resident of the Karakol city (b 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:

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.

Chapter 5. Functions of Commissions

9. To solve the assigned tasks, the Commissions perform the following functions:

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.

10. Chairmen of the Commissions perform the following functions:

1) preside over the meetings of the Commissions and organize its work;

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.

Chapter 5. Rights of the Commissions

11. Commissions have the right to:

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.

12. Members of the Commissions have the right to:

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.

Chapter 6. Organization of the activity of the Commissions and the procedure for the consideration of complaints and applications under the Grievance Redress Mechanism

13. Grievance Redress Mechanism

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 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.	14 days
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 дней

Step	Action level	Process	Term
		Commission members will contact the applicant and leave for his/her village. The Social Safeguard and Resettlement Specialist of the PMO will record the affected person's statements and document all the evidence. The decisions of the majority of the members will be considered final by the Commission at the central level and will be prepared by the Chairman and signed by other members. The case will be updated, and the Social Safeguard and Resettlement Specialist of the PMO will inform the affected person about the decision within 14 days after filing.	

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.

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.