Environmental Monitoring Report

January – June 2020
October 2020

KGZ: Issyk-Kul Wastewater Management Project

Prepared by Temelsu International Engineering Services for Department of Drinking Water Supply and Sewerage Development under the State Agency for Water Resources under the Government of the Kyrgyz Republic and the Asian Development Bank.

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Abbreviations

ADB	Asian Development Bank
ASP	Activated Sludge Process
CMEA	Council for Mutual Economic Assistance Wastewater Standard (1977)
DDWSSD	The Department of Drinking Water Supply and Sewerage Development
d/s	downstream
DSC	Design and supervision consultant
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
IEE	Initial Environmental Examination
ITA SAEPF	Issyk-Kul Territorial Administration of the SAEP
ISDP	Issyk-Kul Sustainable Development Project
IWMP	Issyk-Kul Wastewater Management Project
Gosstroy	State Agency for Architecture, Construction and Housing and Communal Services under the Government of the Kyrgyz Republic
MoES	Ministry of Emergency Situations of the Kyrgyz Republic
MPC	Maximum Allowable Concentrations
NTP	Notice to Proceed
PIU	Project Implementation Unit
PS	Pump Stations
OVOS	A Procedure Defined by National Legislation for Environmental Impact Assessment
SAEMR	Semi - Annual Environmental Monitoring Report
SAEPF	State Agency for Environmental Protection and Forestry
SanPiN	Sanitary-Epidemiological Rules and Regulations Sanitary protection zones and sanitary classification of facilities, buildings and other plants
SIETS	State Inspectorate for Environmental and Technical Safety under the Government of the Kyrgyz Republic
SN	Sewerage Networks
SSEMP	Site-Specific Environmental Management Plan
SPS	ADB Safeguard Policy Statement
SPZ	Sanitary Protection Zone

u/s	upstream
WWTP	Wastewater Treatment Plants

1 INTRODUCTION

1.1 Preface

1. Recognizing the significant ecological value of Lake Issyk-Kul and its region, the Government of the Kyrgyz Republic is implementing significant reforms in the water supply and sanitation sector. These strategic directions were defined in the context of national development and tourism in Issyk-Kul as a priority component of the economic development of the region and included in the National Development Strategy of the Kyrgyz Republic for 2018-2040 and the Program for the Development of Drinking Water Supply and Wastewater Systems in Settlements of the Kyrgyz Republic until 2026 (Decree of the Government of the Kyrgyz Republic dated June 12, 2020 No. 330).

2. ADB is helping to improve the management of environmental protection and urban services in the region through the implementation of the Issyk-Kul sustainable development projects.

   In the period between 2009-2017, ADB implemented the Issyk-Kul Sustainable Development Project worth $ 30 million. USD. The project was designed for a long-term period with a phased approach to supporting environmental management and improving the provision of urban public services in the Issyk-Kul region. The first phase of the urban development program was to improve access to drinking water and safe sanitation, including the use of proven technologies for the treatment and disposal of solid and liquid wastes and wastewater. Feasibility studies were prepared for Balykchy, Cholpon-Ata and Karakol for the rehabilitation and construction of drinking water supply and sewerage systems under this project.

   The current Issyk-Kul Wastewater Management Project (IWMP) thus complements these initiatives by further improving wastewater systems in the two cities, Balykchy and Karakol, significantly improving health, hygiene and sanitation standards.

   Sector policies and institutional arrangements. Government targets for WSS services focus on inclusive development to improve functionality, enhance service levels, and expand municipal sanitation. In terms of policy, this includes a targeted strategy for WSS development to 2026, and a national strategy to guide sustainable development to 2040. A comprehensive legislative and regulatory framework for environmental and natural resource protection has also been enacted with project responsibility

recently transferred to the technically oriented Department of Drinking Water Supply and Sewerage Development (DDWSSD). The Asian Development Bank (ADB) has provided assistance through the Issyk-Kul Sustainable Development Project, which improved wastewater collection systems and provided institutional strengthening in both Balykchy and Karakol. Other development partners also provide WSS sector assistance, including: (i) the World Bank Small Towns Infrastructure and Capacity Development Project, (ii) water supply system improvements in Balykchy and Cholpon-Ata by the European Bank for Reconstruction and Development (EBRD), and (ii) water supply investments in Karakol by the Swiss State Secretariat for Economic Affairs.

3. The project was approved by the ADB Board of Directors on 20 November 2018 and Grant and Loan Agreements between the ADB and the Government of the Kyrgyz Republic were signed on 28 December 2018. The Law of the Kyrgyz Republic No. 60 "On Ratification of the Credit Agreement" dated July 16, 2019 was published in the newspaper "Erkin Too" No. 2019 dated July 19, 2019.

4. The ADB issued Notice to Proceed (NTP) on 16 August 2019 which sets the date of the Project's entry into force and, in accordance with the Grant and Credit Agreements of 28 December 2018, the project is to be implemented from 16 August 2019 to 31 December 2024. Resident Mission of ADB to KR (KYRM) is the body supervising the project.

5. Within the scope of Issyk-Kul Wastewater Management Project an Initial Environmental Examination (IEE) report has been prepared by Department of Drinking Water Supply and Sewerage Development (DDWSSD) under the State Agency for Water Resources for the Asian Development Bank which was also included in the feasibility report. The final version of IEE was disclosed on ADB's website on September 2018.

6. This report is the Semi - Annual Environmental Monitoring Review (SAEMR) for ISSYK-KUL WASTEWATER MANAGEMENT PROJECT (IWMP).

7. This report is the 1st EMR for the project.

1.2 General information

8. Tourism activities that are carried out on the lake adjacent area both in summer and in winter make a significant contribution to the economic development of the Issyk-

Kul region. Up to 1 million of foreign and local tourists visit Lake Issyk-Kul every year as the political situation in the country gradually stabilizes. (IEE, 2018)

Sewage management is an important factor for Issyk-Kul region, aiming at the following:

(i) maintaining the sensitive ecosystem balance of the lake;

(ii) ensuring public health safety; and

(iii) maintaining the tourism potential in the area.

For the Government of the Kyrgyz Republic, the development of the sewerage sector is a priority, as evidenced by a number of the above significant documents concerning this area adopted at the governmental level in recent years.

To secure sustainable and reliable wastewater treatment services in Balykchy and Karakol, sewerage networks will be improved and expanded. IWMP is expected to achieve the following outputs:

a) Balykchy and Karakol wastewater systems improved.
b) Improved capacity of “Vodokanals”
c) Septage management services improved and sanitation and hygiene awareness icreased.

Today, the coverage of the population with sewage treatment plants is at a low level: 35% in Balykchy and 45% in Karakol.

In this regard, the Issyk-Kul Wastewater Management Project focuses on sewage treatment facilities, expansion of sewerage networks, taking into account the connection of an additional 850 households in Balykchy city and 1200 households in Karakol city.

The implementation of this activity will increase the coverage rate to an estimated 45% in Balykchy and 60% in Karakol.

9. Issyk-Kul Wastewater Management Project has been classified as environmental assessment category B .According to ADB procedures, the impacts of the subproject were assessed by the Initial Environmental Examination, conducted according to ADB Safeguard Policy Statement (2009).. The project envisages temporary environmental impacts during the construction phase mainly due to dust, noise,

vibration, solid waste and movement of construction equipment, as well as obstructed traffic. These impacts can be controlled, minimized and mitigated.

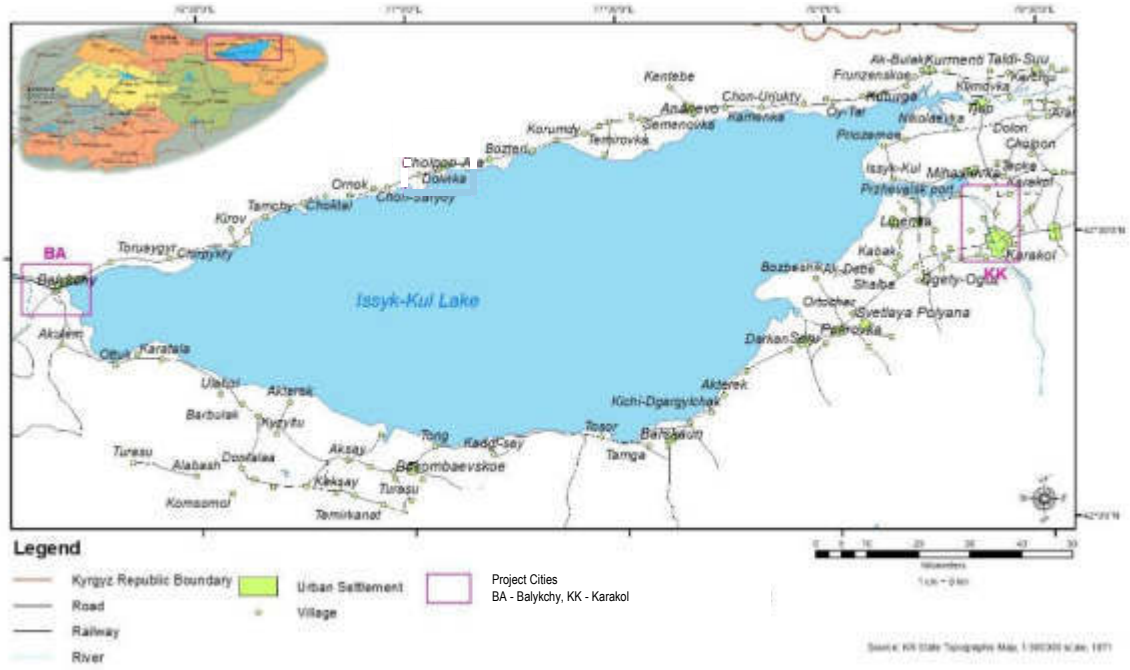
During the operation stage, the impacts will be related to the disposal of sludge, odor and noise from the WWTP and pump stations, as well as from the chlorinator, however, all of these impacts are limited by the sanitary protection zone (SPZ).

Risk mitigation measures aimed at limiting the impacts of construction and operating activities has been included in the Environmental Management Plan prepared within the scope of IEE study. Site Specific Environmental Management Plans to be prepared for each sub project.

2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 Project Description

10. The Issyk-Kul Wastewater Management Project is aimed to maintain the sensitive ecosystem balance of Issyk-Kul Lake, improve and expand access to reliable, sustainable and affordable sewerage services in Balykchy and Karakol, and provides the construction and expansion of existing wastewater treatment systems, strengthening institutional capacity and increasing the sustainability of water supply and sanitation services (WSS) in Balykchy and Karakol (the location of two cities is shown in Figure 1).



Source: (IEE, 2018)Figure 1 Location of Issyk-Kul Oblast and Project Towns

11. The project outcomes should ensure (i) improved sewerage and wastewater treatment systems in the cities of Balykchy and Karakol, (ii) strengthened institutional capacity of Vodokanal Municipal Enterprises, and (iii) improved septic sludge management and sanitation.

12. The project envisages the construction or rehabilitation of sewerage networks and treatment facilities, including WWTP, pump stations, pipelines and related infrastructure, which will significantly improve health, hygiene and sanitation standards.

13. The Consultant shall act Design and Supervision Contract under the following:

- Preparation of Detailed Engineering Designs
- Prepare the bidding documents
- Evaluation of Bidders and Preparation of Works Contracts
- Supervision of Sewer Network in Balykchy-10.3 km (Contract No. W1)
- Supervision of Sewer Network-11.3 km, Pump Station and Rising Main-1.7 km in Karakol (Contract No. W2)
- Supervision of Karakol Waste Water Treatment Plant (WWTP)- 12 MLD and Disposal of Existing Biological Sludge (Contract No. W3)

This Project will increase access to potable water and safe sanitation services, including use of proven technologies for treatment and disposal of solid and liquid waste in the cities of Balykchy and Karakol and includes three components;

Component (A): Wastewater Treatment and collection;

Component (B): Enhancing Vodokanals institutional and service-oriented capacity; and

Component (C): Improve awareness for public health implications and wastewater management in Balykchy and Karakol.

This contract covers the services under Component A.

Balykchy Sewerage Network:

Currently, 3325 households and 106 commercial/industrial/institutional/tourism organizations are connected to the sewerage system in Balykchy. The existing sewerage network consists of 64 km of non-pressure sewers built in the 1970s and currently serves about 35% of the population. IWMP will provide 10,3 km of sewer networks on four streets, which will connect about 850 additional households to the sewer network.

DSC completed the concept design and submitted to the Architecture office on 15.06.2020 to get ETU approval.

Figure 2 New designed sections of Balykchy sewerage network

Karakol Sewerage Network :

About 35% of all households in Karakol are connected to the sewage system, most of which live in multi-story buildings.

Currently, about 25,000 people use services of a centralized sewage system. The length of the sewerage network of the city is about 110 km.

In addition, the municipal enterprise “Karakol Vodokanal” provides sewerage services to 38 budget organizations, 251 commercial enterprises and 1 industrial enterprise.

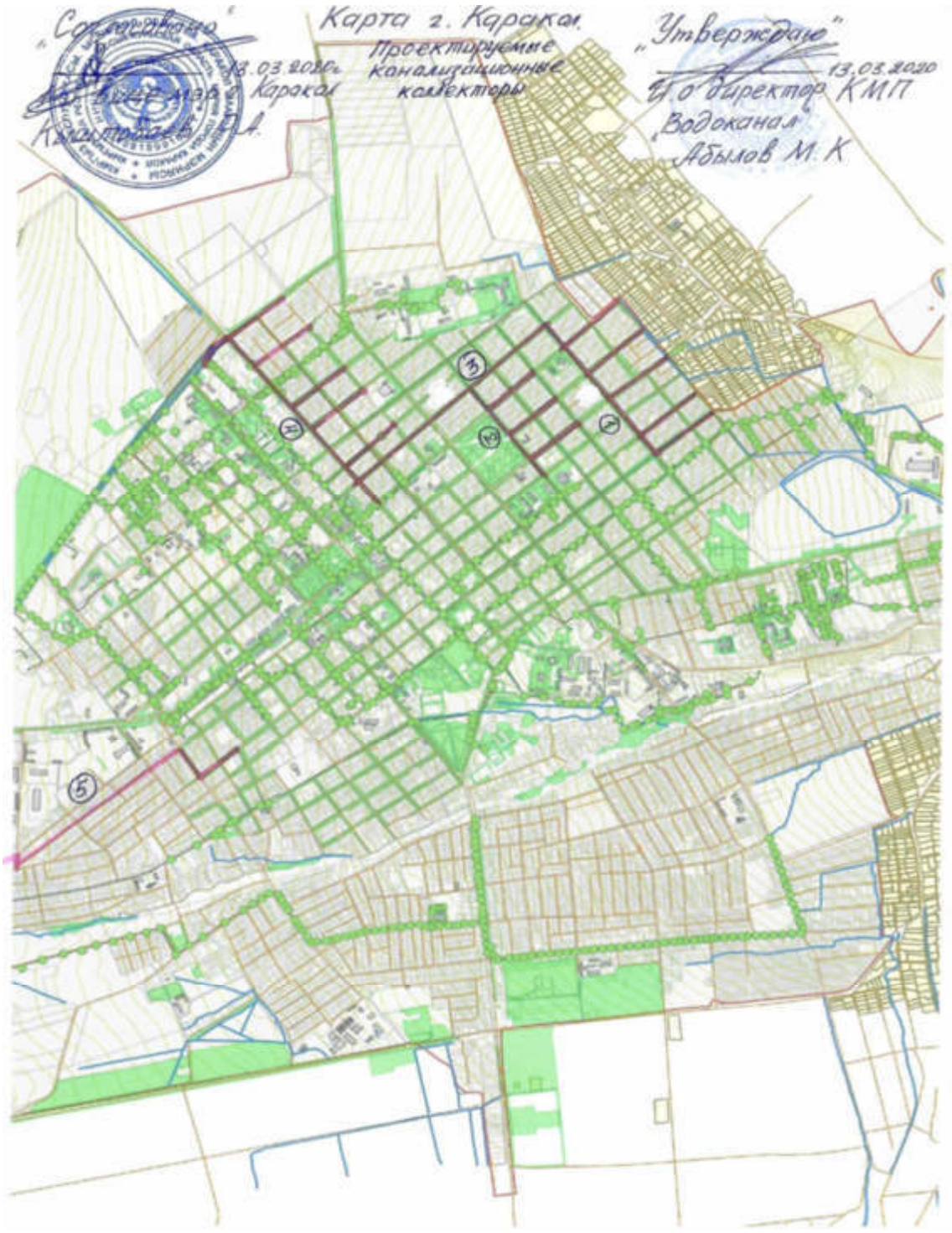


Figure 3 New Sewerage Lines to be Designed for Karakol Sewerage Network

In addition to the non-pressure sewerage system in Karakol, the village of Pristan (TSU No. 8) is served by a gravity-pressure system. This system includes 4 pump stations, 3 of which were rehabilitated under the first phase of IKSDP. The fourth sewage pump station is located in close proximity to Issyk-Kul Lake and is in a semi-ruined non-operating stating. In this connection, the construction of a new sewage pump station No. 4 at a new location is required. DSC completed the concept design and submitted to the Architecture office on 30.06.2020 to get ETU approval.

Karakol WWTP:

The existing wastewater treatment plant is located in the northern suburb of the city and were constructed in 1980 of the last centuries.

Currently, the WWTP does not measure actual influent water, however, according to estimates of the Karakol Vodokanal (KVK), the average existing flow is 7,500 m3/day with the influent flow of about 6,000 m3/day in the winter and 12,000 m3/day in the summer.

Figure 4 Karakol WWTP

DSC recommended the 5 stage Bardenpho process due to the various risks it sees for the IDEAL process proposed in feasibility and this process was approved. Chlorination method has been approved for the disinfection method.

DSC continues to prepare a concept design for a WWTP that will meet the discharge criteria according to national standards.

Figure 5 Balykchy Ponds

Figure 6 Karakol Ponds

Sludge Management:

In order to clean the existing ponds, the sludge should not be contaminated. Therefore, a sampling plan has been prepared. However, the laboratory, which started working again on 01.08.2020 due to quarantine, was contacted again and the current study will be updated and submitted to PMO and ADB for approval.

The sludge management program will be prepared according to the analysis results.

14. Balykchy WWTP is located 5 km northwest of the center of Balykchy.

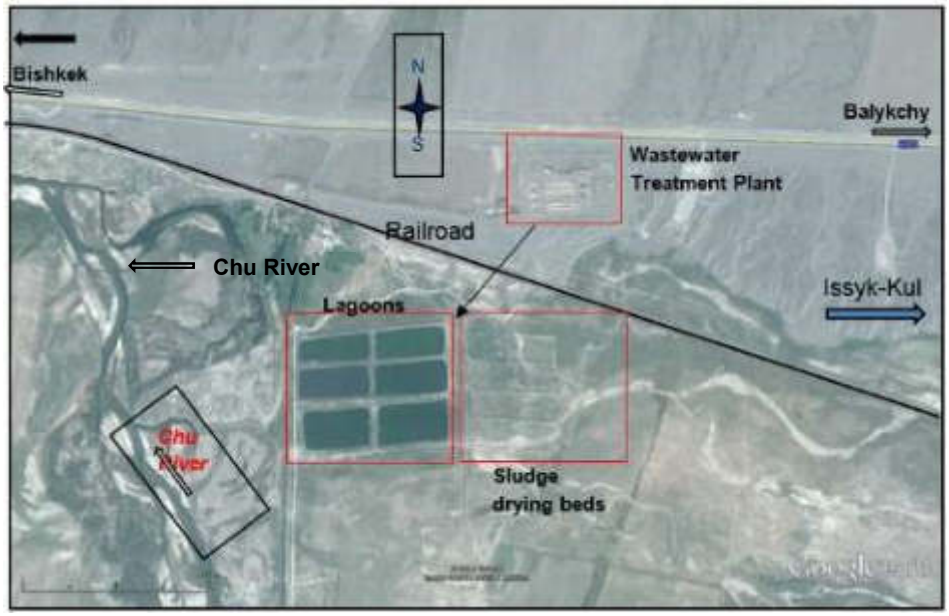
Design and construction of the Balykchy WWTP will be assigned to another contractor. For the current period, the procedure for selecting a Contractor through a tender has not yet been completed. In accordance with the draft LARP in 2018, 7 DPVs have been identified within the boundaries of the SPZ Balykchy WWTP.

Figure 7 Sanitary Protection Zone of Balykchy WWTP

Depending on the design decisions, the size of the boundaries of the SPZ Balykchy WWTP will be approved and an updated LARP will be prepared.

The Balykchy WWTP is located 5 km northwest of the center of Balykchy. The facility was built to use two different treatment processes, a traditional activated sludge process (ASP) wastewater treatment plant, and six tertiary treatment lagoons located 400 m southwest of the plant. The aeration tanks were never commissioned and the main aeration pipework has been stripped from the plant. The existing ponds provide

limited treatment capacity, acting primarily as winter storage ponds. A pumping station (operated by Irrigation Department take pond effluent, mixed with Chui River water is transported by a 1,300 m pressure pipeline to an irrigation channel about 15 km in length where it irrigates about 70 ha of land. around Balykchy. A Google map view of the existing WWTP of Balykchy has shown in the **Error! Reference source not found.**.



Source: (IEE, 2018)

Figure 8 Existing Balykchy wastewater treatment plant and lagoons

15. The existing ponds provide only limited treatment, acting mainly as storage ponds for wastewater during winter. The pumping station (operated by the Department of Water Resources under the State Agency for Water Resources under the Government of the Kyrgyz Republic) receives untreated wastewater from WWTP mixed with water from the Chu River. The latest available wastewater quality for the raw influent and treated effluent of the Balykchy WWTP is given at the Table A1.2 in the Appendix 1. The results indicate that no treatment other than the dilution with river water is being provided, and effluent does not meet wastewater discharge standards, though there are reductions in BOD5 and suspended solids due, primarily, to dilution. The observed surface water quality data of Chu River at the upstream (u/s) and downstream (d/s) locations of the treated effluent discharge point is given the Table

A1.3 in the Appendix 1. The final discharge point for the treated effluent is a channel that runs to an irrigation reservoir in a farming area northwest of the lagoons, where the effluent mixes with water pumped in from the Chu River before being pumped into the irrigation canal system from where it is used by anyone accessing the system. During the irrigation period (April - October) , water is transported through a pressure pipeline 1300 m long to an irrigation canal about 15 km long, which irrigates about 70 hectares of land around Balykchy.

To improve the situation within Issyk-Kul Sustainable Development Project (ISDP) framework a sewage pumping station was repaired, which collected all effluents from the collector system and pumped them to the WWTP through a 5.7 km long double trunk pipeline. Issyk-Kul Wastewater Management Project will consider improvements in sludge management which is explained in paragraph 13 to reduce environmental pollution from poorly designed and maintained septic tanks, which are mainly used by those not connected to the sewer system.

16. The general sewerage system in Karakol includes a public sewerage network, WWTP with bioponds, as well as cesspools and septic tanks. The total length of the sewerage network is 110 km, the pipe diameter varies from 100 to 700 mm. The Karakol sewerage network is non-pressurized, whereas in adjacent Pristan wastewater is pumped out by four pump stations from the sewerage network. As estimated, the network serves a population of about 28,500 people. Similarly to other cities of the Issyk-Kul region, cesspools and septic tanks (reservoirs) are used by 70% of the population. Currently, the areas served - are mainly the central and northeastern areas of the city, but in the first phase of ISDP, 12 km of new sewers were built and 7 km were replaced, covering the area westward from the Karakol River. However, no secondary or tertiary collectors were built to connect to this new collector network.

17. The treatment plant is located approximately 7 km northwest of the city center, along the Karakol River. The WWTP is located on approximately 13 hectares along the southern slopes of the local river valley. Field observations conducted during the IEE study have revealed that residences and other human activities currently exist within the Sanitary Protection Zone (SPZ) surrounding the WWTP in Karakol, and that in order to meet the requirements of the Sanitary-Epidemiological Rules and

Regulations ‘Sanitary protection zones and sanitary classification of facilities, buildings and other plants’ (SanPiN), residences and other human activities would be subject to involuntary resettlement under the project. The structure was built in the 1980s before the collapse of the Soviet Union. The facility has been designed to use two different treatment processes, a traditional Activated Sludge Processes (ASP) plant and four tertiary treatment ponds, and there is an anaerobic sludge digestion reactor.

Source: (IEE, 2018)

Figure 9 Karakol Wastewater Treatment Facility Showing Treatment Plant and Lagoons

Figure 10 Sanitary Protection Zone of Karakol WWTP

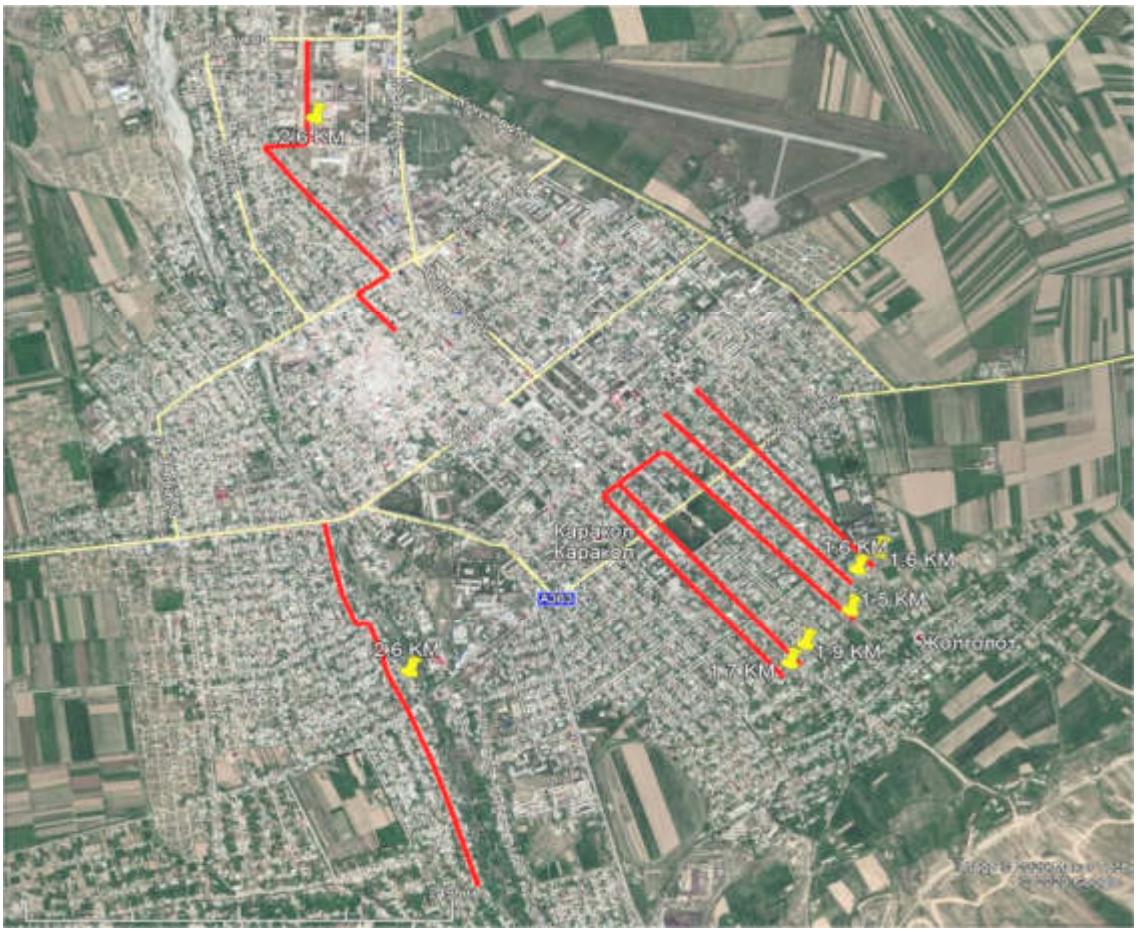
18. 12 km of sewers were built under ISDP, however, due to the fact that it did not include secondary and tertiary sewer collectors, households cannot connect to the main sewer. Therefore, it is proposed extension of the sewer network by 11,3 km, which will allow additional connection of 1200 households of Karakol.

19. The rehabilitation of the sewerage system at Pristan, which currently discharges wastewater to Karakol WWTP, was also carried out under the IWMP, but there is also a need for an additional pump station to collect wastewater from about 500 households that are currently discharging sewage into an open pit. As a result of rehabilitation of the sewerage system at Pristan, the coverage of the sewerage system in Karakol will increase from 45% to 60%.

20. Planned improvements for the Karakol WWTP:

- Construction of a 12.0 mega liter per day (MLD) wastewater treatment plant (WWTP);
- Cleaning of the irrigation pond (decision on acceptance for implementation has not been made yet. Due to sludge quality has not been analyzed.
- Planned improvements for Karakol sewerage networks: Construction provision of 11.3 km new sewerage networks;
- Construction of a new submersible pump station No.4 in Pristan, in order to transmit sewage from households that are not currently connected to the Pristan wastewater system.

The location of the planned Karakol sewer network is shown in Figure 11.



Source: (IEE, 2018)

Figure 11 New designed sections of Karakol sewerage network

2.2 Project Contracts and Management

21. A list or table of main organizations involved in the project and relating to Environmental Safeguards is given at Table 1 below and illustrated at Figure 12. It includes the lender, borrower, PMO, Main Contractor/s and significant sub-contractors, environmental staff of various organizations with their names and contact details.

Table 1 Environmental Safeguards of IWMP

Borrower	Ministry of Finance of the Kyrgyz Republic
Executing Agency	Department for the Development of Drinking Water Supply and Sanitation (DDWSSD) under the State Agency for Water Resources under the Government of the Kyrgyz Republic
	Project Management Office (PMO)
PMO Environmental Specialist:	Mr. Kylychbek Zhundubaev
email	environmental@iwmp.kg
Tel:	+ 996 554 66 54 55
Design and supervision consultant (DSC)	
Organization:	Temelsu International Engineering Services Inc.
DSC International Environmental Specialist:	Mr.Saban Cimen
email	saban.cimen@temelsu.com.tr
Tel:	+996 706 490 063
DSC National Environmental Specialist:	Mrs. Olga Zinina
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Tel:	+996 555 47 55 77

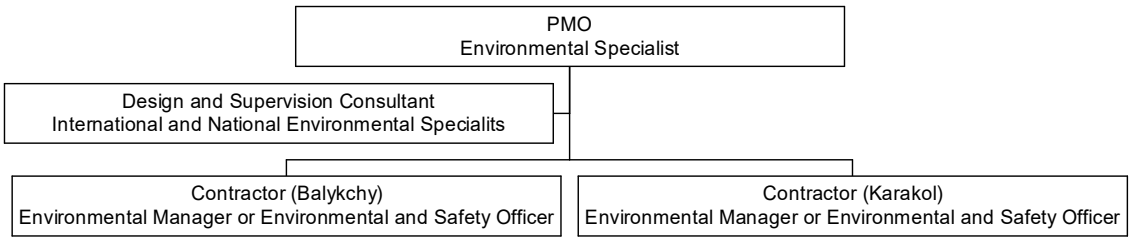

Figure 12 Organogram of Environmental Safeguards of IWMP

22. The following organizations and/or staff will be responsible for environmental monitoring and/or supervision during the design and construction:

a. PMO Environmental Specialist

b. Specialists (international and national) of the design and supervision Consultant in the field of environmental protection

c. Contractor environmental managers and/or environmental and safety offcerresponsible for environmental protection issues

23. Contractor managers responsible for environmental protection, specialists (international and national) of the Consultant on design and supervision in the field of environmental protection and PMO Environmental Specialists perform all environmental related tasks in accordance with ADB Safeguard Policy and national legislation. PMO Environmental Specialist:

- provides control and coordination, as well as assistance to the international and national environmental specialists of the Design and Supervision Consultant , as well as the Contractor's environmental protection manager for implementing monitoring and evaluating targets and performance indicators against the baseline indicators specified in the Design and Monitoring Framework of the project document for all measurements;
- provides control and coordination, as well as assistance to the international and national environmental protection specialist of the Design and Supervision Consultant, and the manager of the Contractor responsible for environmental protection for updating Environmental Management Plan (EMP), including for a specific site, if necessary at the stage of detailed design, taking into account environmental aspects.
- ensures that bidding documents include all requirements of ADB's Safeguard Policy and National Environmental Laws.
- carries out activities on coordination and control monitoring of safeguards by the Design and Supervision Consultant and the Contractor, if necessary, notifies and instructs as appropriate, makes proposals to ADB;
- organizes work on preparation of monitoring reports on safeguards for submission to ADB within the established timeframe .
- ensures the implementation of other tasks related to the project, defined in the Terms of Reference, the requirements of ADB Safeguards Policy and national environmental legislation.
- considers and submits for approval by the PMO / DDWSSD manager Site-specific Environmental Management Plan and Thematic Environmental Management Plan prepared by the Contractor.

24. PMO as responsible EA for the project recruited a Design and Supervision Consultant (DSC) – «Temelsu International Engineering Services Inc». DSC International Environmental Specialist (Shaban Chimen) and DSC National Environmental Specialist (Olga Zinina) assist the PMO Environmental Protection Specialist in coordinating and overseeing construction activities under the Project.

25. The part of the work of the Environmental Experts of the Consultant is to develop a capacity building training program for Contractor's Environmental Officers in order to increase the implementation efficiency of environmental monitoring. The timing of this program will be just before the commencement of civil works. Environmental Experts of the Consultant will develop the content of training. Besides that, Environmental Experts of the Consultant will:

- ensure that the construction methods proposed by the Contractor are satisfactory, with reference to the technical requirements of ADB's Environmental Guidelines.
- undertake periodic review and reporting on the implementation of the EMP.
- will inspect the Contractor's construction equipment; safety of the works, property, personnel, and public; and the recommendations of the environmental management plan (EMP).
- supervise and monitor the implementation of any environmental mitigation measures required and in the event of occurrence of any unexpected environmental impacts, coordinate with the Contactor to provide mitigation measures

2.3 Project activities during the reporting period

26. DSC developed a design, prepared Programs for Balykchy WWTP and Karakol WWTP sludge management and sampling and provided to the PMO. PMO, having considered the draft Program, sent an official letter of notification to the Supervision Consultant of the need to strengthen the Program and supplement it with a Plan of specific step-by-step measures, reflecting the necessary resources. Suggestions from the PMO International Technical Advisor Mr. Caspar Lambrechtsen were attached to the letter. It should be noted that there are practically no specific sludge management guidelines in national legislation. The sludge handling and analysis has been conducted to the according to: (i) rules for the protection of surface waters in

the Kyrgyz Republic; (ii) GOST 17.1.5.01-80 Environmental protection. (SSOP) Hydrosphere. General requirements for sampling of bottom sediments of water bodies for analysis for contamination; and (iii) 3. ISO 5667 on Water quality - Sampling. In this regard, it would be useful to introduce international expertise (DSC has an international consultant on the subject).

27. Laboratories in the Kyrgyz Republic have suspended their activities from May 11, 2020 due to the applied regulation on the state of emergency declared by Kyrgyzstan Government to decrease the effects of coronavirus pandemic (COVID - 19) within the territory of Bishkek and other regions of Kyrgyzstan. Also most of the workers were on sick leave due to illness (COVID-19), hence many laboratories were temporarily closed during the reporting period. . Since an agreement has not been settled with any laboratory during the current reporting period, the sampling process could not be executed. Sediments will be analyzed for the following parameters: arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, manganese. Wastewater will be analyzed for the following parameters: Biological Oxygen Demand, suspended solids, nitrogen (ammonium, nitrites, nitrates), oil products, chromium, cyanides. Laboratory analysis for these parameters could be carried out by local laboratories.

    Except for field visits to Balykchy and Karakol WWTP sites there were not any field activities during the current reporting period. The design activities are in progress during the reporting period.

28. There is no construction activity within the current reporting period.

2.4 Description of Any Changes to Project Design

29. The project design activities is under progress during the reporting period.

2.5 Description of any changes to agreed construction methods

30. During the reporting period no construction work was carried out.

3 ENVIRONMENTAL PROTECTION ACTIVITIES ON SAFEGUARDS

3.1 General Description of Environmental Safeguard Activities

31. Environmental issues related to ADB Safeguards Policy and Project Requirements were included in the Inception Report of DSC. Inception report of DSC has been reviewed and approved by PMO and ADB's environmental experts.

32. The following tasks have been made by international and/or environmental experts of the DSC during the reporting period:

- Preparation Terms of Reference for "Central Asian Frog Survey in Karakol" WWTP site.
- Evaluation of the project related environmental costs given within the IEE resulted that additional costs might be faced due to (i) the sludge and its usage or disposal, it is not suitable to estimate the sludge disposal costs. (i) costs for getting permit in order to discharge effluent to the environment which is calculated at the stage of detailed design (ii) the expenses related to wastes disposal including asbestos cement depends on their volume and disposal site. The approximate cost calculations for these items are under investigation.
- Study on the availability of background data for the prospective OVOS studies including the national and international environmental standards that would applied to the project. At the following international standards are proposed too for comparison with Kyrgyz standards; subsequently, stricter standards will be applied as monitoring requirements.

Air Quality

The maximum permissible concentrations of harmful substances in the air in accordance with Kyrgyz and international standards are presented below.

Table 2 MPC of contaminants

Contaminant	Maximum permissible concentrations (mg/m3)		Concentration Averaging Time	
	In accordance with national legislation**	In accordance with international	In accordance with national legislation**	In accordance with international

		requirements (WHO*)		requirements (WHO*)
Solid particles:	0,5	0,02	average daily	Year 1
Sulfur dioxide SO2	0,5	0,02	average daily	24 hours
Nitrogen dioxide NO2	0,085	0,04	average daily	Year 1
Carbon Oxide CO	5,0	0,1	average daily	Max. 8 hours per day in average

* World Health Organization (WHO) WHO Guidelines for Ambient Air Quality.
** Hygienic standards "MPC of pollutants in the atmospheric air of populated areas", Resolution of the Government of the Kyrgyz Republic dated 11.04.2016.

Noise levels

Table 3 Noise Standards (dB) (WHO*)

Guidelines on Noise Level*		
	A hour Leq (dBA)	
Categories	Day 07:00 - 22:00	Night 22:00 - 07:00
Settlements	55	45
Industry, Trade	70	70

* Recommended values for noise levels measured outdoors. Source: Noise Guidelines, World Health Organization (WHO), 1999.

Table 4 Permissible Noise Levels in the Kyrgyz Republic (dB)

Activities / category	Leqv*		Lmax**	
	Day	Night	Day	Night
Areas in immediate vicinity of hospitals and heath centers	45	35	60	50
Areas in immediate vicinity of residential buildings, clinics, medical centers, care centers, recreation centers, libraries, schools, etc.	55	45	70	60

Areas in immediate vicinity of hospitals and dormitories	60	50	75	65
Recreation zones in hospitals and health centers	35		50	
Recreation zones in the territory of micro-districts and groups of residential houses, holiday homes, resorts, schools, care centers, etc.	45		60	

SN 2.2.4 / 21.8.562-96 “Noise at workplaces, in residential premises, public buildings and in residential areas”.

Surface water

Table 5 Surface Water Quality Standards

Pollutants	Maximum permissible concentrations (mg/m3)		
	In accordance with national legislation*		In accordance with EU laws**
	+	++	
Oil and Grease	0,05 mg/l	0,3 mg/l	Not visible as film
pH	6,5-8,5		6,0-9,0
Transparency	-		-
Electrical conductivity	-		-
Suspended particles	Increased by 0,25/0,75		Not more than 25
Dissolved oxygen	Not less than 4		50%≥7-9
Copper	0,001	1,0	Not more than 0,04

Zinc	0,01	1,0	0,03-0,5
Cadmium	0,005	0,001	-
Lead	0,006	0,01	-

Rules for Surface Water Protection in the Kyrgyz Republic №128 of 14.03.2016
+ List of MPC for fishery water use
++ List of MPC for domestic water supply and amenity needs
++ Hygienic standards, MPC of chemicals in the water of water bodies for domestic water supply and amenity needs, Government Decision No. 201 dated 11.04.2016.
**Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of fresh waters needing protection or improvement in order to support fish life

Surrounding soils

Table 6 Norms of chemicals in soil

Pollutants	Limit value	Maximum permissible concentrations (mg/kg)	
		In accordance with national legislation*	In accordance with EU laws**
Copper+	General sanitary	33-133	50-140
Zink+	Translocation	55-220	150-300
Cadmium+	-	0,5-2,0	1-3
Lead	General sanitary	32	50-300
Chrome++	General sanitary	6,0	-
Mercury	Translocation	2,1	1-1,5
Nickel+	General sanitary	20-80	30-75

* Hygienic standards "Maximum permissible concentrations and approximate permissible quantities of chemicals in soil" Approved by Resolution of GKR № 201 of April 11, 2016
+ Approximate permissible concentrations of chemicals in soil (gross content) , depending on type of soil
++ Moving form
**Council Directive 86/278/ EEC of 12.06.1986 “on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture”

3.2 Site Audits

33. Since the construction activities has not been commenced, yet no formal audits undertaken by environmental safeguard process staff during the current reporting period.

3.3 Issues Tracking (Based on Non-Conformance Notices)

34. Since the construction activities has not been commenced, non-conformance notices have not been issued during the current period.

3.4 Trends

35. Since the construction activities has not been commenced there were no observation about the trends of non-conformance notices.

3.5 Unanticipated Environmental Impacts or Risks

36. Sludge disposal site, hazardous solid waste disposal site and solid waste disposal sites have not been identified yet. After identification of these sites a quick biological/environmental survey and assessment need to be carried out. Additional survey questions may be raised by Issyk-Kul Territorial Administration of the SAEPF during the OVOS development and approval process. DSC is required to conduct these surveys prior to the preparation of bidding documents.

37. Asbestos cement pipes might be faced during the construction phase; therefore, an asbestos management plan will be required for the removal and disposal of these hazardous material. Bidding document must include the requirement for such a plan from the Contractor and a unit rate of removal and disposal.

38. During the biological survey carried out on the course of the Initial Environmental Assessment preparation, a Central Asian frog was registered in the biological ponds of the Karakol wastewater treatment plant (WWTP), but without a catch it was impossible to establish species affiliation. The location of the recorded species is between two biological ponds, as shown in Figure 31. It was assumed that this species of amphibian, Central Asian frog (Rana asiatica), which is included in the Red Book of the Kyrgyz Republic and the Republic of Kazakhstan as an endangered species, is threatened due to capture for the manufacture of traditional medicine. This frog occurs in riparian habitat near waterlogs and/or stagnant water courses. To ensure the existence of the Central Asian Frog a biological survey need to be

conducted by the methods catching, counting, documenting, and mapping the communities of the relevant specie.

The results of this work will be detailed in the next Semi-Annual Environmental Monitoring Report.

Figure 13 Existing WWTP of Karakol and the location of the Central Asian frog

4 ENVIRONMENTAL MONITORING RESULTS

4.1 Overview of monitoring carried out during the current period

39. Due to the COVID-19 pandemic situation, and the inability to enter the Issyk-Kul region during the current period, environmental monitoring studies in the project sites were not carried out.

In this regard, we present the monitoring data carried out within the framework of the preparation of the IEE.

Background data on surface water quality for Lake Issyk-Kul were obtained during the preparation of the IEE, sampling point at the filling station, Balykchy; Shipyard, Balykchy; Yacht Club "Cruise"; Cholpon-Ata; ULAN plant, Karakol, the results are presented in Table 4-1 Appendix 1. The sampling locations are shown at Figure 14.

Source: (IEE, 2018)

Figure 14 Surface Water Quality Sampling Stations of Issyk-Kul Lake

40. During the preparation of the IEE, samples were taken from different points of the Balykchy WWTP and analyzed by the laboratory at the Issyk-Kul Territorial Department of Environmental Protection (SAEPF) in 2017. The results of the analysis are given in **Error! Reference source not found.**. Appendix 1. When the results of analysis have been compared with Council for Mutual Economic Assistance (CMEA)

Wastewater Standard (1977), it could be said that the effluent does not meet wastewater standards.

41. In order to observe the effect of the effluent released from the Balykchy WWTP to the Chui River the water samples have been collected from the upstream (u/s) and downstream (d/s) locations of the discharge point of treated water. The surface water samples have been collected from the location near to the bridge where a canal leading to BEREKE Pumping Station (PS) begins and then downstream of the PS. The samples have been collected and analyzed by ITDEP in year 2014-2017. The results of the analysis are given in **Error! Reference source not found.**. Attachment1. According to the results, wastewater related parameters such as TSS, BOD5, conductivity, COD and TN were higher downstream than upstream. That means the effluent of Balykchy WWTP polluting the Chui River.

42. During the preparation of IEE, wastewater samples from the different locations of the Karakol WWTP have been collected and analysed by the Issyk-Kul Territorial Department for Environmental Protection (ITDEP) Laboratory in 2017. The results of the analysis are given in **Error! Reference source not found.**. Appendix 1. When the results of the analysis have been compared with Council for Mutual Economic Assistance (CMEA) Wastewater Standard (1977), it could be said that the effluent meets wastewater standards. However, irrigators have complained about odors and there is clearly a health risk.

43. In order to observe the effect of the effluent released from the Karakol WWTP to the Karakol River the water samples have been collected from the upstream (u/s) and downstream (d/s) locations of the discharge point of treated water. The surface water samples have been collected from the location 1 km upstream and 0.5 km downstream where the Karakol WWTP's effluent discharged. The samples have been collected and analyzed by ITDEP in year 2014-2017. The results of the analysis are given in **Error! Reference source not found.**. Attachment1. According to the results, wastewater related parameters such as TSS, BOD5, conductivity, COD and TN comply with CMEA standards. That means the effluent of Karakol WWTP pollutes the Karakol River to a minimum.

44. In IEE it has been indicated that the air quality in Issyk-Kul area has been monitored by Kyrgyz Hydromet only at the Cholpon-Ata location. The air quality data obtained from the measurements conducted at Cholpon-Ata location is considered as the

baseline data. These data are given in**Error! Reference source not found.**. Appendix 1. According to the last records of the SO2 and NO2 they do not exceed the national standard limit values.

45. It has been reported in IEE that noise has not been monitored routinely in Issyk-Kul area. IEE report comments that the noise levels are exceptionally low and doesn't exceed KR standards even in the urban areas of Balykchy and Karakol. Kyrgyz Republic Noise Standards, which are adapted from Russian Federation noise standards are summarized in **Error! Reference source not found.** attachment 1.

4.2 Trends

46. Since the current reporting period covers the projects commencement phase the trends could not be evaluated.

4.3 Summary of Monitoring Outcomes

47. Monitoring has not been conducted for the current period.

At this, during the construction period, the following environmental monitoring program is envisaged:

a. Ambient air quality, 6 months per year, at 8 locations for 2,5 years

b. Water quality, 6 months per year, at 4 locations for 2,5 (years)

c. Noise-vibration, 6 months per year, at 8 locations for 2,5 years.

d. influent and effluent quality, 6 months per year, for 3 years

4.4 Material Resources Utilization

48. Since the construction activities has not been commenced no values could be provided for resource utilization.

4.5 Waste Management

49. Since the construction activities has not been commenced no information is available for waste management activities.

4.6 Occupational Health and Safety

50. Since the construction activities has not been commenced no information is available for health and safety issues both for community and workers health and safety. To

protect the health and safety of workers, as well as surrounding communities, the contractors of each subproject shall conduct a workplace review and risk assessment for exposure to COVID-19. To exposure risks will be assessed by the Contractors through: (i) determination of level of exposure risk; (ii) determination additional exposure risk factors; (iii) consultation with workers; (iv) Development of Health and Safety Management Plans which also takes care COVID-19 exposure risk and protection measures; (v) reviewing international good practices especially issued by WHO on key guidance to manage the spread of COVID-19 in the workplace.

4.7 Training

51. Since the construction activities has not been commenced no information is provided on all environmental safeguard related training activities.

5 FUNCTIONING OF SEMP

5.1 SEMP Review

52. Since the construction activities have not been commenced any Site-Site Specific Environmental Plan has not been developed. Therefore there are no comments on SSEMP.

6 GOOD PRACTICES AND OPPORTUNITY FOR IMPROVEMENT

6.1 Good Practice

53. There isn’t any activity that can be recorded as good practice during the reporting period.

Opportunities for Improvement

54. There isn’t any activity that can be proposed as opportunity for the improvement.

7 SUMMARY AND RECOMMENDATIONS

7.1 Summary

An appeal was received from the residents of Geolog village of the city of Karakol addressed to the President of the Kyrgyz Republic S.Sh. Jeenbekov on IWMP Project implementation. The letter was sent to the official website of the Office of the President of the Kyrgyz Republic on January 31, 2020.

On February 14, 2020, the Head of the Department for dealing with citizens' appeals of the Office of the President of the Kyrgyz Republic sent a letter to PRGIKO, the SIETS under the GKR and the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic to prepare a response. The PMO was contacted by the SIETS under the GKR and PIU to provide detailed information on the current state of the Project (date of receipt is February 26, 2020).

On March 9, 2020, a response letter from the Department of Drinking Water Supply and Sewerage Development (EA) was prepared to this appeal jointly with PMO , and was sent to all relevant government agencies that were included in the appeal list. Also, the response letter was brought to the attention of the local focal point in Karakol S. Omurkanov for further informing local residents.

This appeal was registered in the complaint and application registration log. Due to the current situation in the country related to COVID-19 and restrictions imposed on group meetings, on 20 March 2020 the local focal point contacted one of the residents Mr. B.N. Kaliev by phone 0777 52 70 77 and informed him in detail about the current status of the Project and sent an electronic response to their appeal via WhatsApp. It was agreed that a meeting will be held with the residents of the Geologobase after the end of the quarantine.

Citizen Baktiyar Nazarbekovich Kaliev is a member of the local Grievance redress commission.

55. During the current reporting period the study of IEE and as indicated in the paragraph 31 planning of environmental safeguard activities have been performed and inserted into the Inception report. The restrictions that were imposed due to the coronavirus disease (COVID-19) pandemic caused decrease in the efficiency of not

environmental safeguard activities but also implementation of the project. The planning of the environmental safeguard activities is closely linked to the project design. Project design in relation with the selection of the sludge disposal methodology and site is the most significant items that might confront new environmental impacts other than specified in IEE.

56. Paragraph 38 indicates that additional biological surveys will be needed for verification of the existence, identification of population and location of Central Asian Frog (Rana asiatica) specie in the Karakol WWTP area.

57. Background surface water quality information of the Issyk-Kul Lake has been given in paragraph 39. Based on this information the future trends of the Lake water quality could be observed.

58. The wastewater quality at various locations of the Balykchy WWTP has been provided at paragraph 43 as background data. When the outflow effluent quality is compared with CMEA standards, it has been concluded that the wastewater quality doesn't meet the required discharge quality. That is Balykchy WWTP's treatment efficiency is low.

59. The effluent discharged to the Chui River from the Balykchy WWTP affects the surface water quality of the river as indicated in paragraph 41.

60. The wastewater quality at various locations of the Karakol WWTP has been provided at paragraph 42 as background data. When the outflow effluent quality is compared with CMEA standards, it has been concluded that the wastewater quality meets the required discharge quality. But odor and health risk problems exists in Karakol WWTP. In order to decrease odor and health risk problems it is recommended that all biosolids to meet at least USEPA Class B with respect to pathogens and stability by one of the five biosolids management approaches as given below.

    1. Aerobic Digestion: Biosolids are agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time (MCRT or sludge age) at a specific temperature. Values for MCRT and temperature shall be between 40 days at 20°C and 60 days at 15°C.
    2. Air Drying: Biosolids are dried on sand beds or on paved or unpaved basins. The biosolids dry for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 0°C.

3. Anaerobic Digestion: Biosolids are treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between I5 days at 35°C to 55°C and 60 days at 20°C.
4. Composting: Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the biosolids is raised to 40°C or higher and maintained for 5 days. For 4 hours during the 5-day period, the temperature in the compost pile exceeds 55°C.
5. Lime Stabilization: Sufficient lime is added to the biosolids to raise the pH of the biosolids to 12 after 2 hours of contact.

It is envisioned that all solids from the WWTPs at Balykchy and Karakol will be treated via options 1 to 3 to achieve Class B.

61. The effluent discharged to the Karakol River from the Karakol WWTP have no adverse effect on the surface water quality of the river as indicated in paragraph 43.

62. Background data for air quality were provided in item 44 from measurements taken by Kyrgyz Hydromet under the MES in Cholpon-Ata. This data is not realistic for the construction monitoring purposes, the necessary measurements will be required from the contractors prior to the commencement of the construction works.

63. As indicated in item 45 no background noise quality data is available for the region. However, it was assumed in IEE that in Balykchy and Karakol urban areas noise levels were low. The baseline noise quality data will be collected by the construction contractors prior to the commencement of construction.

7.2 Recommendations

64. Already sludge disposal method has not been approved. After the laboratory analysis of the sludge, if the quality of the sludge will be determined as contaminated then no action will be taken. In any other case, sludge disposal sites need to be identified as well as solid and hazardous waste disposal sites during the design study. Additional biological surveys might be conducted after the definition of these disposal sites.

65. Existence of the Central Asian Frog (Rana asiatica) in the lagoons of the Karakol WWTP remains a question. A complementary biological survey need to be conducted

by DSC in order to define the type of the specie, population and exact locations prior to the commencement of the construction activities.

66. The bidding documents must clearly define the requirements of the site specific Environmental Management Plans (EMPs) to be prepared by the Contractor. Other plans that will associate to the SEMP or independently required from the construction contractor as indicated in IEE are:

a) Tree Management Plan
b) Asbestos Management Plan
c) Traffic Management Plan
d) Waste Management Plan
e) Treatment and Disposal Plan for the sludge from Irrigation Reservoir
f) Archaeological Chance Finds Protocol/Plan
g) Water Course Protection Management Plan
h) Construction Noise Management Plan
i) Emergency Response Plan
j) Air quality and Dust Suppression Plan
k) Complaints Log Book
l) Health and Safety Management Plan
m) Construction Noise Management Plan

APPENDIX 1 ENVIRONMENTAL MONITORING RESULTS

Table AI.1 Surface Water Quality Data at Sampling Stations of Issyk-Kul Lake

Parameter	2007	2008	2009	2011	2012	Jun 2013	Oct 2013	MAC
Petroleum Station, Balykchy								
pH (pH units)	8.67	9.2	8.45	8.39	8.56	8.52	8.44	6.5-8.5
BOD_5	1.66	2.13	2.12	0.83				3
DO	8.17	9.02	8.54	8.11			9	≥6.0
Ammonium NH_4^+	<0.05	<0.05	<0.05	<0.039	<0.039	<0.039	<0.039	0.39
Нитрит NO_2	<0.01			<0.01	<0.01	<0.01	<0.001	0.024
Nitrate NO_3^-	0.05	7.6	8.2	<0.1	0.5	1	0.02	9
P	<0.005			<0.02				
Fe		0.345	1.05	<0.05				
Ca		106.8	100.6					
Mg		341.5	333.1					
Na		1808	1630					
K		92.5	75.8					
Cu				<0.0006	<0.0006	<0.0006	<0.0006	0.001
Zn				<0.0005	<0.0005	<0.0005	<0.0005	0.01
Cr		<0.007	<0.007	<0.02				
Mn		0.006	0.008					
Cd				<0.0002	<0.0002	<0.0002	<0.0002	0.005
Pb				<0.0002	<0.0002	<0.0002	<0.0002	0.006
Ni				<0.01				
Chlorides				1829				300
Sulphates				973				100
Synthetic Surfactants	0.02			<0.01	<0.01	<0.01	<0.01	0.1

Parameter	2007	2008	2009	2011	2012	Jun 2013	Oct 2013	MAC
Oil and Grease	<0.02			0.05	<0.05	0.03	0.021	0.05
Shipyard, Balykchy								
pH	8.67	9.1	8.54	8.42	8.56	8.48	8.4	6.5-8.5
BOD_5	0.57	1.85	1.69	0.32				3
DO	8.04	8.54	8.47	9.1			8.7	≥6.0
Ammonium NH_4^+	1.02	0.2	0.2	0.2	<0.039	2.03	3	0.39
Нитрит NO_2	0.032			0.01	<0.01	0.16	0.228	0.024
Nitrate NO_3^-	0.48	8.8	8.8	0.9	0.6	3.5	4.2	9
P	0.006							
Fe		0.054	0.184	<0.05				
Ca		105.9	105.9					
Mg		340.9	329.6					
Na		1847	1640					
K		85.6	76.9					
Cu				<0.0006	<0.0006	<0.0006	<0.0006	0.001
Zn				<0.0005	<0.0005	<0.0005	<0.0005	0.01
Cr		<0.007	<0.007	<0.02				
Mn		<0.003	<0.003					
Cd				<0.0002	<0.0002	<0.0002	<0.0002	0.005
Pb				<0.0002	<0.0002	<0.0002	<0.0002	0.006
Ni				<0.01				
Chlorides				1772				300
Sulphates				985				100
Synthetic Surfactants	<0.02			<0.01	<0.01	<0.01	0.05	0.1
Oil and Grease	<0.02			0.07	<0.05	0.04	0.02	0.05

Parameter	2007	2008	2009	2011	2012	Jun 2013	Oct 2013	MAC
"Cruise" Yacht Club, Cholpon-Ata								
pH	8.55	9.2	8.5	8.37	8.53	8.46	8.33	6.5-8.5
BOD_5	0.67	2.41	2.65	0.79				3
DO	9.26	9.28	9.69	7.6			9	≥6.0
Ammonium NH_4^+	<0.05	<0.05	<0.05	<0.039	<0.039	<0.039		0.39
Нитрит NO_2	<0.01			<0.01	<0.01	<0.001		0.024
Nitrate NO_3^-	<0.08	7.7	1.5	<0.1	0.7	1.2		9
P	<0.005							
Fe		<0.006	<0.006	<0.05				
Ca		111.7	111.7					
Mg		414.8	414.8					
Na		2325	1517					
K		105.8	105.8					
Cu				<0.0006	<0.0006	<0.0006	<0.0006	0.001
Zn				<0.0005	<0.0005	<0.0005	<0.0005	0.01
Cr		<0.007	<0.007	<0.02				
Mn		<0.003	<0.003					
Cd				<0.0002	<0.0002	<0.0002	<0.0002	0.005
Pb				<0.0002	<0.0002	<0.0002	<0.0002	0.006
Ni				<0.01				
Chlorides		1629	1495	1574				300
Sulphates		1988	1911	1181				100
Synthetic Surfactants	<0.02			<0.01	<0.01	<0.01	<0.01	0.1
Oil and Grease	<0.02			0.06	0.11	<0.02	<0.02	0.05
ULAN plant, Karakol								

Parameter	2007	2008	2009	2011	2012	Jun 2013	Oct 2013	MAC
pH	8.5	9	8.7	8.39	-	8.16	8.32	6.5-8.5
BOD_5	0.99	2.47	3.2	0.22	-			3
DO	7.17	9.29	10.12	7.78	-		8.8	≥6.0
Ammonium NH_4^+	<0.05	0.06	0.05	<0.039	-	<0.039	<0.039	0.39
Нитрит NO_2	<0.01			<0.01	-	<0.01	<0.01	0.024
Nitrate NO_3^-	0.05	8.4	0.5	<0.1	-	1	<0.1	9
P	<0.005				-			
Fe		0.594	0.032	<0.05	-			
Ca		110.5	121.3		-			
Mg		407.5	345.6		-			
Na		2367	1784		-			
K			85.6		-			
Cu				<0.0006	-	<0.0006	<0.0006	0.001
Zn				<0.0005	-	<0.0005	<0.0005	0.01
Cr		<0.007	<0.007	<0.02	-			
Mn		0.005	0.008		-			
Cd				<0.0002	-	<0.0002	<0.0002	0.005
Pb				<0.0002	-	<0.0002	<0.0002	0.006
Ni				<0.01	-			
Chlorides		1553	1456	1489	-			300
Sulphates		1927	1885	1164	-			100
Synthetic Surfactants	0.02			<0.01	-	<0.01	<0.01	0.1
Oil and Grease	<0.02			<0.04	-	<0.02	<0.02	0.05

MAC Maximum Allowable Concentration for fisheries activities, Rules for Protection of Surface Waters, Aug 09, 1993.

Table AI.2 Wastewater Quality Results at Balykchy WWTP in Year 2017

Parameter	CMEA standard	Inlet		Before biological ponds	After biological ponds		In irrigation canal
Sampling in 2017		April	Sept.	April	April	Sept.	Sept.
Temperature (°C)	-	11	18.5	11.5	14.5		
pH	-	6.59	7.37	6.94	7.57	8.04	8.07
Total Suspended Solids (mg/L)	-	118	83	62	57	10	106
Total Dissolved Solids (mg/L)	-	525	246	548	381	267	165
BOD (mg/L)	6	76.75	128.3	83.78	35.06	80.7	5.6
COD (mg/L)	-	135.8	169.6	150.4	59.3	101.4	15.1
Ammonia (mg/L)	1.5	20.52	23.6	22.4	6.78	20.38	0.74
Nitrite (mg/L)	1	0.09	0.001	0.15	0.21	0.001	0.001
Nitrate (mg/L)	10	7.09	0.05	2.75	11.16	0.05	0.05
Oil and Grease (mg/L)	-	8	13.5	4.5	2	3	0.5
Alkalinity (mg/L)	-	300	201	275	180	288	155
Total Phosphorus (mg/L)	-	2.9	2.9	3.7	1.7	2	0.05
Total Nitrogen (mg/L)	-	11.5	25	12	9.1	18.8	0.8
Conductivity (uS/cm)	-	821	764.8	856	595	866.3	405.1

Table AI.3 Surface Water Quality in Chui River, u/s and d/s of Balykchy WWTP

Parameter	Unit	Sampling date					CMEA standard
		13.08.14	20.08.14	27.08.14	03.09.14	12.07.17	
Temperature	C^0	22	20	20	18	16.7	NA
pH	pH unit	7.84/7.6	7.5/8.0	7.8/7.8	7.3/7.62	8.35/8.48	6.5-8.5
Flow speed	m/sec	--	--	--	--	--	NA
Suspended solids	mg/l	33/40	29/20	18/25	27/26	25/23	No CMEA standard
DO	mg of O/l	5.39/5.50	5.69/5.6	5.82/5.48	5.28/5.86	8,78/8,17	≥ 6
BOD_5	mg of O/l	1.9/2.06	1.51/1.89	1.56/1.88	2.62/2.79	2.94/2.98	3
Electrical conductivity	µS	492/483	489/479	442/458	494/496	373/380	
COD	mg of O/l	2.1/3.54	2.18/2.60	2.52/3.7	3.31/3.89	5.2/6.0	30
Ammonium N	mg/l	0.039/0.05	0.02/0.05	0.039/0.09	0.02/0.06	0.04/0.04	2
Nitrite N	mg/l	0.003/0.003	0.001/0.005	0.004/0.005	0.004/0.004	0.001/0.001	10
Nitrate N	mg/l	0.25/0.23	0.28/0.20	0.23/0.20	0.3/0.24	0.19/0.1	1
Total N		0.30/0.29	0.31/0.30	0.25/0.26	0.33/0.34	0.21/0.10	
Chlorides	mg/l	15.5/16.3	15.3/16.6	15.5/16.4	15.3/16.8	11.12/12.5	350
Sulphates	mg/l	22.0/22.0	21.6/22.1	21.2/21.8	20.9/21.0	59.9/52.2	500
Hardness	mg-equ/l	4.35/4.5	4.32/4.44	3.9/4.2	4.36/4.62	2.4/2.2	
Synthetic surface-active substance	mg/l	bdl	bdl	bdl	bdl	--	0.5
Ether derivatives	mg/l	No	No	No	No	0,05/0,05	0.05
Ferrum		0.035//0.004	0.030/0.033	0.028/0.030	0.018/0.021	0.1/0.1	0.09
Copper		0.01/0.01	0.011/0.011	0.01/0.01	0.009/0.01	0.001/0.001	1
Cadmium		No	No	No	None/	0.001/0.001	0.005

Table AI.4 Wastewater Quality Results at Karakol WWTP in Year 2017

Parameter	CMEA standard	Inlet		Before biological ponds	After biological ponds		At storage lagoons	At mixing point	Irrigation canal
Sampling in 2017		April	August	April	April	August	August	August	August
Temperature (ºC)	-	9,8	13	10.5	12	15			
pH	-	7.19	7.43	6.91	7.1	7.14	7.77	7.9	8.01
Total Suspended Solids (mg/L)	-	76	128	75	22	78	12	26	42
Total Dissolved Solids (mg/L)	-	348	704	373	353	643	528	213	160
BOD (mg/L)	6	110	97.2	86.9	50	55.1	29.2	16.1	2.4
COD (mg/L)	-	184	129.5	176.3	80	72.8	43.4	25.1	3.5
Ammonia (mg/L)	1.5	13.7	10.66	11.3	12	8.8	17.04	4.91	<0.039
Nitrite (mg/L)	1	0.2	0.001	0.15	0.1	0.001	0.2	0.08	<0.001
Nitrate (mg/L)	10	4.16	2.2	4.47	2.6	1.1	0.9	<0.1	<0.1
Oil and Grease (mg/L)	-	19.5	8	14	2.5	2.5	0.5	5	<0.05
Alkalinity (mg/L)	-	175	285	165	170	271	328	174	89
Total Phosphorus (mg/L)	-	2.6	0.7	3.7	2.8	0.9	2.8	1.4	0.03
Total Nitrogen (mg/L)	-	12.7	9.5	15.6	14	8.9	15.5	5	0.1
Conductivity (uS/cm)	-	538	654.3	583	552	509.6	714.3	452	159.7

Table AI.5 Surface Water Quality in Karakol River, u/s and d/s of Karakol WWTP-2017)

Parameter	Unit	Sampling date					CMEA standard
		Jan-13	Apr-13	Jul-13	Oct-13	11.07.17	
pH	pH unit	--	--	--	--	8.22/8.21	6.5-8.5
Flow speed	m/sec	--	--	--	--	--	NA
Suspended solids	mg/l	44114	42309	67/77	27/28	35/32	No CMEA
BOD5	mg of O/l						standard
Electrical conductivity	µS	1.80/1.90	1.72/1.90	3.10/3.08	1.78/1.88	2.4/2.4	3
COD	mg of O/l					4.1/4.2	30
Ammonium N	mg/l	0.050/0.050	0.046/0.05	0.050/0.05	0.390/0.390	0.04/0.04	2
Nitrite N	mg/l	0.003/0.003	0.003/0.016	0.003/0.003	0.010/0.010	0.001/0.001	10
Nitrate N	mg/l	2.10/2.20	0.163/0.163	0.925/0.313	0.002/0.002	0.1/0.1	1

Table AI.6 Air quality recorded in Cholpon Ata 1999-2012 (annual average, µg/m³)

Year	SO_2	NO2	NO	CO	NH_3	HCOH*	Dust
1999	10	10		400			40
2006	6	20					
2012	5	20					
National Standard							
Daily average	50	40	60	150	40	3	150
max.	500	85	400	500	200	35	500
* Maximum concentration limit of contaminants in atmospheric air of settlements, as per Resolution of the Chief State Sanitary Inspector No. 20, 28 May 2004.							

Table AI.7 Ambient Outdoor Noise Standards in Kyrgyzstan

Activity Category[1]	Leq [2]	Lmax [3]	Description of Activity Category
8	Day = 45	Day = 60	Areas immediately adjacent to hospitals and sanatoriums
	Night = 35	Night= 50	
9	Day = 55	Day = 70	Areas immediately adjacent to dwellings, polyclinics, dispensaries, rest homes, holiday hotels, libraries, schools, etc
	Night = 45	Night = 60	
10	Day = 60	Day = 75	Areas immediately adjacent to hotels and dormitories
	Night = 50	Night = 65	
11	35	50	Recreation zones in hospitals and health centers
12	45	60	Rest areas at the territories of micro-districts and building estates, rest houses, sanatoriums, schools, homes for the aged, etc

[1] 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.

[2] L_{eq} = the sound level equivalent, the L_{eq} 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.

[3] L_{Max} = maximum sound level.

APPENDIX 2 PHOTOS

Balykchy Wastewater Treatment Plant

Photo 1. Balykchy WWTP. Existing aeration tank

Photo 2. Balykchy WWTP. Existing pond

Photo 3. Balykchy WWTP. Pre-sedimentation Tank

Photo 4. Balykchy WWTP. Existing pond Karakol Wastewater Treatment Plant

Photo 5. Karakol WWTP. Sludge areas

Photo 6. Karakol WWTP. Seasonal Runoff Pond

Photo 7. Karakol WWTP. Pre-sedimentation Tank

Photo 8. Karakol WWTP. Distribution chamber of pre-sedimentation tank

Photo 9. Karakol WWTP. Distribution chamber of pre-sedimentation tank

DSC Commentary Matrix on
ADB Comments on the Semi-Annual Environmental Monitoring Report (Jan-Jun 2020)

No.	ADB Comments	Considered / Not considered, DSC comments
1	**In the title page of the Report:** Please revise cover page, use https://www.adb.org/sites/default/files/project-documents/45169/45169-001-emr-en_4.pdf as a template	**Considered.**
2	~~Approved: Zhundubaev K.Sh. Environmental Specialist, Project Management Department _____ 30/07/2020~~	**Considered.**
3	OVOS - A Procedure Defined by National Legislation for Environmental Impact Assessment	**Considered.** This is OVOS It has been added to abbreviations
4	SPS - ADB Safeguard Policy Statement	**Considered.**
5	**IN PARAGRAPH 2:** PLEASE DESCRIBE WHY CHOLPON-ATA WAS NOT CONSIDERED IN THE PROJECT?	**Considered.** Sector policies and institutional arrangements. Government targets for WSS services focus on inclusive development to improve functionality, enhance service levels, and expand municipal sanitation. In terms of policy, this includes a targeted strategy for WSS development to 2026, and a national strategy to guide sustainable development to 2040. A comprehensive legislative and regulatory framework for environmental and natural resource protection has also been enacted with project responsibility recently transferred to the technically oriented Department of Drinking Water Supply and Sewerage Development (DDWSSD). The Asian Development Bank (ADB) has provided assistance through the Issyk-Kul Sustainable Development Project, which improved wastewater collection systems and provided institutional strengthening in both Balykchy and Karakol. Other development partners also provide WSS sector assistance, including: (i) the World Bank Small Towns Infrastructure and Capacity Development Project, (ii) water supply system improvements in Balykchy and Cholpon-Ata by the European Bank for Reconstruction and Development (EBRD), and (ii) water supply investments in Karakol by the Swiss State Secretariat for Economic Affairs.
5	**in paragraph 4:** Notice to proceed? Resident	**Considered.** The ADB issued Notice to Proceed (NTP) on 16 August 2019. The project implementation period is from August 16, 2019 to December 31, 2024. Kyrgyz Republic Resident Mission of ADB (KYRM) is the body supervising the project.
6	**in paragraph 5:** Initial Environmental Examination (IEE)	**Considered**. Initial Environmental Examination (IEE)

	disclosed	**Considered**. disclosed
7	**in paragraph 8:** ... visited by up to 1 million foreign and local tourists Please provide reference Please provide missing data	**Considered.** Reference is given as Initial Environmental Examination (IEE)
8	**in paragraph 9:** ? Impact? Site Specific Environmental Management Plans (to be prepared for each sub-project)	**Considered** Issyk-Kul Wastewater Management Project has been classified as environmental assessment category B. According to ADB procedures, the impacts of the subproject were assessed by the Initial Environmental Examination, conducted according to ADB Safeguard Policy Statement (2009).. **Considered** During the operation stage, the impacts will be related to the disposal of sludge, odor and noise from the WWTP and pump stations, as well as from the chlorinator, however, all of these impacts are limited by the sanitary protection zone (SPZ). **Considered** Risk mitigation measures aimed at limiting the impacts of construction and operating activities has been will be included in the Environmental Management Plan to be prepared under IWMP within the scope of IEE study. Site Specific Environmental Management Plans to be prepared for each sub project.
9	**in paragraph 10:** Provide source reference	**Considered.** Reference is given as Initial Environmental Examination (IEE)
10	**in paragraph 13:** Provide detailed description of planed project activities including information on ongoing tender and its components	**Considered.** 13. The Consultant shall act Design and Supervision Contract under the following: – Preparation of Detailed Engineering Designs – Prepare the bidding documents – Evaluation of Bidders and Preparation of Works Contracts – Supervision of Sewer Network in Balykchy-10.3 km (Contract No. W1) – Supervision of Sewer Network-11.3 km, Pump Station and Rising Main-1.7 km in Karakol (Contract No. W2) – Supervision of Karakol Waste Water Treatment Plant (WWTP)- 12 MLD and Disposal of Existing Biological Sludge (Contract No. W3) This Project will increase access to potable water and safe sanitation services, including use of proven technologies for treatment and disposal of solid and liquid waste in the cities of Balykchy and Karakol and includes three components; Component (A): Wastewater Treatment and collection;

		Component (B): Enhancing Vodokanals institutional and service-oriented capacity; and Component (C): Improve awareness for public health implications and wastewater management in Balykchy and Karakol. This contract covers the services under Component A Balykchy Sewerage Network : Currently, 3325 households and 106 commercial/industrial/institutional/tourism organizations are connected to the sewerage system in Balykchy. The existing sewerage network consists of 64 km of non-pressure sewers built in the 1970s and currently serves about 35% of the population. Therefore IWMP will provide 10,3 km of sewer networks on four streets, which will connect about 850 additional households to the sewer network. DSC completed the concept design and submitted to the Architecture office on 15.06.2020 to get ETU approval (Engineering and Technical Conditions). Karakol Sewerage Network : About 35% of all households in Karakol are connected to the sewage system, most of which live in multi-story buildings. Currently, about 25,000 people use services of a centralized sewage system. The length of the sewerage network of the city is about 110 km. In addition, the municipal enterprise “Karakol Vodokanal” provides sewerage services to 38 budget organizations, 251 commercial enterprises and 1 industrial enterprise. Figure 3 New Sewerage Lines to be Designed for Karakol Sewerage Network In addition to the non-pressure sewerage system in Karakol, the village of Pristan (TSU No. 8) is served by a gravity-pressure system. This system includes 4 pump stations, 3 of which were rehabilitated under the first phase of IKSDP. The fourth sewage pump station is located in close proximity to Issyk-Kul Lake and is in a semi-ruined non-operating stating. In this connection, the construction of a new sewage pump station No. 4 at a new location is required. DSC completed the concept design and submitted to the Architecture office on 30.06.2020 to get ETU approval. Karakol WWTP : The existing wastewater treatment plant is located in the northern suburb of the city and were constructed in 1980 of the last centuries. Currently, the WWTP does not measure actual influent water, however, according to estimates of the Karakol Vodokanal (KVK), the average existing flow is 7,500 m3/day with the influent flow of about 6,000 m3/day in the winter and 12,000 m3/day in the summer. Figure 4 Karakol WWTP

		DSC recommended the 5 stage Bardenpho process due to the various risks it sees for the IDEAL process proposed in feasibility and this process was approved. Chlorination method has been approved for the disinfection method. DSC continues to prepare a concept design for a WWTP that will meet the discharge criteria according to national standards. Sludge Management: In order to clean the existing ponds, the sludge should not be contaminated. Therefore, a sampling plan has been prepared. However, the laboratory, which started working again on 01.08.2020 due to quarantine, was contacted again and the current study will be updated and submitted to PMO and ADB for approval. The sludge management program will be prepared according to the analysis results. Figure 5 Balykchy Ponds Figure 6 Karakol Ponds
11	**in paragraph 14:** Indicate current situation with Balykchy WWTP SPZ	**Considered.** Design and construction of the Balykchy WWTP will be assigned to another contractor. For the current period, the procedure for selecting a Contractor through a tender has not yet been completed. In accordance with the draft LARP in 2018, 7 DPVs have been identified within the boundaries of the SPZ Balykchy WWTP. Depending on the design decisions, the size of the boundaries of the SPZ Balykchy WWTP will be approved and an updated LARP will be prepared. A Google map view of the existing WWTP of Balykchy has shown in the Figure 7
	Provide a google map screenshot or indicate on city map	**Considered.** The latest available wastewater quality for the raw influent and treated effluent of the Balykchy WWTP is given at the Table A1.2 in the Appendix 1. The results indicate that no treatment other than the dilution with river water is being provided, and effluent does not meet wastewater discharge standards, though there are reductions in BOD5 and suspended solids due, primarily, to dilution. The observed surface water quality data of Chu River at the upstream (u/s) and downstream (d/s) locations of the treated effluent discharge point is given the Table A1.3 in the Appendix 1.
	Please provide latest available lab testing results	**Considered.** The final discharge point for the treated effluent is a channel that runs to an irrigation reservoir in a farming area northwest of the lagoons, where the effluent mixes with water pumped in from the

	Describe current wastewater utilization practices Spell out at the first use Spell the project title Please describe the status of sludge management plan, sludge sampling plan and project's activities in this regard	Chu River before being pumped into the irrigation canal system from where it is used by anyone accessing the system. **Considered.** Issyk-Kul Sustainable Development Project (ISDP) **Considered.** Issyk-Kul Wastewater Management Project **Considered.** It has been indicated that the sludge management issue has been explained at paragraph 13.
12	**in paragraph 17:** Provide google map screenshot Describe situation with SPZ, and local residents in proximity to WWTP	 **Considered.** At "Figure 8 Karakol Wastewater Treatment Facility Showing Treatment Plant and Lagoons" google earth view added. **Considered.** Field observations conducted during the IEE study have revealed that residences and other human activities currently exist within the Sanitary Protection Zone (SPZ) surrounding the WWTP in Karakol, and that in order to meet the requirements of the Sanitary-Epidemiological Rules and Regulations 'Sanitary protection zones and sanitary classification of facilities, buildings and other plants' (SanPiN), residences and other human activities would be subject to involuntary resettlement under the project. In accordance with the draft LARP for 2018, 19 local residents have been identified within the boundaries of the SPZ of Karakol WWTP. The resumption of work on the Project is of concern to DPA, and already twice in 2020 they, on behalf of residents of the nearby "settlement of geologists", wrote to the President of the Kyrgyz Republic and the ADB office on the timing of the Project implementation and obtaining relevant information. Written replies were prepared for them on the planned design and start of construction of the Karakol WWTP. Depending on the design decisions, the boundaries of the SPZ of Karakol WWTP will be approved and an updated LARP will be prepared.
13	**in paragraph 19:** Of what...	**Considered** As a result of rehabilitation of the sewerage system at Pristan, the coverage of the sewerage system in Karakol will increase from 45% to 60%.
14	**in paragraph 20:**	

	Describe why Construction?	**Considered.** Due to sludge quality has not been analyzed. **Considered.** Construction provision of 11.3 km new sewerage networks
15	**Picture 3.** Provide source for reference	**Considered.** Reference is given as Initial Environmental Examination (IEE)
16	**Table 2.1.** Consider using organogram	**Considered.** An organogram has been added at "Figure 2 6 Organogram of Environmental Safeguards of IWMP"
17	**In paragraph 22, with:** Dedicated Environmental Specialist?	**Considered.** Contractor environmental managers and/or environmental and safety officer responsible for environmental protection issues
18	**in paragraph 25:** Indicate other tasks as per contract	**Considered.** Besides that, Environmental Experts of the Consultant will: – ensure that the construction methods proposed by the Contractor are satisfactory, with reference to the technical requirements of ADB's Environmental Guidelines. – undertake periodic review and reporting on the implementation of the EMP. – will inspect the Contractor's construction equipment; safety of the works, property, personnel, and public; and the recommendations of the environmental management plan (EMP). – Supervise and monitor the implementation of any environmental mitigation measures required and in the event of occurrence of any unexpected environmental impacts, coordinate with the Contactor to provide mitigation measures
19	**in paragraph 26:** For which sub-project? Please describe current situation with sludge management and sampling programs Describe suggested guidelines and standards to be considered?	**Considered.** (Balykchy WWTP and Karakol WWTP) **Considered.** In order to clean the existing ponds, the sludge should not be contaminated. Therefore, a sampling plan has been prepared. However, the laboratory, which started working again on 01.08.2020 due to quarantine, was contacted again and the current study will be updated and submitted to PMO and ADB for approval. **Considered.** The sludge handling and analysis has been conducted to the according to: (i) rules for the protection of surface waters in the Kyrgyz Republic; (ii) GOST 17.1.5.01-80 Environmental protection. (SSOP)

		Hydrosphere. General requirements for sampling of bottom sediments of water bodies for analysis for contamination; and (iii) 3. ISO 5667 on Water quality - Sampling.
20	**in paragraph 27:** Is it still true?	**Considered.** Laboratories in the Kyrgyz Republic have suspended their activities from May 11, 2020 due to the applied regulation on the state of emergency declared by Kyrgyzstan Government to decrease the effects of coronavirus pandemic (COVID -19) within the territory of Bishkek and other regions of Kyrgyzstan. Also most of the workers were on sick leave due to illness (COVID-19), hence many laboratories were temporarily closed during the reporting period. *Explanation note: "Negotiations has been started with the laboratories in July and agreement achieved on 26 July 2020."*
	Please describe which parameters could be analyzed locally and which will be sent to international laboratories, are there any preliminary	**Considered.** Sediments will be analyzed for the following parameters: arsenic, cadmium, chromium, copper, lead, mercury, molybdenum, nickel, selenium, zinc, manganese. Wastewater will be analyzed for the following parameters: Biological Oxygen Demand, suspended solids, nitrogen (ammonium, nitrites, nitrates), oil products, chromium, cyanides. Laboratory analysis for these parameters could be carried out by local laboratories.
21	**in paragraph 31:** Was it approved by PMO? Please share approved version.	**Considered.** Inception report of DSC has been reviewed and approved by PMO and ADB's environmental experts. Download link: https://we.tl/t-oJNY2olpy9
22	**in paragraph 32:** Resident	**Considered.** Corrected as resident
	Please include the results to the SAEMR	**Considered.** 1. Environmental issues related to ADB Safeguards Policy and Project Requirements were included in the Inception Report of DSC. Inception report of DSC has been reviewed and approved by PMO and ADB's environmental experts. 2. The following environmental standards apply to the project. Here international standards are proposed too for comparison with Kyrgyz standards; subsequently, stricter standards will be applied as monitoring requirements. Air Quality The maximum permissible concentrations of harmful substances in the air in accordance with Kyrgyz and international standards are presented below. Table 2 MPC of contaminants

		Noise levels Table 3 Noise Standards (dB) (WHO*) Table 4 Permissible Noise Levels in the Kyrgyz Republic (dB) Surface water Table 5 Surface Water Quality Standards Surrounding soils Table 6 Norms of chemicals in soil
23	**in paragraph 36:** OVOS? Please use correct terms	**Considered.** Corrected as OVOS
24	**in paragraph 37:** Requirement	**Considered.** Corrected as requirement.
25	**in paragraph 38:** Examination	**Considered.** Corrected as examination
26	**in paragraph 40:** Please elaborate on the standards for effluent to be used under this project	**Considered.** The sludge handling and analysis has been conducted to the according to: (i) rules for the protection of surface waters in the Kyrgyz Republic; (ii) GOST 17.1.5.01-80 Environmental protection. (SSOP) Hydrosphere. General requirements for sampling of bottom sediments of water bodies for analysis for contamination; and (iii) 3. ISO 5667 on Water quality - Sampling.
27	**in paragraph 50:** Please include measures that will be applied during the project implementation in order to minimize chances for COVID 19 transmission	**Considered.** To protect the health and safety of workers, as well as surrounding communities, the contractors of each subproject shall conduct a workplace review and risk assessment for exposure to COVID-19. To exposure risks will be assessed by the Contractors through: (i) determination of level of exposure risk; (ii) determination additional exposure risk factors; (iii) consultation with workers; (iv) Development of Health and Safety Management Plans which also takes care COVID-19 exposure risk and protection measures; (v) reviewing international good practices especially issued by WHO on key guidance to manage the spread of COVID-19 in the workplace.
28	**in paragraph 52:** SSEMP is not developed yet, please indicate that...	**Considered.** Since the construction activities have not been commenced any Site-Site Specific Environmental Plan has not been developed. Therefore there are no comments on SSEMP.
29	**In subsection 7.1 .:** Please provide information on grievances of Karakol residents in chronological order with subsequent actions on behalf of PMO	**Considered.** An appeal was received from the residents of Geolog village of the city of Karakol addressed to the President of the Kyrgyz Republic S.Sh. Jeenbekov on IWMP Project implementation. The letter was sent to the official website of the Office of the President of the Kyrgyz Republic on January 31, 2020.

		On February 14, 2020, the Head of the Department for dealing with citizens' appeals of the Office of the President of the Kyrgyz Republic sent a letter to PRGIKO, the SIETS under the GKR and the Department of Disease Prevention and State Sanitary and Epidemiological Surveillance of the Ministry of Health of the Kyrgyz Republic to prepare a response. The PMO was contacted by the SIETS under the GKR and PIU to provide detailed information on the current state of the Project (date of receipt is February 26, 2020). On March 9, 2020, a response letter from the Department of Drinking Water Supply and Sewerage Development (EA) was prepared to this appeal jointly with PMO , and was sent to all relevant government agencies that were included in the appeal list. Also, the response letter was brought to the attention of the local focal point in Karakol S. Omurkanov for further informing local residents. This appeal was registered in the complaint and application registration log. Due to the current situation in the country related to COVID-19 and restrictions imposed on group meetings, on 20 March 2020 the local focal point contacted one of the residents Mr. B.N. Kaliev by phone 0777 52 70 77 and informed him in detail about the current status of the Project and sent an electronic response to their appeal via WhatsApp. It was agreed that a meeting will be held with the residents of the Geologobase after the end of the quarantine. Citizen Baktiyar Nazarbekovich Kaliev is a member of the local Grievance redress commission.
30	**in paragraph 55:** It is rather study, I assume... Please include this to the report	**Considered** Text has changed as study **Considered** This has been already included into the report. A reference is given as in the following text. During the current reporting period the review of IEE and as indicated in the paragraph 31 planning of environmental safeguard activities have been performed and inserted into the Inception report.
31	**in paragraph 57:** Paragraph	**Considered** Text is corrected as paragraph.
32	**in paragraph 60:**	**Considered.**

	Indicate set of appropriate standards to be applied in the project Please elaborate on health risks and appropriate mitigation measures	1. The following tasks have been made by international and/or environmental experts of the DSC during the reporting period: 2. Preparation Terms of Reference for “Central Asian Frog Survey in Karakol” WWTP site. 3. Evaluation of the project related environmental costs given within the IEE resulted that additional costs might be faced due to (i) the sludge and its usage or disposal, it is not suitable to estimate the sludge disposal costs. (i) costs for getting permit in order to discharge effluent to the environment which is calculated at the stage of detailed design (ii) the expenses related to wastes disposal including asbestos cement depends on their volume and disposal site. The approximate cost calculations for these items are under investigation. 4. Study on the availability of background data for the prospective OVOS studies including the national and international environmental standards that would applied to the project. At the following international standards are proposed too for comparison with Kyrgyz standards; subsequently, stricter standards will be applied as monitoring requirements.. ***Air Quality*** The maximum permissible concentrations of harmful substances in the air in accordance with Kyrgyz and international standards are presented below. **Table 1 MPC of contaminants**

Contaminant	Maximum permissible concentrations (mg/m3)		Concentration Averaging Time	
	In accordance with national legislation**	In accordance with international requirements (WHO*)	In accordance with national legislation**	In accordance with international requirements (WHO*)
Solid particles:	0,5	0,02	average daily	Year 1
Sulfur dioxide SO2	0,5	0,02	average daily	24 hours

Nitrogen dioxide NO2	0,085	0,04	average daily	Year 1
Carbon Oxide CO	5,0	0,1	average daily	Max. 8 hours per day in average

* World Health Organization (WHO) WHO Guidelines for Ambient Air Quality.
** Hygienic standards "MPC of pollutants in the atmospheric air of populated areas", Resolution of the Government of the Kyrgyz Republic dated 11.04.2016.

Noise levels

Table 2 Noise Standards (dB) (WHO*)

Guidelines on Noise Level*		
	A hour Leq (dBA)	
Categories	Day 07:00 - 22:00	Night 22:00 - 07:00
Settlements	55	45
Industry, Trade	70	70

* Recommended values for noise levels measured outdoors. Source: Noise Guidelines, World Health Organization (WHO), 1999.

Table 3 Permissible Noise Levels in the Kyrgyz Republic (dB)

Activities / category	Leqv*		Lmax**	
	Day	Night	Day	Night
Areas in immediate vicinity of hospitals and heath centers	45	35	60	50

Areas in immediate vicinity of residential buildings, clinics, medical centers, care centers, recreation centers, libraries, schools, etc.	55	45	70	60
Areas in immediate vicinity of hospitals and dormitories	60	50	75	65
Recreation zones in hospitals and health centers	35		50	
Recreation zones in the territory of micro-districts and groups of residential houses, holiday homes, resorts, schools, care centers, etc.	45		60	

SN 2.2.4 / 21.8.562-96 “Noise at workplaces, in residential premises, public buildings and in residential areas”.

Surface water

Table 4 Surface Water Quality Standards

Pollutants	Maximum permissible concentrations (mg/m3)		
	In accordance with national legislation*		In accordance with EU laws**
	+	++	
Oil and Grease	0,05 mg/l	0,3 mg/l	Not visible as film
pH	6,5-8,5		6,0-9,0

Transparency	-	-
Electrical conductivity	-	-
Suspended particles	Increased by 0,25/0,75	Not more than 25
Dissolved oxygen	Not less than 4	50%≥7-9

Copper	0,001	1,0	Not more than 0,04
Zinc	0,01	1,0	0,03-0,5
Cadmium	0,005	0,001	-
Lead	0,006	0,01	-

Rules for Surface Water Protection in the Kyrgyz Republic №128 of 14.03.2016
+ List of MPC for fishery water use
++ List of MPC for domestic water supply and amenity needs
++ Hygienic standards, MPC of chemicals in the water of water bodies for domestic water supply and amenity needs, Government Decision No. 201 dated 11.04.2016.
**Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of fresh waters needing protection or improvement in order to support fish life

Surrounding soils

Table 5 Norms of chemicals in soil

Pollutants	Limit value	Maximum permissible concentrations (mg/kg)	
		In accordance with national legislation*	In accordance with EU laws**
Copper+	General sanitary	33-133	50-140
Zink+	Translocation	55-220	150-300
Cadmium+	-	0,5-2,0	1-3
Lead	General sanitary	32	50-300
Chrome++	General sanitary	6,0	-
Mercury	Translocation	2,1	1-1,5
Nickel+	General sanitary	20-80	30-75

* Hygienic standards "Maximum permissible concentrations and approximate permissible quantities of chemicals in soil" Approved by Resolution of GKR
№ 201 of April 11, 2016
+ Approximate permissible concentrations of chemicals in soil (gross content) , depending on type of soil
++ Moving form
**Council Directive 86/278/ EEC of 12.06.1986 “on the protection of the environment, and in particular of the soil, when sewage sludge is used in agriculture”

Considered.
In order to decrease odor and health risk problems it is recommended that all biosolids to meet at least USEPA Class B with respect to pathogens and stability by one of the five biosolids management approaches as given below.

- Aerobic Digestion: Biosolids are agitated with air or oxygen to maintain aerobic conditions for a specific mean cell residence time (MCRT or sludge age) at a specific temperature. Values for MCRT and temperature shall be between 40 days at 20°C and 60 days at 15°C.
- Air Drying: Biosolids are dried on sand beds or on paved or unpaved basins. The biosolids dry for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 0°C.
- Anaerobic Digestion: Biosolids are treated in the absence of air for a specific mean cell residence time at a specific temperature. Values for the mean cell residence time and temperature shall be between I5 days at 35°C to 55°C and 60 days at 20°C.
- Composting: Using either the within-vessel, static aerated pile, or windrow composting methods, the temperature of the biosolids is raised to 40°C or higher and maintained for 5

		days. For 4 hours during the 5-day period, the temperature in the compost pile exceeds 55°C. – Lime Stabilization: Sufficient lime is added to the biosolids to raise the pH of the biosolids to 12 after 2 hours of contact. It is envisioned that all solids from the WWTPs at Balykchy and Karakol will be treated via options 1 to 3 to achieve Class B.
33	**in paragraph 62:** Not applicable for the project, please use data for sub-projects	**Considered.** This data is not realistic for the construction monitoring purposes, the necessary measurements will be required from the contractors prior to the commencement of the construction works.
34	**in paragraph 63:** Baseline? Indicate when such data will be collected?	**Considered.** The baseline noise quality data will be collected by the construction contractors prior to the commencement of construction.
35	**in paragraph 64:** Was the disposal method approved?! Elaborate and include laboratory testing, also include information as per IEE that if the sludge will be contaminated no action will be taken	**Considered.** Already sludge disposal method has not been approved. After the laboratory analysis of the sludge, if the quality of the sludge will be determined as contaminated then no action will be taken. In any other case sludge disposal sites need to be identified as well as solid and hazardous waste disposal sites during the design study. Additional biological surveys might be conducted after the definition of these disposal sites. **Considered.** …. if the quality of the sludge will be determined as contaminated then no action will be taken.
36	**in paragraph 66:** Not relevant in recommendation sectio	**Considered.** Paragraph deleted
36	**in paragraph 67:** Required	**Considered.** Text has been corrected as required.