

# Environmental Monitoring Report

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January – June 2021  
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## KGZ: Issyk-Kul Wastewater Management Project

Prepared by Temelsu International Engineering Services Inc. for The Department of Drinking Water Supply and Sewerage Development (DDWSSD) under the State Agency for Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic and the Asian Development Bank.

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## Table of Contents

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|          |   |           |
|----------|---|-----------|
| <b>1</b> | <b>INTRODUCTION</b> .....                                       | <b>1</b>  |
| 1.1      | Preamble.....   | 1         |
| 1.2      | Headline Information .....                                      | 2         |
| <b>2</b> | <b>PROJECT DESCRIPTION AND CURRENT ACTIVITIES</b> .....         | <b>5</b>  |
| 2.1      | Project Description .....                                       | 5         |
| 2.2      | Project Contracts and Management .....                          | 9         |
| 2.3      | Project Activities During Current Reporting Period .....        | 11        |
| 2.3.1    | Conceptual Design .....   | 11        |
| 2.3.2    | Bidding Documents.....  | 15        |
| 2.3.3    | Construction .....  | 15        |
| 2.4      | Description of Any Changes to Project Design .....              | 15        |
| 2.5      | Description of Any Changes to Agreed Construction methods ..... | 16        |
| <b>3</b> | <b>ENVIRONMENTAL SAFEGUARD ACTIVITIES</b> .....                 | <b>17</b> |
| 3.1      | General Description of Environmental Safeguard Activities.....  | 17        |
| 3.2      | Site Audits.....  | 19        |
| 3.3      | Issues Tracking (Based on Non-Conformance Notices) .....        | 19        |
| 3.4      | Trends.....   | 19        |
| 3.5      | Unanticipated Environmental Impacts or Risks.....               | 19        |
| <b>4</b> | <b>ENVIRONMENTAL MONITORING RESULTS</b> .....                   | <b>20</b> |
| 4.1      | Overview of Monitoring Conducted during Current Period.....     | 20        |
| 4.2      | Trends.....   | 20        |
| 4.3      | Summary of Monitoring Outcomes .....                            | 20        |
| 4.4      | Material Resources Utilization .....                            | 21        |
| 4.5      | Waste Management .....  | 21        |
| 4.6      | Health and Safety.....  | 21        |
| 4.7      | Training.....   | 21        |
| <b>5</b> | <b>FUNCTIONING OF SEMP</b> .....                                | <b>22</b> |
| 5.1      | SEMP Review .....   | 22        |
| <b>6</b> | <b>GOOD PRACTICES AND OPPORTUNITY FOR IMPROVEMENT</b> .....     | <b>23</b> |
| 6.1      | Good Practice .....   | 23        |
| 6.2      | Opportunities for Improvement.....                              | 23        |

|  |           |
|--|-----------|
| <b>7 SUMMARY AND RECOMMENDATIONS .....</b> | <b>24</b> |
| 7.1 Summary.....                           | 24        |
| 7.2 Recommendations .....                  | 24        |

**List of Appendices:**

|             |   |
|-------------|---|
| Appendix I  | SN Balykchy letter no 02-4-178 from IKTA of SAEPF |
| Appendix II | SN Karakol letter no 02-4-179 from IKTA of SAEPF  |

**List of Figures**

|   |    |
|---|----|
| Figure 2-1 Location of Project Towns of Balykchy and Karakol..... | 5  |
| Figure 2-2 Schematic Illustration of Balykchy WWTP processes..... | 7  |
| Figure 2-3 Schematic Illustration of Karakol WWTP processes.....  | 8  |
| Figure 2-4 Organogram of Environmental Safeguards of IWMP.....    | 10 |

**List of Tables**

|  |    |
|--|----|
| Table 2-1 Environmental Safeguards of IWMP.....  | 9  |
| Table 4-1 Comparison of Number of Corncrake..... | 20 |

## Abbreviations

|                  |   |
|------------------|---|
| ADB              | Asian Development Bank  |
| APU              | Architectural and Planning Specifications (Conditions)  |
| ETU              | Engineering and Technical Specifications (Conditions)   |
| BOD <sub>5</sub> | Biological Oxygen Demand for 5 days   |
| BOQs             | Bill of Quantities  |
| BVK              | Balykchy Vodokanal  |
| COD              | Chemical Oxygen Demand  |
| DDWSSD           | The Department of Drinking Water Supply and Sewerage Development (DDWSSD) under the State Agency for Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic |
| DSC              | Design and Supervision Consultant   |
| EA               | Executing Agency  |
| EHS              | Environment, Health and Safety  |
| EIA              | Environmental Impact Assessment   |
| EMP              | Environmental Management Plan   |
| ETS              | Engineering and Technical Specifications  |
| GKR              | Government of Kyrgyz Republic   |
| ICB              | International Competitive Bidding   |
| IEE              | Initial Environmental Examination   |
| IFC              | International Finance Cooperation   |
| ISDP             | Issyk-Kul Sustainable Development Project   |
| IKTA             | Issyk-Kul Territorial Administration  |
| IWMP             | Issyk-Kul Wastewater Management Project   |
| KVK              | Karakol Vodokanal   |
| KYRM             | Kyrgyz Republic Resident Mission  |
| LARP             | Land Acquisition and Resettlement Plan  |
| NTP              | Notice to Proceed   |
| OOS              | Russian acronym for Environment Protection  |
| OVOS             | Russian acronym for “Assessment of Environmental Impacts”   |
| PIU              | Project Implementation Unit   |
| PMO              | Project Management Office   |
| PPM              | Public Participation Meeting  |

|       |  |
|-------|--|
| SAEMR | Semi - Annual Environmental Monitoring Report                  |
| SCEC  | State Committee for Ecology and Climate of the Kyrgyz Republic |
| SEMP  | Site Specific Environmental Management Plans                   |
| SNIP  | Russian acronym for Construction Codes and Regulations         |
| SPZ   | Sanitary Protection Zone                                       |
| WSS   | Water supply and sanitation services                           |
| WWTP  | Wastewater Treatment Plant                                     |

### **Units and Currencies**

|                     |                            |
|---------------------|----------------------------|
| °C                  | degree Celsius             |
| ha                  | hectare                    |
| km                  | kilometers                 |
| m <sup>3</sup>      | cubic meter                |
| m <sup>3</sup> /day | cubic meter per day        |
| mg/l                | milligram per liter        |
| Mg/Ol               | milligram Oxygen per liter |
| MLD                 | million liter per day      |
| USD                 | United States Dollar       |

# 1 INTRODUCTION

## 1.1 Preamble

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 (GKR) dated June 12, 2020, No. 330).
2. Asian Development Bank (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.
3. 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.
4. 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.
5. The project was approved by the ADB Board of Directors on 20 November 2018 and Grant and Loan Agreements between the ADB and the GKR 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.
6. 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. Kyrgyz Republic Resident Mission (KYRM) is the body supervising the project.

7. 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 State Agency for Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic for the ADB which was also included in the feasibility report. The final version of IEE was disclosed on ADB's website in September 2018.
8. This report is the 3<sup>rd</sup> Semi-Annual Environmental Monitoring Report (SAEMR) for the project. It covers the IWMP activities between the period of 01/January/2021 and 30/June/2021.

## 1.2 **Headline Information**

9. During the current reporting period no civil works have been started.
10. 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 several significant documents concerning this area adopted at the governmental level in recent years.

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

13. In this regard, the Issyk-Kul Wastewater Management Project focuses on sewage treatment facilities, expansion of sewerage networks, considering the connection of an additional 850 households in Balykchy city and 1200 households in Karakol city.
14. The implementation of this activity will increase the coverage rate to an estimated 45% in Balykchy and 60% in Karakol.
15. Issyk-Kul Wastewater Management Project has been classified as environmental assessment category B according to ADB procedures, the impacts of the subproject were assessed in 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.
16. During the operation stage, the impacts will be related to the disposal of sludge, odor, and noise from the Wastewater Treatment Plant (WWTP) and pump stations, as well as from the chlorinator, however, all of these impacts could be limited by the sanitary protection zone (SPZ). Environmental management plan (EMP) which are included in IEE will develop appropriate mitigation measures for each subproject.
17. Risk mitigation measures aimed at limiting the impacts of construction and operating activities has been included in the EMP prepared within the scope of IEE. IEE of the project has been prepared in September 2018 which needs to be revised based on agreement with ADB and PMO.
18. According to the General Technical Regulation on Environmental Safety, Regulation on Environmental Impact Assessment (EIA) procedure (KR Governmental Resolution No. 60 of 13.02.2015), Regulation on State Environmental Expertise procedure (KR Governmental Resolution No. 248 of 07.05.2014), state environmental expertise is conducted by especially authorized in area of environmental expertise state bodies (State Committee for Ecology and Climate of the Kyrgyz Republic (SCEC), and territorial departments on environment protection). Kyrgyz Environmental Impact Assessment (EIA) standard (herein after OVOS Report (Russian acronym for "Assessment of Environmental Impacts") reports of each subproject will be prepared by DSC which are listed below:
  - OVOS Report on Extension of Balykchy Sewerage Network
  - OVOS Report on Extension of Karakol Sewerage Network
  - OVOS Report on Pumping Station SPS-4 at Pristan
  - OVOS Report on Karakol WWTP

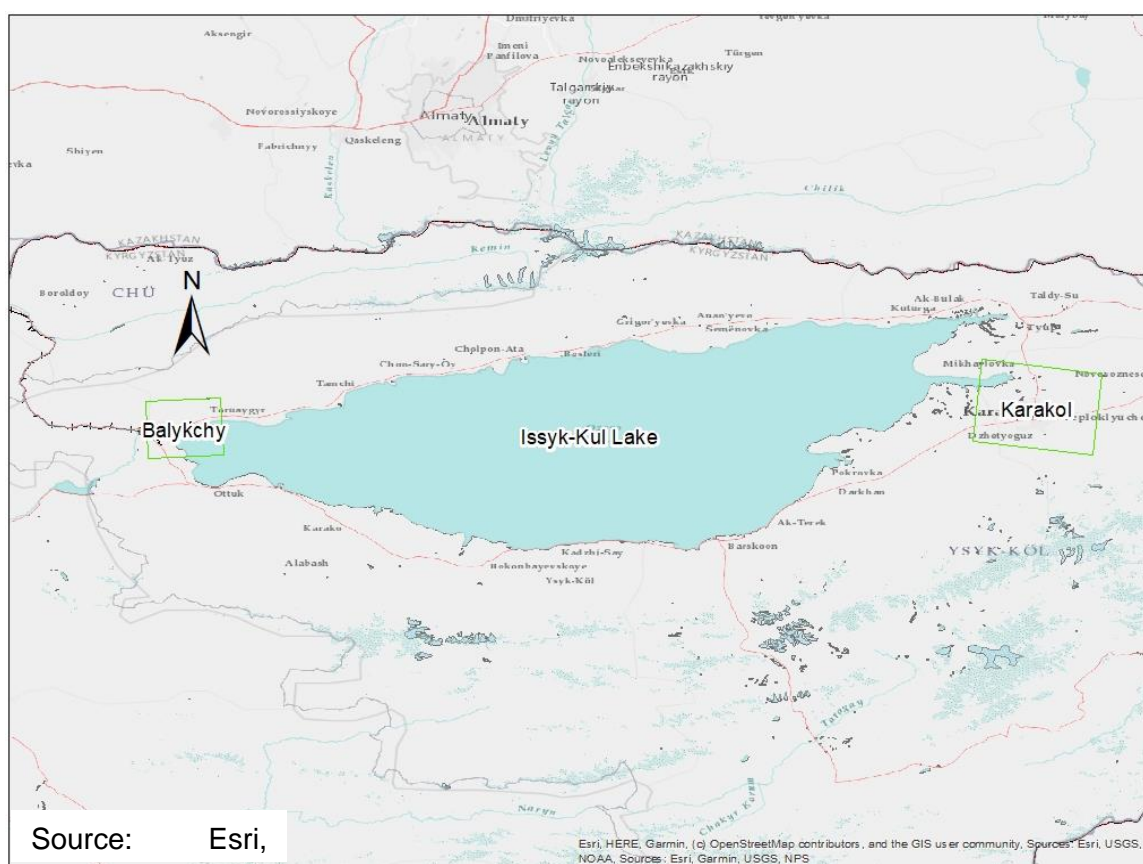


19. DSC will also assist the Design and Build Contractor in developing an OVOS and Site-Specific Environmental Management Plan (SEMP) for a specific site for the Balykchy WWTP. DSC will guide Design and Build Contractor to conduct environmental monitoring, and ensure environment, health and safety (EHS) compliance
20. DSC will integrate findings in the OVOS report to the design documents as a separate section which is called OOS (Russian acronym for Environment Protection). And submit OOS together with design documents to the State Expertise. OOS part will be reviewed and approved by SCEC. After getting this approval for all of the positive decision for these documents, and completion of sludge sampling works for Balykchy and Karakol wastewater ponds and Seasonal Irrigation Pond in Karakol the IEE and Environmental Management Plan (EMP) of the project will be reviewed and if necessary, it will be updated. Based on this review, before the commencement of the construction works SEMP of each site will be provided for each sub project contractor with the assistance of Design and Supervision Consultant (DSC) in accordance with the EMP.
21. During the reporting period no environmental safeguards trainings and public conducted. During the reporting period the following activities have been carried out within the scope of the project:
  - In order to conduct sludge sampling and analysis at Balykchy and Karakol wastewater ponds a Sampling and Analysis Plan has been prepared by DSC and reviewed by PMO and ADB. During the reporting period the plan was under progress.
  - OVOS Report on Extension of Balykchy Sewerage Network has been finalized and OOS section of design document has been prepared.
  - OOS of Extension of Balykchy Sewerage Network has been approved by the Issyk-Kul Territorial Department of SAEPF (now SCEC) on 26/February/2021.
  - OVOS Report on Extension of Karakol Sewerage Network has been finalized and OOS section of design document has been prepared.
  - OOS Report on Extension of Karakol Sewerage Network has been approved by the Issyk-Kul Territorial Department of SCEC on 26/February/2021.
  - A biological survey for the existence of Corncrake (*Crex crex*) in Balykchy have been conducted on the base of EMP given at IEE.
  - For the construction of Balykchy WWTP design and build contract has been awarded on May 28, 2021. The Contractor is the CCCC Tianjin Dredging Co., Ltd, China Road and Bridge Corporation and China Northeast Municipal Engineering Design and Research Institute Co. Detailed engineering design study is ongoing.

## 2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES

### 2.1 Project Description

22. 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 2-1).



**Figure 2-1 Location of Project Towns of Balykchy and Karakol**

23. 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.
24. 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.
25. 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 WWTP - 12 MLD and Disposal of Existing Biological Sludge (Contract No. W3).
26. 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.

**Balykchy Sewerage Network Extension:**

27. Currently, 3 325 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 six streets, which will connect about 850 additional households to the sewer network.

**Karakol Sewerage Network Extension:**

28. About 45% 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 approximately 110 km. In addition, the municipal enterprise “Karakol Vodokanal” provides sewerage services to 38 budget organizations, 251 commercial enterprises and 1 industrial enterprise. IWMP will provide 11.3 km of sewer networks on six streets, which will connect about 1170 additional households to the sewer network.

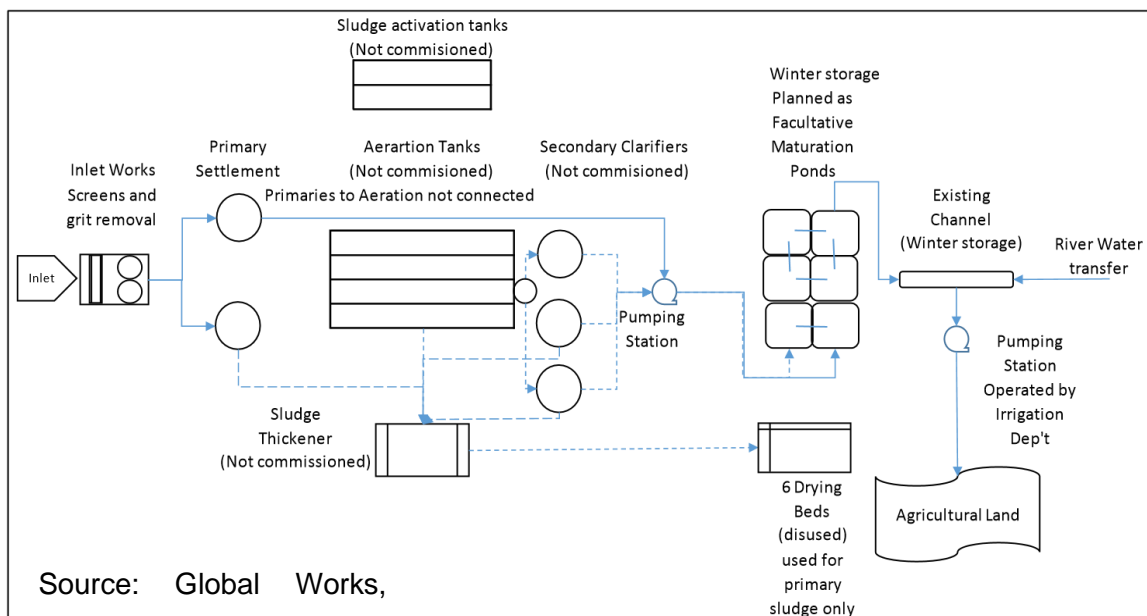
**Construction of a Pump Station (PS-4) at Pristan, Karakol city:**

29. In addition to the non-pressure sewerage system in Karakol, the village of Pristan (TSU No. 8) is served by a gravity-pressure combined system. This system includes 4 pump stations, 3 of which were rehabilitated under the first phase of Issyk-Kul Sustainable

Development Project (ISDP). The fourth sewage pump station is located in close proximity to Issyk-Kul Lake and is in a semi-ruined non-operating staging. In this connection, a construction of a new sewage pump station No. 4 at a new location is required.

### **Balykchy WWTP Reconstruction**

30. The existing wastewater treatment plant is located in the 5 km northwest of the center of Balykchy city and were constructed in 1980s. The actual quantity of influent wastewater received by WWTP has not been measured.
31. A general scheme of the existing Balykchy WWTP has been given at the Figure 2-2. As it has been indicated in the figure the treatment system designed to use the conventional active sludge process to treat the wastewater, including facultative ponds for tertiary treatment purposes.

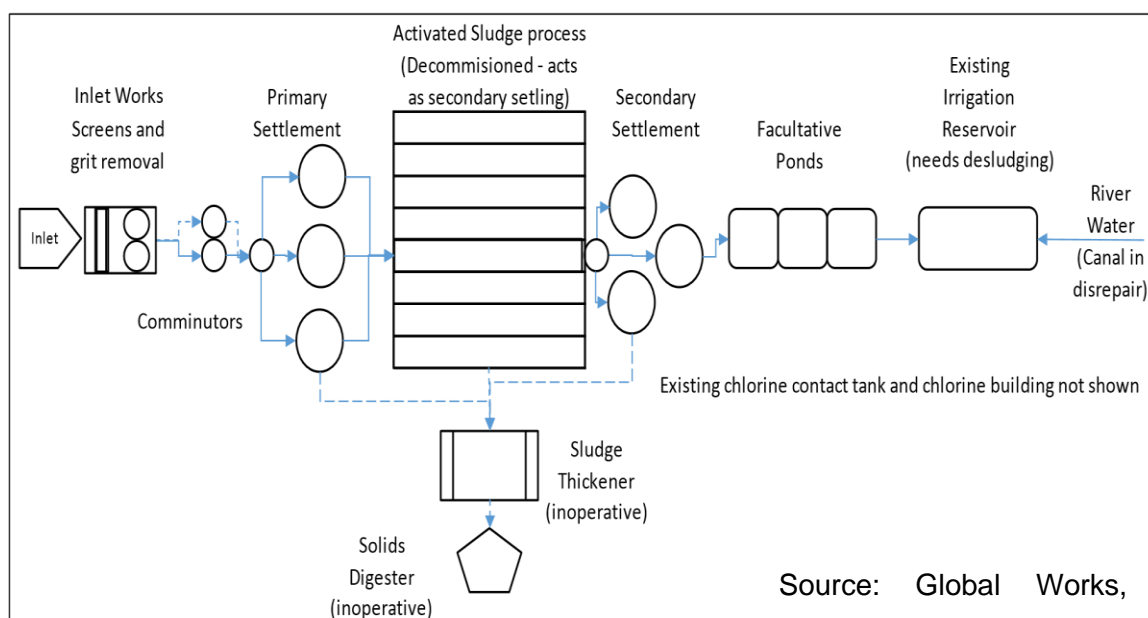


**Figure 2-2 Schematic Illustration of Balykchy WWTP processes**

32. The typical useful service life for most mechanical facilities is 15 to 20 years. Useful service life for most electrical gear and variable frequency drives ranges from 15 to 30 years. After Approximately 40 years of its construction Balykchy WWTP has lost its functionality because of improvements or maintenance practices that could not be implemented. Balykchy WWTP has been operated by Balykchy Vodokanal (BVK). Because of chronic and severe financial shortages BVK faced, the operation of Balykchy WWTP has been kept going by employees working without the benefit of proper written operating procedures, maintenance registers, appropriate tools and equipment, or professional training. Besides this, there is a lack of funding and weak administrative support for improving existing conditions. The new Balykchy WWTP plant will be designed and constructed with a project delivery method of design and build construct.

### Karakol WWTP Reconstruction

33. 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 actual quantity of influent wastewater received by WWTP has not been measured, however, according to estimates of the Karakol Vodokanal (KVK), the average existing flow is 7,500 m<sup>3</sup>/day with the influent flow of about 6,000 m<sup>3</sup>/day in the winter and 12,000 m<sup>3</sup>/day in the summer.
34. A general scheme of the existing Karakol WWTP has been given at the Figure 2-3. As it has been indicated in the figure the treatment system designed to use the conventional active sludge process to treat the wastewater, including facultative ponds for tertiary treatment purposes.



**Figure 2-3 Schematic Illustration of Karakol WWTP processes**

35. The typical useful service life for most mechanical facilities is 15 to 20 years. Useful service life for most electrical gear and variable frequency drives ranges from 15 to 30 years. After Approximately 40 years of its construction Karakol WWTP has lost its functionality because of improvements or maintenance practices that could not be implemented. Karakol WWTP has been operated by KVK. Because of chronic and severe financial shortages KVK faced, the operation of Karakol WWTP has been kept going by employees working without the benefit of proper written operating procedures, maintenance registers, appropriate tools and equipment, or professional training. Besides this, there is a lack of funding and weak administrative support for improving existing conditions. The detailed information about the Karakol WWTP including its SPZ defined during the feasibility stage is given at the 1st SAEMR of IWMP.

### **Sludge Management**

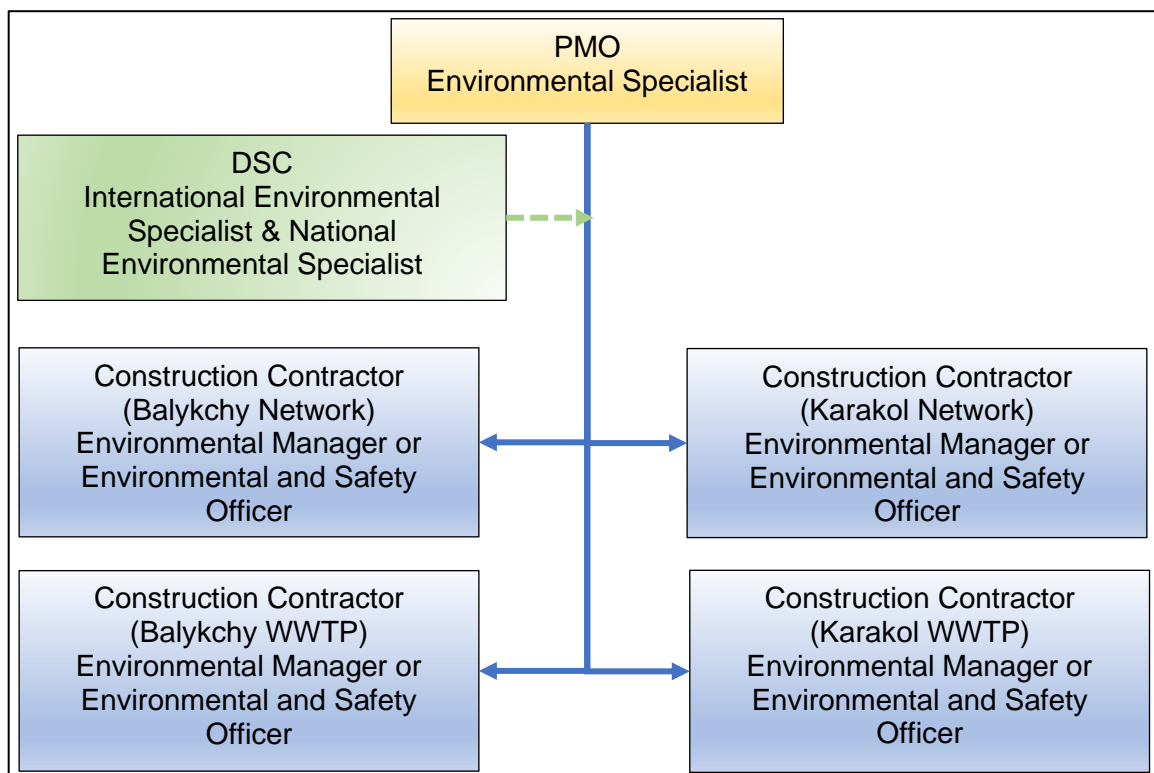
36. The sludge accumulated in Balykchy and Karakol wastewater ponds and seasonal irrigation pond of Karakol decreases the storage capacity of the ponds. Depending on the contamination analysis of sludge should be carried to decide whether the sludge is hazardous or nonhazardous, hence to handle the sludge in these ponds or not. Prior to sampling, a Sludge Sampling and Analysis Plan shall be prepared and submitted to ADB for approval – the plan will contain, but not limited to parameters to analyze, proper sampling and transport plan to recognized and certified labs, methodologies, standards to use for comparison, etc.

### **2.2 Project Contracts and Management**

37. A list of main organizations involved in the project and relating to Environmental Safeguards is given Table 2-1 and illustrated at Figure 2-4 Organogram of Environmental Safeguards of IWMP. It includes names of borrower, executing agency and Design and Supervision Consultant of IWMP and names and contact details of environmental staff of Project Management Office (PMO) and DSC.

**Table 2-1 Environmental Safeguards of IWMP**

|  |   |
|--|---|
| <b>Borrower</b>                                | Ministry of Finance of the Kyrgyz Republic  |
| <b>Executing Agency</b>                        | Department of Drinking Water Supply and Sewerage Development (DDWSSD) under State Agency for Architecture, Construction and Housing and Communal Services under the Cabinet of Ministers of the Kyrgyz Republic |
|  | Project Management Office (PMO)   |
| PMO environmental specialist                   | Mr. Kylychbek Zhundubaev  |
| email  | <a href="mailto:environmental@iwmp.kg">environmental@iwmp.kg</a>  |
| Tel:   | + 996 554 66 54 55  |
| <b>Design and Supervision Consultant (DSC)</b> |   |
| Organization:                                  | Temelsu International Engineering Services Inc  |
| DSC International Environmental Specialist     | Mr. Shaban Chimen   |
| email  | <a href="mailto:saban.cimen@temelsu.com.tr">saban.cimen@temelsu.com.tr</a>  |
| Tel:   | +996 706 490 063  |
| DSC National Environmental Specialist:         | Mrs. Olga Zinina  |
| email  | <a href="mailto:zinola@yandex.ru">zinola@yandex.ru</a>  |
| Tel:   | +996 555 47 55 77   |



**Figure 2-4 Organogram of Environmental Safeguards of IWMP**

38. 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. International and National Environmental Specialists of DSC
  - c. Contractor's environmental managers and/or environmental and safety officer responsible for environmental protection issues
39. Contractor and his EHS staff are responsible for preparation and implementation of SEMP.
40. International and National Environmental Specialists of DSC undertakes the technical oversight for the delivery of all safeguard measures, ensures that EMP mitigation and monitoring measures implemented, and compliance reporting completed.
41. PMO Environmental Specialist is responsible for overall management of the implementation of this project in regard to environment protection. Oversees application of safeguard measures for the project as a whole. He draws on consultants to provide inputs to EMP preparation, develops and delivers EMP-specified training.
42. PMO Environmental Specialist (Mr. Kylychbek Zhundubaev):
- Implements ADB Safeguard Policy and national legislation and practices.
  - Plans environmental strategies to meet targets and to encourage best practice.

- Plans the best tools and systems to monitor performance and to implement strategies.
  - Ensures compliance with national environmental legislation, IEE, EMP, SEMP, etc.
  - Assesses, analyze, and collate environmental performance data and reporting information.
  - Prepares plans and reports, such as SAEMR.
  - Contacts and liaises with regulatory bodies such as SCEC.
43. DSC International Environmental Specialist (Mr. Shaban Chimen) and DSC National Environmental Specialist (Mrs. Olga Zinina) assist the PMO Environmental Protection Specialist in coordinating and overseeing design, construction supervision and monitoring activities under the Project based on the contract.
44. The part of the work of the Environmental Experts of the DSC 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 before the commencement of civil works. DSC 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 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 Contractor to provide mitigation measures.

## **2.3 Project Activities During Current Reporting Period**

### **2.3.1 Conceptual Design**

45. A conceptual design report has been developed to be guide for detailed designs which covers the cities of Balykchy and Karakol located in Issyk-Kul Oblast.

#### **Balykchy Network:**

46. Sewerage network in this location is designed as an extension network to the existing one all along T. Moldo, Mambetalieva, Sharipova, Toktosunova, Kaldybaeva, and Ozernaya streets. Moreover, in the scope of this project the wastewater discharge of development area stays at the north of settlement also included in design calculations as an inflow to the system. However, the lines in the development area are out of the scope of the project. The total length of the pipelines for these streets is 10.3 km. After construction of network, approximately 8,760 people will be connected to the sewerage



system. According to the studies, there are 1600 houses in the project area and 600 houses in the development area. Within the scope of the project, only collector lines will be constructed. House connections, parcel manholes and connection lines are out of the scope of the project.

47. In parallel to the final agreement, Conceptual Design was revised and submitted back to APU/ETU (Russian acronym for Architectural and Technical Approval) for approval. Following the approval of APU/ETU detailed design studies were initiated for Balykchy network. (See paragraph 61 for progress of detailed design)

**Karakol Network:**

48. Sewerage network extensions are designed along the streets in five different sections of Karakol city. These streets are Zhamansariyev, Lenin, Alybakov, Abdrakh-manov, Gebze, Akhunbaev, Moskovskiy, Duisheev, Asanaliev, Tumanov, Kadyrov, Sovetskiy, Oktyabrskiy, Kuchukov, Lenin, Przhevalsky, Zhusayev, Udilov, Valikhanov. Moreover, in the scope of this project the wastewater discharge of development area stays at the south-east of settlement (Jolgot) also included in design calculations as an inflow to the system. In the scope of this tender package, total length of 11.3 km sewerage line and approximately 450 manholes will be constructed. When the project is completed, approximately 6.282 people can be connected to the sewerage system. Within the scope of the project, only collector lines will be constructed. House connections, parcel manholes and connection lines are out of the scope of the project.

**PS-4 Pump Station:**

49. In order to deliver the wastewater collected in Pristan region of Karakol to Karakol WWTP, there is a need to build a new pump station PS-4 to pump collected wastewater and transmit to existing pump station PS-2 which is connected to WWTP. The solution proposed in existing feasibility study is not applicable since, pressure pipeline from proposed PS-4 to existing PS-2 can easily be clogged during operation, especially at the point of minimum elevation of pipeline i.e., Karakol river crossing. Although for the future demand (320 m<sup>3</sup>/day) it is possible to operate proposed pump station, for the existing conditions wastewater flow rate will be very low (10 m<sup>3</sup>/day) considering the SNIP (Russian acronym for Construction Codes and Regulations) criteria for minimum pipe diameter and minimum flow velocity which will result in siltation in pipeline and clogging. Therefore, DSC proposed an alternative solution as not to construct PS-4 pump station building and pressure line for the beginning of operating period but in place to construct only wastewater storage tank (app. 50 m<sup>3</sup>) and purchase two vacuum trucks and transport cumulated waste to existing PS-2 (app. 3 km). Construction of pump station and pump line is proposed for the future when wastewater discharge will reach

200 m<sup>3</sup>/day. This solution is more economical in terms of initial investment and operation costs. Moreover, with proposed solution 100% of the houses in Pristan can be served through vacuum trucks since existing network cannot serve all houses in the settlement.

50. After the contribution of new Chief Technical Advisor to PMO, the alternative solutions proposed for Pristan evaluated again together with all parties. As the result of these discussions Consultant's proposal to build only emergency reservoir and purchase of two vacuum trucks in 1<sup>st</sup> phase and construction of pump station and pumping line from PS-4 to PS-2 in 2<sup>nd</sup> phase were accepted.
51. In parallel to the final agreement, Conceptual Design was revised and submitted back to APU/ETU for approval. Following the approval of APU/ETU detailed design studies were initiated for both phases. (See paragraphs 61 and **Ошибка! Источник ссылки не найден.** for progress of detailed design)

#### **Balykchy WWTP:**

52. On May 28, 2021, a Design and Build Contract was signed with the CCCC Tianjin Dredging Co., Ltd, China Road and Bridge Corporation and China Northeast Municipal Engineering Design and Research Institute Co. for the construction of Balykchy WWTP. During the reporting period, since the advance payment of the Contractor has not paid yet, the contract was not enter into force.

#### **Karakol WWTP:**

##### **Process Selection Report:**

53. After the contribution of new Chief Technical Advisor (CTA) to PMO, it was requested from consultant to prepare a Process Justification Report in order to verify that selected 5-Stage Bardenpho process is the optimum solution for Karakol WWTP. Draft Process Justification Report was prepared with the suggestions of CTA including the additional alternative processes and modified design criteria to minimize CAPEX/OPEX costs. The Draft Report is evaluated by PMO, and CTA and necessary revision are recommended. Revised Report is submitted to PMO which is forwarded to ADB for their no-objection. ADB requested from consultant to include a section in the report that compares the process alternatives in terms of environmental impacts. The report is revised in terms of environmental impacts of process alternatives and submitted to ADB. As of today, Consultant is waiting for the approval for the selected process.

##### **Sludge Sampling and Analyzing Plan:**

54. The main objective of the Sampling and Analysis Plan is to:

- carry out a systematic sampling program,
  - carrying out complete chemical analysis of sludge by taking composite sampling
  - determine whether the accumulated sludge is contaminated in accordance with the international standards and regulations,
  - in case sludge is uncontaminated, formulate the subsequent action plan for disposal of the sludge in an environmentally sound manner.
55. After approvals, Plan may be implemented, and samples can be analyzed. According to the results of analysis, if sludge is tested as uncontaminated DSC will prepare sludge management program that evaluates sludge disposal strategy, depending on the result of analysis. A transportation plan for defining the most straightforward and cost-effective way of transporting the sludge will also be included in the disposal strategy.
56. Submitted report was forwarded to ADB for no-objection. ADB reviewed the report and sent their comments on 6 May 2021 which indicates; to add pathogen parameters to be analyzed to the report, to give the reasons why final table of parameters are not consistent with Terms of Reference, information about biodiversity conservation and utilization of WWTP sludges classified as Class-3 (dangerous waste). Requested information is included into the report and submitted back to ADB for approval.
57. Most of the comments from ADB is related with sludge management more than sampling and analysis. Since the sludge management will depend on the result of analysis i.e metal and pathogen content, in order not to delay sampling and analysis the Consultant suggested to PMO and ADB to divide the report as sludge sampling, analysis and sludge management.
58. Submitted report once more reviewed by ADB and new comments were given on 14 June,2021. It was suggested to also include toxicity parameters for analysis including As, Ag, Se. As testing methodology, Toxicity Characteristic Leaching Procedure (TCLP) with USEPA Method 1311 is suggested to be used. Requested revisions are being done as of today.
59. During final discussions about the report, PMO asked from the Consultant to speed up the procedure for selection of Laboratories for the sampling and analysis of sludge. Since in Kyrgyzstan there are limited choice for the laboratories which has accreditation for sampling and analysis of metal parameters, international laboratories were also contacted. During reporting period proposals of international and national laboratories are expected. After receiving of all proposals an evaluation report together with the proposals will be prepared and submitted to PMO for their decision.

### **Sanitary Protection Zone (SPZ):**

60. SPZ modelling studies were completed at the during the previous reporting period and submitted to PMO on 25/11/2020 with letter and reviewed by PMO. After receiving comments from PMO, revised SPZ modelling study was submitted on 29/12/2020 was sent to ADB for information. SPZ is decided to be finalized after the completion of detailed design of Karakol WWTP.

### **Detailed Designs**

61. Balykchy and Karakol Sewerage Network detailed designs were approved without any revision and submitted to State Expertise. State Expertise approval has been received on 10 March 2021 for both networks.

### **2.3.2 Bidding Documents**

62. After submission of detailed designs for Balykchy and Karakol cities some sections of tender documents i.e., Bill of Quantities (BOQs), specifications in parallel with produced design document is being drafted in International Competitive Bidding (ICB) format. All documents and design drawings will be formatted and translated into English to satisfy the requirements of ICB type tender documents.
63. During the review period of State Expertise for detailed designs, Draft Bidding Documents were prepared for Balykchy Network and completed on 30 April 2021 and submitted to PMO for review. PMO decided to change the format of document to single-stage two envelope and decided to divide in to two equal lots. Necessary revisions are done and submitted back to PMO. The document is under review of PMO as of today. Karakol Network bidding documents are not submitted yet to PMO. After decision of PMO for the final format of Balykchy Bidding Documents, Karakol Draft Bidding Documents will be updated and submitted to PMO.
64. In order not to delay Karakol Network Tender, PS-4 pump station is excluded from W2 (Construction of Karakol Sewerage Network and PS-4 Pump Station) tender package and moved to W3 (Construction of Karakol WWTP) tender package. When detailed designs of PS-4 and Karakol WWTP are completed and approved both by PMO and State Expertise bidding documents for W3 package will be prepared.

### **2.3.3 Construction**

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

### **2.4 Description of Any Changes to Project Design**

66. The treatment process type of the Karakol WWTP is under the discussion, which could not be settled during the reporting period.

**2.5 Description of Any Changes to Agreed Construction methods**

67. There are no construction activities yet.

### 3 ENVIRONMENTAL SAFEGUARD ACTIVITIES

#### 3.1 General Description of Environmental Safeguard Activities

##### **Balykchy Sewerage Network Extension:**

68. Related to the environmental aspects of Balykchy Sewerage Network Extension the following activities have been realized by PMO, Balykchy Project Implementation Unit (PIU) and DSC.
- Preparation of Final EIA (OVOS) Report and OOS of Balykchy Sewerage Network Extension on 30/September/2020. Copies of OVOS reports for Balykchy sewerage extension lines have been submitted to the government agencies a few days before the meeting who could not access to the OVOS have been also provided.
  - Getting approval of OOS Report of Balykchy Sewerage Network Extension on 26/February/2021.
69. The approval letter of OOS of Balykchy Sewerage Network Extension includes the following aspects mainly (See Appendix I - SN Balykchy letter no 02-4-178 from Issyk-Kul Territorial Administration (IKTA) of SAEPF):
- Location where design work of sewerage network has been carried out.
  - The national legislation considered during the design and that will be considered during the construction.
  - Design criteria applied.
  - Sanitary Protection Zone characteristics.
  - Impacts of the construction activities on the environment.
  - Environmental protection measures to be applied.
  - Coordination and approval requirements if any technological changes applied to the design during the construction with by Issyk-Kul Territorial Administration of SAEPF.

##### **Karakol Sewerage Network Extension:**

70. Related to the environmental aspects of Karakol Sewerage Network Extension the following activities have been realized by Project Management Office (PMO), Karakol PIU and DSC.
- Preparation of Final EIA (OVOS) Report and OOS of Karakol Sewerage Network Extension on 29/October/2020. Copies of EIA (OVOS) reports for Karakol sewerage extension lines have been submitted to the government agencies by e-mail, and all participants have been provided copies before the meeting.
  - Getting approval of OOS Report of Karakol Sewerage Network Extension on 26/February/2021.

71. The approval letter of OOS of Karakol Sewerage Network Extension includes the following aspects mainly (See Appendix I - SN Karakol letter no 02-4-179 from IKTA of SEAPF):

- Location where design work of sewerage network has been carried out.
- The national legislation considered during the design and that will be considered during the construction.
- Design criteria applied.
- Sanitary Protection Zone characteristics.
- Impacts of the construction activities on the environment.
- Environmental protection measures to be applied.
- Coordination and approval requirements if any technological changes applied to the design during the construction with by Issyk-Kul Territorial Administration of SAEPF.

**Construction of a Pump Station (PS-4) at Pristan, Karakol city:**

72. With regard to environmental aspects of constructing a pumping station (PS-4) in Pristan, Karakol:

- after the final decision is made, OVOS will be carried out in accordance with the requirements of national legislation.

**Karakol WWTP Reconstruction**

73. Related to the environmental aspects of Karakol WWTP Reconstruction the following activities have been realized by Project Management Office (PMO), Karakol PIU and DSC.

- Review of Critical Habitat Assessment of Central Asian frog at Karakol WWTP in accordance with (International Finance Cooperation (IFC) Performance Standards no. 6.;
- Preparation and Review of the environmental section of “Justification Report for Secondary Treatment, Sludge Dewatering and Disinfection Alternatives of Karakol WWTP”.

**Balykchy WWTP Reconstruction**

74. Conduction of biological survey Crex Crex at Balykchy WWTP reconstruction site and wastewater ponds according to the EMP given in IEE.

**Sludge Sampling Program**

75. Contribution is provided to the preparation of sludge management report both international and national environmental specialists of DSC.

**3.2 Site Audits**

76. Formal audit activity has not been realized during the reporting period.

**3.3 Issues Tracking (Based on Non-Conformance Notices)**

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

**3.4 Trends**

78. 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**

79. Asbestos cement pipes might be faced during the construction phase; therefore, an Asbestos Containing Materials management plan will be required for the removal and disposal of these hazardous material.



## 4 ENVIRONMENTAL MONITORING RESULTS

### 4.1 Overview of Monitoring Conducted during Current Period

80. During the current reporting period only Corncrake (*Crex crex*) biological background survey has been realized at Balykchy WWTP and wastewater ponds area. The biological survey report has not been prepared during the current reporting period. The initial observations indicate that there is only two Corncrake (*Crex crex*) species in the vicinity of wastewater ponds.

### 4.2 Trends

81. On the territory adjacent to the site Balykchy WWTP Corncrake (*Crex crex*) has been identified during the biological survey studies conducted during the preparation of IEE: This species is included in the Red Book of the Kyrgyz Republic. And its presence gives a special status to the project on the rehabilitation of sewage treatment facilities with the development of special protective measures in case of disruption of the Corncrake (*Crex crex*) habitat. Since Corncrake (*Crex crex*) is a migratory species, their nests change from year to year. According to the Red Book of Kyrgyzstan "It arrives in the beginning of May and starts to display, usually during nighttime. Prefers running among grass rather than flying. Uses for food insects, rarer in seeds of the crops. Lays 8-10 eggs, fledglings appear in the second half of June." Mr. Davletbakov, competent biologist, has conducted Corncrake (*Crex crex*) biological survey between dates 3/June/2021 and 7/June/2021. A survey report could not be prepared a during the reporting period on Corncrake (*Crex crex*) biological survey.

82. Number of Corncrake (*crex crex*) the observed number during the preparation of IEE and biological survey conducted between dates 3/June/2021 and 7/June/2021 are given at the Table 4-1.

**Table 4-1 Comparison of Number of Corncrake**

| Species   | Number Given in IEE               | Number Observed in Biological Survey (3/June/2021 - 7/June/2021) |
|-----------|-----------------------------------|--|
| Corncrake | One species at Balykchy WWTP area | Three species at vicinity of Balykchy wastewater ponds area      |

### 4.3 Summary of Monitoring Outcomes

83. The following environmental monitoring program has been envisaged to be conducted during the construction period:

- 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
84. During the current reporting period only, biological survey of Corncrake has been performed at Balykchy WWTP.
85. Based on the sludge analysis results, additional biological surveys might be required depending on the requirement of the disposal sites of the sludges.

#### **4.4 Material Resources Utilization**

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

#### **4.5 Waste Management**

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

#### **4.6 Health and Safety**

88. 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.
89. In this respect DSC has prepared a Health and Safety Plan during the previous SAEMR period, which is applied in the office, field and meeting activities have been organized according to the given plan. No COVID-19 cases have been recorded during the previous reporting period.

#### **4.7 Training**

90. 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**

91. Since the construction activities have not been commenced any SEMP has not been developed. Therefore, there are no comments on SEMP.

## **6 GOOD PRACTICES AND OPPORTUNITY FOR IMPROVEMENT**

### **6.1 Good Practice**

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

### **6.2 Opportunities for Improvement**

93. There isn't any activity that can be proposed as opportunity for the improvement.

## **7 SUMMARY AND RECOMMENDATIONS**

### **7.1 Summary**

94. During the current reporting period the following activities have been carried out:

- Preparation of Final EIA (OVOS) Report on Extension of Balykchy Sewerage Network
- Preparation of OOS section of Extension of Balykchy Sewerage Network
- Preparation of Final EIA (OVOS) Report on Extension of Karakol Sewerage Network
- Preparation of OOS section of Extension of Karakol Sewerage Network
- Conduction of Biological Survey for investigating the presence of Corncrake at Balykchy WWTP and wastewater ponds area.
- Preparation of the environmental impact assessment section of “Justification Report for Secondary Treatment, Sludge Dewatering and Disinfection Alternatives of Karakol WWTP”.
- Contribution to the preparation of Sludge Sampling and Analysis Plan

### **7.2 Recommendations**

95. Sludge disposal method has not been approved. The disposal method will depend on quality of sludge and its contamination with heavy metals and pathogens. 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. Solid waste, sludge disposal sites which have been proposed by Balykchy and Karakol PMO's have been visited on 15 September 2020 and 16 September 2020 during the reporting period July-December 2020, respectively. According to the sludge analysis results, if the disposal of sludge is decided to be disposed then additional biological surveys might be conducted.
96. Existence of the Corncrake (*crex crex*) in the wastewater ponds of the Balykchy WWTP has been investigated. The biological survey conducted during the preparation of IEE had reported that Corncrake (*crex crex*) species was in the vicinity of WWTP area. The solution related to the protection of species related to the commencement of construction activities. Since Corncrake (*crex crex*) is a migratory species, to investigate the nesting places of it additional biological surveys will be needed during the construction period early in May each year.