

Environmental Monitoring Report

Semi-annual report

December 2019

L2869/G0294-KGZ: Power Sector Rehabilitation Project

Prepared by the Open Joint Stock Company Electric Power Plants, with the assistance of the Project Implementation Consultant Fichtner GmbH & Co. KG –Energy, Germany

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Final Environmental Monitoring Report

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Abbreviations

ADB	Asian Development Bank
ACM	Asbestos Containing Materials
CC	Construction Contractor
EA	Executing Agency
EMP	Environmental Management Plan within IEE
EPP	Electric Power Plant Company
ES	Environmental Specialist
HPP	Hydro Power Plant
H&S	Health and Safety
HSE	Health, Safety and Environment
kV	Kilovolt
IPID	Investment Projects Implementation Department within EPP
IEE	Initial Environmental Examination
LLC	Limited Liability Company
LV	Low Voltage
OHL	Overhead Line
OHS	Occupational Health and Safety
PIC	Project Implementation Consultant = FICHTNER
PIU	Project Implementation Unit within EPP for 'Power Sector Rehabilitation Project'
ROV	Remotely Operated (underwater) Vehicle
SAEPF	State Agency of Environment Protection and Forestry
SAEMR	Semi - Annual Environmental Monitoring Report
SSEMP	Site Specific Environmental Management Plan
WB	World Bank

1. INTRODUCTION

1.1 Preamble

1. This report represents the Final Environmental Monitoring Review (FEMR) for Kyrgyz Republic: Power Sector Rehabilitation Project, Toktogul HPP Rehabilitation Phase 1 (the Project).
2. The Project has now been completed and this report represents the final submission relating to Environmental Monitoring. The report provides Environmental Monitoring Report (EMR) information since the last Semi-Annual EMR (SAEMR) covering the period January to June 2019 and additional information relating to an overview of the performance of the performance of the project during the construction phase in terms of environmental safeguard application.

1.2 Report Format

3. This FEMR is divided into two main sections. The first section provides information relating to the final construction period, extending from the date of the last SAEMR which was the July 2019(https://www.adb.org/sites/default/files/project-documents/44198/44198-013-emr-en_3.pdf), through to the formal end of the construction period which is 30 November 2019. This information is a continuation of the previously submitted SAEMR's, a total of 12 of which have been submitted starting with the first SAEMR in 2013 (July to December 2013) and since project construction commenced in May2015.
4. The second section is intended to provide a summary of the whole project construction and its compliance with ADB safeguards. This information will assist ADB and the PIU in reporting the overall outcomes of the project SEMP Monitoring and further, will allow lessons learned to be documented and used by ADB and PIU's in their process of continuous improvement.

1.3 Overview of Project and Main Stakeholders

1.3.1 Project Description and Purpose

5. The backbone of Kyrgyz power generation is the Naryn River with its several hydropower plants (HPP), namely At-Bashy, Kambarata, Toktogul, Kurpsai, Tash-Kumyr, Shamaldy-Say and Uch-Kurgan.
6. Electricity demand in Kyrgyz Republic is highly seasonal with two thirds of domestic consumption taking place in autumn and winter. Although electricity generation capacity has

nearly doubled since the Soviet era, load shedding is frequent. This is especially the case in winter, when hydropower output is limited due to low river discharge, while cuts arise from problems due to technical failures in the outdated generating equipment.

7. In order to sustain power generation of the Toktogul HPP located near Kara-Kul city (Picture 1), the Asian Development Bank (ADB) is financing the rehabilitation of this hydropower station.



Picture 1. Location of Toktogul HPP in the scale of the country

1.3.2 Stakeholders

8. The entire Project Phase 1 consists of 4 Lots.
 - Lot 1 of the Project was completed in November 2015 (Annex 1);
 - Lots 2 and 3 were finalized in December 2018 (Annex 2 and Annex 3), the Post Construction Environmental Audits were conducted in December 2018 and are given in Annex 4, Annex 5, and
 - Lot 4 was finalized in November 2019 (Annex 6) and the Post Construction Environmental Audit was done in November 2019 (Annex 7).

**Table 1. Project' Contractors under implementation of PSRP Toktogul HPP
Rehabilitation Phase1 Project**

Contracts	Title	Construction Contractors	Subcontractors
D-34-25/235 dated 18 May 2015	Lot I - Underwater Inspection	JV of BSR. Co.Ltd and AQUADRON Inc.	-
D-34-18/554 dated 21 December 2015	Lot II - Replacement of secondary electrical and mechanical components	JOC Technical Engineering Co., Ltd.	Electroprivod LLC
D-34-20/428 dated 12 October 2015	Lot III - HV Cables and its connection systems	Consortium of LS Cable and System Ltd. And SM Powertech Co.Ltd.	BIOR LLC
D-15-37/588 dated 27 Dec 2017	Lot IV - Equipment for 500 kV Substation and 500 kV Cable Transition Point	Genser Genel Muhendeslik Taahutve Ti caret A.S.	-

9. Stakeholders involved in the Project's implementation have been:

- Asian Development Bank ADB, Donor;
- OJSC Electric Power Plants (EPP), Executing Agency
Investment Projects Implementation Department (IPID), Project Implementation Unit
(PIU, email: piu2@es.kg);
- Fichtner GmbH & Co. KG, Germany, Project Implementation Consultant
(email: harald.von-Bueren@fichtner.de).

10. The Investment Projects Implementation Department (IPID) is the one of EPP's departments and specially assigned for implementing projects funded by international development organizations such as ADB and World Bank (WB) etc.

11. The IPID administers all consulting and procurement contracts on behalf of EPP. It is responsible for bid evaluation, contract award, construction supervision, and report to the Government, and ADB.

2. FINAL REPORTING PERIOD

2.1 Project Activities During Current Reporting Period

12. In current reporting period Lot 4 works were implemented. In Table 2 activities as performed during the reporting period are given:

Table 2. Activities implemented during reporting period for Lot 4

#	Month, 2019	Activity
1	July	Installation of HV equipment, cables and auxiliary systems for line L509 and Bus Bar 1 related equipment. Energizing of line L509 and Bus Bar 1 related newly installed equipment.
2	August	Installation of HV equipment, cables and auxiliary systems for Bus Bar 2 related equipment.
3	September	Installation of HV equipment, cables and auxiliary systems for Bus Bar 2 related equipment. Energizing of Bus Bar 2 related newly installed equipment.
4	October	Installation of HV equipment, cables and auxiliary systems. Energizing of newly installed auxiliary equipment. Elimination of defects.
5	November	Elimination of defects. Finalization setting up of site.

Rehabilitation works were implemented at 500 kV Substation, transition point and along the cable duct running through the tunnel from substation to the Toktogul power plant (Picture 2-Picture 22). All these project activities are restricted to the property of OJSC EPP with no access for unauthorized persons.

Pictures of Lot 4 works during reporting period are shown in Annex 8.

13. During the site visit of PIC Fichtner HSE specialist took place on 15 October 2019 most of the works at transition point and at switchyard site have been finalized (Picture 11, Picture 12, Picture 13 **Error! Reference source not found.**). Some works left as electrical grounding at the transition point as electrical works at the switch yard site, rehabilitation of cable duct within the tunnel connecting switchyard with power house. Removal of waste from switch yard site is one of the main remaining environmental issues found in October 2019 that have to be done (Picture 14, Picture 15).
14. Concrete old cover plates are handed over to EPP and stored intermediately on EPP site, status in October 2019 (Picture 16).
15. In November 19 (final) inspection, which can be considered as the post-construction audit, all the works at the site were completed, wastes were removed, including the containers

with asbestos, and the switchyard remained in the full order. And the Post-Construction Environmental Audit was conducted (Annex 7).

16. A final post construction site audit took place in November 2019. A container for intermediate storage of asbestos containing material has been delivered (Picture 19).
17. Between July and October approximately 50 workers of Genser have been on site. After this time period this number decreased to 30-20 workers.

2.2 Description of Any Changes to Project Design

18. For Lot 1 to 4 there were no changes in the design that are not covered by the corresponding IEE.

2.3 Description of Any Changes to Agreed Construction methods

19. There have been no changes of agreed construction methods.

2.4 Environmental Safeguard Activities

2.4.1 General Description of Environmental Safeguard Activities

20. The routine activities by environmental safeguards staff of construction contractors during the reporting period are as following:

A regular monthly site visit were conducted by PIC's national environmental specialists (ES) Ms. Djamila Aitmatova together with the ES of PIU/EPP Ms. Jyldyz Moldosanova. A quarterly site inspection was conducted by the international HSE specialist (Mr. Hans Back) in October 2019 together with ES of PIU/EPP Ms. Jyldyz Moldosanova. A final post construction site audit was then performed on November 19, 2019 by PIC's national environmental specialist (ES) Ms. Djamila Aitmatova together with the ES of PIU/EPP Ms. Jyldyz Moldosanova. Site visits and audits in the reporting period are given in Table 3.

21. Beside these specialists, Mr. Orozaliev Aibek is employed by the Turkish Contractor Genser for Lot 4 as HSE Officer was permanently on site and providing SSEMP and ACMM Plan implementation reports to PIU on a monthly basis.
22. Rehabilitation works were implemented at 500 kV Substation and along the cable duct running through the tunnel from substation to the power plant. All these project activities are restricted to the property of OJSC EPP with no access for unauthorized persons.

23. All wastes are segregated (wood, concrete, domestic, cable/metals) and taking over by EPP (Picture 24 - Picture 29). Domestic and construction wastes were managed under the signed Agreement on waste removal and stored at the official landfill of Kara-Kul.
24. Genser's HSE officer on site performs weekly general HSE training to the workers with special focus on asbestos handling. In addition, every new person starting work on site gets an induction training on HSE issues.
25. During the site visits in reporting period the handling of asbestos containing plates were put into plastic bags and stored in containers. Workers were provided with special PPEs for works with ACM and a shower room (Picture 30, Picture 31). According to ACMMP the asbestos containing plates have been stored at designed storage area of Toktogul HPP after completion of works in locked containers (Picture 22).
26. According to Supplementary IEE for Lot 4 works, §8.1.2. Handling of asbestos containing material: When new landfills for solid waste will be available in future, fulfilling international and Kyrgyz requirements, the asbestos containing material shall be moved to one of these landfills for final disposal.

2.4.2 Site Audits

27. As shown above in Section 2.4.1 regular site visits were conducted by PIC's international by PIC's national environmental specialist and by ES of PIU/EPP (details see in Table 3.)

Table 3. Site visits and audits in the reporting period

Organization	Purpose	Performed by	Date
PIC Fichtner PIU	Monthly site inspection of actual construction sites at Toktogul HPP	PIC Fichtner: Local ES Ms. Dj. Aitmatova, EPP: ES Ms J. Moldosanova	27 August 2019
PIC Fichtner PIU	Monthly site inspection of actual construction sites at Toktogul HPP	PIC Fichtner: Local ES Ms. Dj. Aitmatova, EPP: ES Ms J. Moldosanova	24 September 2019
PIC Fichtner PIU	Quarterly site inspection of actual construction sites at Toktogul HPP	PIC Fichtner: International ES Mr. H. Back; EPP: ES Ms J. Moldosanova	15 October 2019
PIU	Participating in Project Review Mission of ADB	EPP: ES Ms J. Moldosanova	29 October 2019
PIC Fichtner PIU	Final site inspection of actual construction sites at Toktogul HPP	PIC Fichtner: Local ES Ms. Dj. Aitmatova, EPP: ES Ms J. Moldosanova	19 November 2019

28. The waste situation was partly unsolved as found during the site visit on 15 October 2019. Especially the asbestos containing material was not properly stored in containers required by the SSEMP (Picture 14). This situation improved as found during the final post-

construction site audit performed on November 19, 2019: the containers with asbestos were removed to the “Baza 3” (storage) site of the Cascade of Toktogul HPPs (Picture 19, Picture 22).

2.4.3 Issues Tracking (Based on Non-Conformance Notices)

29. During the inspection visits for environmental monitoring and checking compliance with the HSE requirements, the PIC’s and the PIU Environmental Teams checked the substation site and the area along the cable duct to the tunnel and inside the tunnel. The availability and use of PPE by workers at construction sites was inspected, and timely collection and disposal of household and construction waste. In addition, meetings were held with managers and employees of construction contractors, where issues of compliance with the HSE requirements, briefing of construction workers, implementing the provisions of the Project environmental documents - EMP and the HSE Management Plan were discussed. All the remarks and recommendations reflected by the PIU and PIC environmental teams were timely corrected and reported accordingly during next several days.
30. Occupational health and safety: Inspection visits to the Toktogul switchyard site demonstrated that generally all workers comply with the safety requirements. In rare cases observed, some workers did not use proper PPE. After remarks from the inspection team, immediate correction actions were made from the part of contractor (**Picture 32**).
31. Physical works to Lot 4 commenced in May 2018. All foundation work to install the new equipment has been completed. Meeting with the construction contractor Genser environmental specialist demonstrated that all required Management Plans for Occupational safety, management of materials containing asbestos, and the Management Plan for HSE issues at the site were in place. There is also a book of complaints for local residents available. Not any complaints were registered. The book "Environmental Monitoring" to record the comments of the Consultant and the PIU EPP environmental specialists, have been using for improving performance of works at the site. A Briefing Book in a standard form available on the workplace.

2.4.4 Trends

32. During the entire construction Phase no major non-conformances occurred so far. No accidents or severe incidents occurred. Only small issues were found most of them are related to not wearing proper PPE of single workers (Table 4) At the beginning and during construction some minor non-conformances especially not wearing appropriate PPE was found to happen in the responsibilities of CC Genser (Picture 35). This was requested and discussed with the HSE officer of CC many times. It can be stated that the situation improved during the construction period.

33.

Table 4. Trends in issues

Quarterly Report No	Total No of Issues	% issues Closed	% issues closed late
9	2	100	0
10	5	80	20
11	4	75	25
12	4	75	25

Many workers appreciate the necessity of wearing personal protective equipment (PPE) while at work. But for every willing employee, there is also a stubborn one who would rather gamble with their safety. The reason of this was the uncomfortable filling (wearing helmets, shockproof shoes) and the very hot weather in summer. Convincing workers to keep their helmets and shoes was done through detail explanation of consequences of not wearing PPE while work. And if a worker would not wear their PPE without good reason – despite employer’s attempts to accommodate them – it could be considered gross misconduct and dismissal was allowed.

2.4.5 Unanticipated Environmental Impacts or Risks

34. During the entire construction phase to Lot 4 no major non-conformances occurred so far. No accidents or severe incidents occurred. Only small issues were found, most of them are related to not wearing proper PPE of single workers (Picture 35).

2.5 Results of Environmental Monitoring

2.5.1 Overview of Monitoring Conducted during Current Period

35. According to IEE/EMP, it was and it is not planned to measure instrumentally parameters of water, air and noise.
36. Significant dust emissions of works done during the reporting period did not occur. Suppression of dust with water was implemented regularly at site. Exhausts from trucks transporting cement, gravel and concrete can be considered to be minimal and truck movements are restricted to Toktogul HPP site (except for transportation of equipment to the site).
37. A regular instrumental monitoring of noise and vibrations is not foreseen for this Project according to the IEE/EMP. However, the construction contractor is obliged to take care that workers wear ear protectors in times of high sound pressure (Picture 33).
38. All works take place within the area of Toktogul HPP where no access for unauthorized persons (Picture 34). All access roads already exist and are paved. Thus flora and fauna is not affected by the rehabilitation works.

2.5.2 Trends

39. The cooperation among contractors and consultants during relevant and on-time consultation can contribute to effective execution of EMPs. But sometimes, contractors do not hire environmental specialists, especially local contractors.
40. With respect to receiving government permissions (waste disposal), contractors have gotten better at obtaining all necessary permissions.
41. Clients and PIUs need to be guided and informed more often and in detail about importance of Environmental Safeguards of projects and following the projects measures. Appropriate trainings and sharing of good practice are highly required.

2.5.3 Summary of Monitoring Outcomes

42. There is no need for additional monitoring. Beside the regularly site visits (monthly, quarterly, semi-annually) the improvement of the waste disposal (especially asbestos) is supervised on a daily basis by the site managers of the PIC being on site.

2.5.4 Material Resources Utilisation

Current Period

43. Monitoring of material resources utilization such as electricity, water is complex due to the lack of separate counters for CCs that is why this measure was not implemented.

Cumulative Resource Utilisation

44. There are no monitoring activities for utilisation of resources foreseen in the SSEMP.
45. Scrap metals is collected by EPP for further use or recycling.

2.5.5 Waste Management

46. Domestic waste has been collected and disposed of at the municipality landfill of Kara-Kul. Concrete wastes from civil works have been reused as much as possible by the Client/Toktogul HPP according to norms and regulations.
47. Waste streams during current Period is given in table 5.

Table 5. Waste streams during current reporting period

Type of Waste	Waste Source	Quantity of waste generated	Treatment/disposal route
Old cables (non-hazardous)	Dismantling of old cable ducts	3 tons	Reused or recycled
Scrap metals, wood, packaging material (non-hazardous)	Dismantling of old cable ducts	NA	Reused or recycled
Construction waste (concrete) (non-hazardous)	Civil works	955 tons	Reused and stored at authorized landfill of Kara-Kul
Construction waste (ceramic) (non-hazardous)	Civil works	50 pieces	Reused or recycled
Domestic solid waste (non-hazardous)	Domestic life	28 m ³	Stored at the authorized landfill of Kara-Kul
Hazardous asbestos containing waste	Civil works	23 tons	Stored at storage area No3 of the Cascade of Toktogul HPPs

Cumulative Waste Generation

48. All wastes were collected and is segregated in concrete, wood, package material, scrap metals, domestic waste and in hazardous asbestos containing material.
49. All wastes have been reused as much as possible. Asbestos containing waste was put into double plastic bags, stored in containers and transported to storage area of the Cascade of Toktogul HPPs.

2.5.6 Health and Safety

Community Health and Safety

50. During the reporting period not any accident or incident occurred resulting in a Community Health and Safety issue.

Worker Safety and Health

51. During the reporting period not a single worker's accident or severe incident occurred. Regular safety instructions were given by the HSE staff of the contractors. All safety issues were monitored permanently by the HSE staff on site and by the site managers of the PIC during their daily tours. In addition, monthly, quarterly and semi-annually audits by the national, international environmental specialists of the PIC and by the EPP's environmental specialist has been conducted during the reporting period.
52. Medicine and first aid kit and a shower room are available at field office of CC.

2.5.7 Training

53. A first training program was implemented in 2013. In December 14 2016, an environmental group of the Project Consultant (Mr. H. Back and Ms. D. Aitmatova) held a second HSE training course for Construction Contractors of Lots 2 and 3, and Toktogul HPP staff together with the PIU environmental specialist (Ms. J. Moldosanova) at the Toktogul HPP office in Kara-Kul.
54. In April 6, 2017, training on PCBs was conducted by the PIC Fichtner environmental team (Mr.H.Back and Ms. D.Aitmatova), EPP's environmental specialist (Ms. J. Moldosanova) and invited expert Ms. T.Neronova - for Construction Contractors of Lots 2 and 3, and Toktogul HPP staff in the Cascade of Toktogul HPPs conference room.
55. Specifically, Ms. T. Neronova's presentation was devoted to risks and danger of PCB. A second presentation of Ms. T.Neronova was devoted to «Testing of the transformer oil for

- PCB using the L2000DX analyzer equipment». This training contained also a practical section how to use the L2000DX.
56. In October 17, 2018, Fichtner's local environmental expert, Ms. Djamila Aitmatova, conducted an HSE training devoted to consideration of three documents prepared by the Lot 4 construction contractor Genser: Special focus was given to handling of asbestos containing material.
 57. During the site visit in December 2018, the HSE officer of CC Genser was made aware of appropriate asbestos handling again. The measures stipulated within CC Genser's general HSE Plan, within the 'supplementary IEE' prepared by PIC Fichtner on behalf of EPP, within CC Genser's 'site specific EMP' and within Genser's 'Asbestos-Containing Material Management Plan' shall be followed up. Correct asbestos storage was explained again. Material containing asbestos was shown in the field to the HSE officer and to the site manager of CC Genser. Plates indicating names and phone numbers of responsible personal and of the next hospital shall be put on site and handed out to the workers. Who has to be called in case of an emergency, incident or accident etc. A new first aid kit shall be purchased.
 58. Fichtner's HSE Specialist Mr Hans Back conducted an HSE training for Toktogul HPP's and Construction Contractor's staff at the Cascade of Toktogul HPPs study centre. This training was carried out at Kara-Kul on 25 March 2019, altogether 24 persons took part in this training. The International Health and Safety requirements during construction, possible environmental and social impacts of projects and their mitigation and compensation, HSE management during operation, and some Toktogul HPP specific HSE issues were communicated. After the presentations room was given for a discussion.
 59. Training on OHS aspects was conducted on April 23, 2019 by environmental expert of the Project Ms. Djamila Aitmatova for Genser personnel and personnel of Tokotgul HPP. It was divided into 2 sessions. The first was conducted in the office of PIC Fichtner, in which Genser's HSE staff and Project manager attended. From the part of the PIU Ms. Jyldyz Moldosanova attended.
 60. The second session was conducted in the office of Toktogul HPP, during which 5 employees of the Service of Reliability and Safety attended.
 61. During the presentation "National legislation in environmental protection and occupational health and safety at the Toktogul HPP 500kV switchgear" Dj. Aitmatova informed about principal laws and by-laws in this sphere. The following legislative documents were considered:

- Decree of the KR Government №344 of 07.13.2001.(List of medical psychiatric contraindications for people with mental disorders, when working with hazard sources, under exposure to hazardous substances and negative work environment factors, including asbestos-containing substances and wastes);
 - SanPiN 2.2.3.013-03 “Work with asbestos and asbestos-containing materials” (2003);
 - Hygienic requirements for disposal of industrial and household waste" (2003, RF);
 - Hygienic standards GN 2.1.6.1339-03 "Approximate levels of safe exposure to pollutants in the atmospheric air of populated areas" (2003, RF);
 - Decree of Kyrgyz Government of May 16, 2011 No. 225 "On Approval of Normative Legal Acts of the Kyrgyz Republic in public health "(negative effects on the health of workers in the performance of certain types of work, a series of documents);
 - Law of the Kyrgyz Republic on public health (2009);
 - Law of the Kyrgyz Republic “Technical Regulations on Environmental Safety” (waste).

62. General approaches in public health were also considered based on the:

- Law of the Kyrgyz Republic On Public Health;
- Section 7. Requirements of the Legal Entities;
- Article 11. Requirements for substances and factors potentially hazardous to human health;
- Article 13. Soil safety, waste collection and disposal.

and

- Duties and responsibilities of managers (Instructions on the mandatory periodic medical examinations of employees prior to receive a permit-to-work);
- Obligations and responsibilities of employees (those subject to medical examination);
- Responsibilities and duties of health organizations;
- Special attention was drawn to the issues of asbestos handling, hazards and consequences of its inappropriate application (Annex 9).

3. SUMMARY OF SAFEGUARDING DURING CONSTRUCTION

3.1 Changes in Design, Construction and Management

3.1.1 Design

63. There have been no changes in the design as considered in the corresponding IEE. In 2017 it was decided to add a Lot 4 which implementation started in May 2018. Before, a supplementary IEE was prepared to Lot 4 which was approved by the State Agency of Environmental Protection and Forestry under the Government of the Kyrgyz Republic. Major component of this IEE was the handling of asbestos containing material.

3.1.2 Construction Processes

64. There have been no changes of agreed construction methods and as described in the IEE and supplementary IEE developed to the Projects.

3.1.3 Project Organisation

65. There was no major change in structure during the entire project implementation.

3.2 Summary of Safeguard Compliance During Project Construction

66. General compliance of the project related works can be considered as sufficient/good. All the construction contractors paid serious attention to the compliance with environmental requirements reflected in the national legislation, ADB policies, and IEE EMMP. No one case of oil leaks at the construction sites was registered during the Phase 1 implementation. Air quality was protected via use of safely operating mechanisms, permanent environmental control over the operating machinery emissions by the dedicated personnel of the contractor companies at the every day basis and by the PIU and PIC at the monthly basis.

67. The non-conformances found during Phase 1 period generally related to the PPE's of the individual workers, who were provided with protective equipment, but sometimes when working at the site they did not use them. Especially, it was related to the ear-protective equipment, glasses and helmets.

68. A summary of common themes encountered during the construction phase is given in Table 6.

Table 6 - Common Themes of Problems During Construction

Item No	Theme	Root cause	Possible solutions for future projects
1	Insufficient construction waste management practices	Shortage of disposal locations in area.	Review of potential disposal sites should form part of the EIA/IEE process
2	Insufficient asbestos containing materials management practices	There is no any chance to dispose of asbestos containing cement wastes since at the legislative level such sites do not exist yet. Therefore we have to keep the asbestos in the containers at the Toktogul HPP's site until the government makes an appropriate decision.	Review of potential disposal sites should form part of the EIA/IEE process
3	Insufficient old dismantling oily equipment disposal management by the Client	Dismantled old oily equipment is remaining at the Client's storage area with risks of environmental pollution and safety instead of being sold out to appropriate licensed organizations due to bureaucratic procedures	Set up durations of selling of dismantled old oily equipment for the Client in EIA/IEE of the Projects

3.2.1 Summary of performance of Grievance Redress Mechanism

69. A Grievance Redress Mechanism (GRM) was developed within the scope for preparing the IEE and EMP. This GRM was maintained during the whole duration of the Project's implementation. It describes the mechanism how to redress the affected peoples' (AP) grievances in a timely and effective manner.
70. The GRM was implemented end of 2016. Since the beginning of Project's implementation not any complaint from workers or from public has been raised because of the project activities.

3.3 Summary of Monitoring Results for Construction Phase

3.3.1 Monitoring/Measurements

71. During the entire construction period of Lot 1 to Lot 4 no severe accident or incident to workers happened at any constructions site within the area of Toktogul HPP. Only minor non-compliances occurred which could be solved immediately or in a short time of period (oil drops at working areas, not using of helmets by workers).
72. According to IEE/EMP the monitoring of air, water, and noise quality were not foreseen and were not conducted.

3.3.2 Resource Utilisation

73. There are no monitoring activities for utilisation of resources foreseen in the SSEMP.
74. Scrap metals is collected by EPP for further use or recycling.
75. Domestic waste has been collected and disposed of at the municipality landfill of Kara-Kul. Concrete wastes from civil works have been reused as much as possible by the Client/Toktogul HPP according to norms and regulations.

3.3.3 Health and Safety

76. During the construction period not any accident or incident occurred resulting in a Community Health and Safety issue.

3.4 SEMP Review

3.4.1 Changes in SSEMP

77. A change of the SSEMP originally developed to the Project became not necessary. To the additional Lot4 a supplementary IEE including management plan has been developed and has been approved by ADB and by national State Agency of Environment Protection and Forestry.

3.4.2 SSEMP Effectiveness

78. The environmental mitigation measures developed within the SSEMP have been effective and could be implemented without problems. A modification of the SEMP became not necessary.

3.4.3 Unanticipated Impacts

79. Unanticipated impacts did not occur. All impacts happened have been covered by the IEE/SEMP developed to the Project.

4. LESSONS LEARNED

4.1 Good Practice

80. For temporary storage of removed oil from the 500 kV cable (before sending it to Osh Power Plant for burning) a hall with concreted floor and a metal roof was constructed. The concreted floor was fitted with a drainage system around to hinder eventually leaking oil from polluting the soil.
81. For proper temporary storage of asbestos containing material, a designated, well signed site was prepared. The asbestos containing material is being packed in plastic bags and these plastic bags are being stored in a closed metal container.

4.2 Opportunities for Improvement


82. Indirect measure to improve the environmental situation around Toktogul HPP site could be to develop a landscape managing plan and to propose areas where native trees and shrubs could be planted and green areas created. This would have both a positive aesthetic effect and a general positive environmental and ecological impact on and in the area.
83. In general, requirements of EMPs were fully implemented during the Project and all required plans by IEE were elaborated and followed by Contractors. Environmental monitorings were conducted on monthly and quarterly basis by PIC's and PIU's Environmental and H&S Specialists. The Semi-annual EMRs were prepared and submitted to ADB on time and disclosed after approval.
84. But it's required to note, most contracts do not contain financial penalty clauses in the event of consistent of noncompliance. Very few environmental specialists participate in the preparation and evaluation of bidding documents, and usually, the environmental management capability of bidders is not evaluated.
85. Trainings effect is usually high. It's recommended to provide trainings on environmental measures, health and safety requirements, information of international practises for Contractors' and Client's staff more often by International Project Consultants.

ANNEXES

Annex 1. Certificate of completion of Lot 1 works

<p>СЕРТИФИКАТ о завершении работ</p> <p>CERTIFICATE of completion of works</p>	
<p>Дата « 11 » <u>ноября</u> 2015 г.</p>	<p>Date « 11 » <u>November</u> 2015</p>
<p>Лот № 1 «Подводное обследование гидромеханического оборудования и сооружений Токтогульской ГЭС с поставкой аппарата дистанционного управления со вспомогательным оборудованием».</p>	<p>Lot 1 "Underwater inspection of hydro-mechanical equipment and civil structures of Toktogul HPP and provision of ROV system and associated equipment"</p>
<p>Настоящий Сертификат выдан консорциуму BSR Co.Ltd и AQUADRON Inc. в подтверждении того, что все работы*, предусмотренные по Контрактному соглашению № Д34-26/235 от 18.05.2015 г. полностью завершены. По качеству выполненных работ претензий не имеется.</p>	<p>This certificate is issued to the Consortium of BSR Co.Ltd and AQUADRON Inc. to confirm that all works*, required by Contract agreement № D34-26/235 dated 18.05.2015 has been fully completed. There are no complaints regarding the quality of performed works.</p>
<p>Руководитель проекта Заместитель главного инженера Каскада Токтогульских ГЭС</p> <p> Курманалиев Т.С.</p>	<p>Project Manager Deputy Chief Engineer of Cascade of Toktogul HPP's</p> <p> Tokon Kurmanaliev</p>
<p>Представитель Консультанта Компания Fichtner GmbH & Co.KG</p> <p> Мартин Фасил</p>	<p>Representative of the Consultant Fichtner GmbH & Co.KG</p> <p> Martin Fasil</p>
<p>*Детали выполненных работ прилагаются</p>	<p>* Details of the performed works are attached</p>

Annex 2. Operational Acceptance Certificate. Lot 2. Unit No4 related facilities

 ЭЛЕКТР СТАНЦИЯЛАР АЧКК АКЦИОНЕРДИК КОММУ	ОТКРЫТОЕ АКЦИОНЕРНОЕ ОБЩЕСТВО ЭЛЕКТРИЧЕСКИЕ СТАНЦИИ 720070, Кыргызская Республика г.Бишкек пр. Жибек-Жолу, 326 Телефон: +996 (312) 661101 Телефакс: +996 (312) 663409 E-mail: es@irnbek.kg, www.energo-ek.kg	ELECTRIC POWER PLANTS JOINT-STOCK COMPANY 326, Jibek Jolu Avenue 720070, Bishkek, Kyrgyz Republic P/t: 129900 3150021465 ОАО "РСК Баян" г.Бишкек, ЕМК 129-001 ИНН 01810300110062 КОД ПРЕДПРИЯТИЯ: 22896351
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№ _____

на № _____

Operational Acceptance Certificate

Contract: Refurbishment of Toktogul HPP. Replacement of electrical Components, Electrical Auxiliaries & Instrumentation.

LOT II - Replacement of Secondary Electrical and Mechanical Components.

Contract No. Д-34-18/554 dated 21 December 2015

Date: 26 November 2018
Certificate No.: 10

To: Mr. Shen Xi, Project Manager, JOC Technical Engineering Co., Ltd.


Dear Mr. Shen Xi,

Pursuant to GC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated 12th of October 2015, relating to the Refurbishment of Toktogul HPP, Replacement of Electrical Components, Electrical Auxiliaries & Instrumentation (Lot II - Replacement of Secondary Electrical and Mechanical Components), we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below:

1. Description of the Facilities or part thereof: Unit 4 related Facilities
2. Date of Operational Acceptance: 20 November 2018

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.


Very truly yours,

Bektursun Bekboev 

Project Manager

№ 0062644

Annex 3. Operational Acceptance Certificate. Lot 3. Unit No4 related facilities

 <p>ЭЛЕКТР СТАНЦИЯЛАР АЧМУ АКЦИОНЕРДИК КООМУ</p> <p>720070, Кыргыз Республикасы Бишкек ш. Жибек-Жолу пр. 326</p>	<p>ОТКРЫТОЕ АКЦИОНЕРНОЕ ОБЩЕСТВО ЭЛЕКТРИЧЕСКИЕ СТАНЦИИ</p> <p>720070, Кыргызская Республика г. Бишкек пр. Жибек-Жолу, 326</p> <p>Телефон: +996 (312) 661101 Телефакс: +996 (312) 663409 E-mail: es@infotel.kg, www.energo-es.kg</p>	<p>ELECTRIC POWER PLANTS JOINT-STOCK COMPANY</p> <p>326, Jibek Jolu Avenue 720070, Bishkek, Kyrgyz Republic</p> <p>P/c: 129900 2190001465 САО "РСК Банк" г. Бишкек, БИК 129-001 ИНН 01810300110062 КОД ПРЕДПРИЯТИЯ: 22856381</p>
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№ _____

на № _____

Form of Operational Acceptance Certificate

Contract: Refurbishment of Toktogul HPP. Replacement of electrical Components, Electrical Auxiliaries & Instrumentation.

LOT III - HV Cables.

Contract No. Д-34-20/428 dated 12 October 2015

Date: 28 November 2018

Certificate No.: 08

To: Mr. Hangil Do, Project Manager, Consortium of LS Cables & Systems Ltd. and SM Powertech Co., LTD.


Dear Mr. Hangil Do,

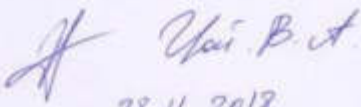
Pursuant to GC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated 12th of October 2015, relating to the Refurbishment of Toktogul HPP, Replacement of Electrical Components, Electrical Auxiliaries & Instrumentation (Lot III - 500kV XLPE cable systems), we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

- Description of the Facilities or part thereof: Unit 4 related Facilities
- Date of Operational Acceptance: 20 November 2018

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Bektursun Bekboev 
Project Manager


28.11.2018

№ 0062647

Annex 4. Post Construction Environmental Audit for Lot 2

Post-Construction Environmental Audit Check-List

Project: 44198-KGZ L2869/G0294
Lot 2 Replacement of secondary electrical and mechanical components

Implementing Agency: Electric Power Plants OJSC
Project Implementation Consultant: Fichtner GmbH & Co.KG – Energy, Germany

Site: Toktogul Hydro Power Plant


Contractor: JOC Technical Engineering Co., Ltd.
Sub-contractor: Electroprivod LLC

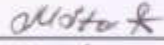
Date: 4 December 2018

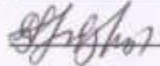
Name and position of the specialists who conducted inspection
Jyldyz Moldosanova, Environmental Specialist, PIU EPP;
Djamila Altmatova, Environmental Specialist, PIC Fichtner


No.	Type of works	Impact	Activity(ies) per SSEMP	Control	Execution
1	Oil management	Impact on soil and ground quality. Land, streams and groundwater may be polluted by spillage of oil or other toxic material used or stored on site.	Analysis of oil samples from the transformer to be replaced for PCBs and register of results.	Yes	Oil was found free of PCB.
			Oil from main transformers shall be reused. Oil can be refined on HPP Toktogul site (if it is free of PCB).		Old oil from main transformers will be reused by the Employer.
			Transformer oil of old transformers will be drained manually by opening of a valve installed. The oil through the acceptance located under the transformers, safely will get into existed tanks of Toktogul HPP oil facility. Oil from equipment to be replaced will be stored safely until further reuse (roofed and concreted areas being fitted with bunds). Tanks with enough storage capacities will be installed.	Yes	Transformer oil was drained into existed tanks inside of Toktogul HPP building partially. And remaining volume of transformer oil was stored in tanks and located at concreted area of base No 3 of Toktogul HPP.
			Maintain, repair & refuel all vehicles/machines at chosen premises, not on site.	Yes	Vehicles and machines used in construction were repaired and refueled out of site.
			Work with oil-filled equipment on concreted emplacement.	Yes	All works with oil-filled equipment was implemented on concreted emplacement. Power house and other premises of Toktogul HPP building are concreted. Project works were implemented inside of Toktogul HPP building.

			Strict control over the waste (particularly hazardous waste) management process.	Yes	Waste (particularly hazardous waste) management process was strictly controlled.
2	Waste management	Inappropriate disposal of waste from work sites can cause visual and chemical pollution and cause safety risks	Scrap metals shall be stored safely until recycling	Yes	Scrap metals are stored safely at concreted and fenced area of Toktogul HPP until recycling.
			The construction waste from civil works shall be disposed of in an appropriate landfill according to an Agreement on waste disposal.	Yes	The construction waste was disposed according to the Order of the Cascade of Toktogul HPPs No498 dated 03 July 2017.
			Make arrangements with the Cascade of Toktogul HPP for safe disposal of domestic and construction waste from work site; comply fully with any instructions for deposition/storage.	Yes	Appropriate agreements were made and signed: Agreement No D-д-55-07-18/46 dated 1 July 2017 on domestic waste collection and disposal and the Order of the Cascade of Toktogul HPPs No498 dated 03 July 2017 on construction waste disposal.
3	Removal of all equipment and surplus materials and any remaining rubbish which may have accumulated in the execution of the Contract and the whole area should be in clean and tidy condition.	Issues regarding site improvement	Upon completion of the Works, the Contractor shall remove all temporary works which he may have constructed for the protection of plant or his convenience while carrying out the works and all equipment and surplus materials and any remaining rubbish which may have accumulated in the execution of the Contract and shall leave the whole area in a clean and tidy condition (the Contract Section B0, §9.12).	Yes	All equipment and surplus materials and any remaining rubbish were removed and the whole working and site areas are in clean and tidy condition (see Annex 1).
4	Other questions				

Prepared by:  Mr. Zhou Zhonghui, HSE Manager of JOC Technical Engineering Co., Ltd.

Checked by:  Ms. Jyldyz Moldosanova, Environmental Specialist, PIU Electric Power Plants

 Ms. Djamila Aitmatova, Environmental Specialist, PIC Fichtner

Approved by:  Mr Bektursun Bekboev, Project Manager, PIU OJSC Electric Power Plants

Annex 1. Pictures of working and site areas after construction works completion



Pic. 1. Power House of Toktogul HPP



Pic. 2. Area of the main transformer T 3 of Toktogul HPP



Pic. 3. Area of the main transformer T4 of Toktogul HPP



Pic. 4. Area of 6 kV Central Set of Distribution Equipment

Annex 5. Post Construction Environmental Audit of Lot 3

Post-Construction Environmental Audit Check-List

Project: 44198-KGZ L2869/G0294
Lot 3 High Voltage Cables

Implementing Agency:
Project Implementation Consultant:

Electric Power Plants OJSC
Fichtner GmbH & Co.KG – Energy, Germany

Site: Toktogul Hydro Power Plant

Contractor:

Consortium of LS Cable & System Ltd. and SM Powertech Co. Ltd.
BIOR LLC

Sub-contractor:

Date: 4 December 2018.

Name and position of the specialists who conducted inspection

Jyldyz Moldosanova, Environmental Specialist,
PIU EPP;
Djamila Aitmatova, Environmental Specialist,
PIC Fichtner

No.	Type of works	Impact	Activity(ies) per SSEMP	Control	Execution
1	Waste management	Inappropriate disposal of waste from work sites can cause visual and chemical pollution and cause safety risks.	Make arrangements with Cascade of Toktogul HPP for safe disposal of domestic and construction waste from work site; comply fully with any instructions for deposition/storage.	Yes	Appropriate agreements were made and signed: Agreement No D-д-55-07-18/55 dated 1 July 2017 on domestic waste collection and disposal and the Order of the Cascade of Toktogul HPPs No498 dated 03 July 2017 on construction waste disposal.
			The domestic waste from workers at site shall be disposed of in an appropriate landfill according to arrangement with Cascade of Toktogul HPP for safe disposal of domestic and construction waste from work site; and complying fully with any instructions for deposition/storage. Temporal storage of municipal waste. Using containers for domestic waste collection.	Yes	Domestic waste was disposed of in an appropriate landfill according to above mentioned agreement. Whole working and site area is free of domestic and construction waste.
			Scrap metal shall be stored at designed area on site and further disposed by a licensed organization.	Yes	Scrap metal was stored at designed area base No3 of Toktogul HPP with further disposal by a licensed organization (Employer's responsibility).
			Oil from cable lines to be replaced shall be stored safely until further reuse (roofed and concreted areas being fitted with bunds). Tanks with enough storage capacities shall be installed. The analyses revealed that there is no contamination with PCBs. The oil shall be burned at Osh TPP. In order to ensure the findings of the analyses each batch of oil shall be tested for PCB before it is sent to Osh power plant. If PCB is found in the oil an expert study has to be performed what to do with the oil.	Yes	All volume of cable oil was transported to Osh Thermal Power Plant. The oil storage facility at Toktogul HPP is clean.

			Oil containing paper shall be stored safely by the construction contractor. The oil containing paper is practically free of PCB. If PCB is found in the oil by additional analyses an expert study has to be performed what to do with the oil containing paper.	Yes	Oil was found free of PCB. Dismantled cable lines with oil containing paper were stored safely in metallic containers at the base No3 of Toktogul HPP and they will be safely disposed by the Employer.
			Maintain, repair & refuel all vehicles/machines at chosen premises, not on site.	Yes	All vehicles/machines were maintained, repaired and refueled out of site.
			Identify existing garages or workshops near the work site with the capacity to service, repair and refuel vehicles and machinery used in construction.	Yes	All vehicles/machines used in construction were maintained, repaired and refueled out of site.
			Strict control over the waste (particularly hazardous waste) management process.	Yes	Waste management process was strictly controlled during construction period.
			Clean regularly work areas and site area	Yes	Work and site areas were regularly cleaned.
2	Removal of all equipment and surplus materials and any remaining rubbish which may have accumulated in the execution of the Contract. And the whole area should be in clean and tidy condition.	Issues regarding site improvement	Upon completion of the Works, the Contractor shall remove all temporary works which he may have constructed for the protection of plant or his convenience while carrying out the works and all equipment and surplus materials and any remaining rubbish which may have accumulated in the execution of the Contract and shall leave the whole area in a clean and tidy condition (the Contract Section B0, §9.12).	Yes	All equipment and surplus materials and any remaining rubbish were removed and the whole working area is in clean and tidy condition (see Annex 1).
3	Other questions				

Prepared by: [Signature] Sultan Kalpakov, Environment, Health & Safety Specialist, Consortium of LS Cable & System Ltd. and SM Powertech Co. Ltd.

Checked by: [Signature] Ms. Jyldyz Moldosanova, Environmental Specialist, PIU OJSC Electric Power Plants

[Signature] Ms. Djamila Aitmatova, Environmental Specialist, PIC Fichtner.

Approved by: [Signature] Mr Bektursun Bekboev, Project Manager, PIU OJSC Electric Power Plants

Annex 1. Pictures of working and site areas after construction works completion



Pic.1. Area of 500 kV Cabel tunnel of Toktogul HPP



Pic.2. Area of Distribution Point 500 kV of Toktogul HPP



Pic.3. Area of the Oil storage of Toktogul HPP



Pic.4. Area of the construction waste and surplus materials of the Contractor

Annex 6. Operational Acceptance Certificate. Lot 4. Sections of Busbars.

 <p>ЭЛЕКТР СТАНЦИЯЛАР АНКК АКЦИОНЕРДИК ИЮМУ</p> <p>720070, Кыргыз Республикасы Бишкек ш. Жибек-Жолу пр. 126</p>	<p>ОТКРЫТОЕ АКЦИОНЕРНОЕ ОБЩЕСТВО ЭЛЕКТРИЧЕСКИЕ СТАНЦИИ</p> <p>720070, Кыргызская Республика г. Бишкек пр. Жибек-Жолу, 326</p> <p>Телефон: +996 (312) 661101 Телефакс: +996 (312) 663409 E-mail: es@infotel.kg, www.energo-es.kg</p>	<p>ELECTRIC POWER PLANTS JOINT-STOCK COMPANY</p> <p>326, Jibek Jolu Avenue 720070, Bishkek, Kyrgyz Republic</p> <p>Ph: 129600 3150021466 ОАО "РСК Баян" г. Бишкек, БИК 129-001 ИНН 01810200110062 КОД ПРЕДПРИЯТИЯ: 22956351</p>
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№ _____
на № _____

«Approved»
Director of Toktogul HPP
A.K. Kushubakov
« _____ » 2019г.

Operational Acceptance Certificate

Contract: Refurbishment of Toktogul HPP. Replacement of electrical Components, Electrical Auxiliaries & Instrumentation.
LOT IV – Rehabilitation of 500kV Substation & 500kV Cable Transition Point.
Contract No. Д-15-37/588 dated 27 December 2017

Date 21 November 2019
Certificate No.: 11

To: Mr. Fethi Alp Karatas, Project Coordinator, Genser Genel Muhendislik Taahhut ve Ticaret A.S.

Dear Mr. Alp Karatas,

Pursuant to GC Sub-Clause 25.3 (Operational Acceptance) of the General Conditions of the Contract entered into between yourselves and the Employer dated 27th of December 2017, relating to the Refurbishment of Toktogul HPP, Replacement of Electrical Components, Electrical Auxiliaries & Instrumentation (Lot IV - Rehabilitation of 500kV Substation & 500kV Cable Transition Point), we hereby notify you that the Functional Guarantees of the following part(s) of the Facilities were satisfactorily attained on the date specified below.

1. Description of the Facilities or part thereof:

II Section of Busbars (Primary part and secondary connections):

Primary connections for Bus Bar II

- Surge Arrester (ОПН-500-ВП-2)
- Voltage Transformer (ТН-2СЩ-500)

Secondary connections for Bus Bar II

- Marshalling kiosk (МК-В2-Л509, МК-В2-Л554, МК-BUS-2)

2. Date of Completion: October 10, 2019

This letter does not relieve you of your obligation to complete the execution of the Facilities in accordance with the Contract nor of your obligations during the Defect Liability Period.

Very truly yours,

Ulugbek Mamyraliev
Project Manager

Otar Gavasheli
Project consultant

№ 0070828

Annex 7. Post Construction Environmental Audit of Lot 4


Post-Construction Environmental Audit Check-List

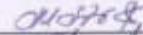
Project: 44198-KGZ L2869/G0294 Lot 4 Rehabilitation of 500 kV Substation & 500 kV Cable Transition Point	Implementing Agency: Project Implementation Consultant:	Electric Power Plants OJSC Fichtner GmbH & Co.KG – Energy, Germany
Site: Toktogul Hydro Power Plant	Contractor:	Genser Muhendeslik Taahut ve Ticaret A.S., Turkey
Date: 19 November 2019	Name and position of the specialists who conducted inspection	Jyldyz Moldosanova, Environmental Specialist, PIU EPP; Djamila Aitmatova, Environmental Specialist, PIC Fichtner

No.	Type of works	Impact	Activity(ies) per SSEMP ¹	Control	Execution
1	Waste management	Pollution caused by wastes: Scrap metal Ceramic waste Construction waste from civil works Concrete waste	Scrap metals shall be stored safely at Toktogul HPP until recycling	Yes	Scrap metals are stored safely at Toktogul HPP storage area #3 with further disposal by a licensed organization (Employer's responsibility).
			Ceramic is a chemically inert material and can be used e.g. as land-filling material.	Yes	Ceramic was handed over to Client for recycling
			The waste from construction activities shall be disposed of in an appropriate landfill promptly.	Yes	Construction wastes were disposed of in an appropriate landfill according to the agreement NoD-d-55/07-18-179 dated 14/09/2018
			Concrete is a chemically inert material and can be used e.g. as land-filling material. Asbestos analyses showed that the concrete plates of the cable duct are free of asbestos.	Yes	Concrete was given to the Employer for recycling
		Domestic waste	Make arrangements with Cascade of Toktogul HPP for safe disposal of domestic and construction waste from work site; comply fully with any instructions for deposition/storage	Yes	Appropriate agreements were made and signed: Agreement No D-d-55-07-18-179 dated 14/09/2018 on domestic waste collection and disposal and the Order of the Cascade of Toktogul HPPs No498 dated 03 July 2017 on construction waste disposal.
			Domestic waste of the workers will be collected at construction site in appropriate metal containers. Domestic waste further shall be taken to an official landfill and according to an Agreement between Construction Contractor and Toktogul HPP Administration.	Yes	Metal container for domestic waste was used.
	After finishing of project works	Site improvement	Sites should be cleaned of wastes and looked tidy.	Yes	All equipment and surplus materials and any remaining rubbish were removed and the whole working and site areas are in clean and tidy condition (see Annex 1)

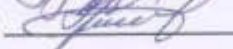
¹ Site Specific Environmental Management Plan

No.	Type of works	Impact	Activity(ies) per ACMMP ²	Control	Execution
	Replacement of old equipment. Removal of asbestos containing material	Impact on health of workers. Inhalation of asbestos fibres can cause serious illnesses	All asbestos containing waste shall be double-bagged or double-wrapped in plastic sheeting as they are, with the correct internationally used hazard warning signs attached.	Yes	Asbestos containing waste was double-bagged in plastic sheeting.
	Storage of asbestos containing material		Asbestos containing waste in plastic bags shall be stored in containers. The containers with asbestos containing waste shall be placed at the EPP storage site already used for the pieces of 500 kV cables.	Yes	Containers with asbestos containing waste in plastic bags were placed at the EPP storage site
	Disposal of asbestos containing material		The containers with asbestos containing waste placed at the EPP storage site shall be there until further proper disposal is possible. When new landfills for solid waste will be available in future, fulfilling international and Kyrgyz requirements, the asbestos containing material shall be moved to one of these landfills for final disposal.	Yes	Containers with asbestos containing waste in plastic bags were placed at the EPP storage site (Employer's responsibility).
	After the termination of work	Issues regarding site improvement	Equipment, machines and the working areas must be thoroughly cleaned. Parts contaminated with asbestos fibers which cannot be cleaned must be wetted and properly disposed of.	Yes	All equipment and surplus materials and any remaining rubbish were removed and the whole working area is in clean and tidy condition (see Annex 1).

Prepared by:  Aibek Orozaliev, Environment, Health & Safety Specialist, Construction Contractor Genser

Checked by:  Ms. Jyldyz Moldosanova, Environmental Specialist, PIU OJSC Electric Power Plants

 Ms. Djamila Aitmatova, Environmental Specialist, PIC Fichtner.

Approved by:  Mr Uluk Mamyraliev, Project Manager, PIU OJSC Electric Power Plants

² Asbestos Containing Material Management Plan

Annex 1. Pictures of working and site areas after completion of construction works

Pic.1. Area of 500 kV Substation of Toktogul HPP (Status in November 2019)



Pic.2. Cleaned area of construction waste and surplus materials storage of the Contractor (Status in November 2019)



Pic.3. Containers with asbestos containing waste placed at the Client's/Cascade of THPPs storage site (Status in November 2019)



Pic.4. Area of 500kV Transition Point of Toktogul HPP (Status in November 2019)

Annex 8. Pictures of Lot 4 project works



Picture 2. Dismantling works at 500kV substation of Toktogul HPP (Status in July 2019)



Picture 3. Installation of metal equipment at 500kV substation of Toktogul HPP (Status in July 2019)



Picture 4. Steeplejack work at 500kV substation of Toktogul HPP (Status in July 2019)



Picture 5. Cable Installation work (Status in August 2019)



Picture 6. Old electrical equipment dismantling work (Status in August 2019)



Picture 8. Installation of ground conductor (Status in September 2019)



Picture 7. Steeplejack work at 500kV substation of Toktogul HPP (Status in August 2019)



Picture 9. Earth works at 500 kV substation (Status in September 2019)



Picture 10. Works on ground conductor (Status in September 2019)



Picture 11. Clean switchyard site, most of works are finalized (Status in October 2019)



Picture 12. New cable duct within switchyard site (Status in October 2019)



Picture 13. New cable duct between tunnel and switchyard site (Status in October 2019)



Picture 14. Temporary storage of asbestos
(Status in October 2019)



Picture 15. Waste remnants on switchyard site (Status in October 2019)



Picture 16. Intermediate storage of old cable duct cover plates (Status in October 2019)



Picture 17. Works on preparation for gravel covering at 500 kV transition point (Status in October)



Picture 18. Last electric grounding works at transition point
(Status in October 2019)



Picture 19. A new container for temporary storage of asbestos containing material (Status in October 2019)



Picture 20. 500 kV transition point after covering with gravel (Status in November 2019)



Picture 21. 500 kV substation after rehabilitation works (Status in November 2019)



Picture 22. Containers with asbestos waste were transported to storage area of the Cascade of Toktogul HPPs (Status in November 2019)



Picture 23. 500 kV Transition point after rehabilitation works (Status in November 2019)



Picture 24. Wood construction waste temporarily stored at site (Status in August 2019)



Picture 25. Concrete construction waste was removed from site to the storage area of Toktogul HPP (Status in August 2019)



Picture 26. Old concrete poles were reused for fencing at the Cascade of Toktogul HPPs (Status in August 2019)



Picture 27. Dismantled cables were removed from site and stored at storage area of Toktogul HPP (Status in August 2019)



Picture 28. Ceramic waste was stored at storage area of the Cascade of Toktogul HPPs (Status in August 2019)



Picture 29. Scrap metal and old dismantled equipment were stored at the fenced storage area of the Cascade of Toktogul HPPs (Status in September 2019)



Picture 30. Worker wearing special PPE for works with ACM (Status in August 2019)



Picture 31. Wash facilities was available for workers at site (Status in August 2019)



Picture 32. The worker wearing PPE at 500 kV substation of Toktogul HPP (Status in August 2019)



Picture 33. Ear protectors are in used by worker while working with a perforator (Status in September 2019)



Picture 34. PIC and PIU specialists are inside of the fenced and protected area of 500 kV Substation of Toktogul HPP (Status in March 2019)



Picture 35. Two workers working without reflective vests (Status in August 2019)

Annex 9. Training on HSE and ACM management



Picture 36. HSE Training by PIC national expert, at Toktogul HPP administration for CC Genser and Toktogul HPP staff (Status in October 2018)



Picture 37. CC Genser staff, PIC Consultants, and Toktogul HPP personnel at HSE Training at HPP. (Status in October 2018)

Toktogul HPP Rehabilitation Project, funded by ADB

Attendance list

Training on HSE Plan, Plan for Asbestos Containing Materials, SEMP

Date: October 17, 2018, 9:00-13:00
 Venue: Office of Toktogul HPPs Cascade
 Trainer: Danyla Abramova, Fichtner Environmental Expert

#	Name	Position	Signature
1.	Самойлов	МММ СМД	[Signature]
2.	Абрамова Дарина	инж. по ТЭ. БУМ	[Signature]
3.	Абрамова Ирина	инженер	[Signature]
4.	Абрамова Ольга	инженер	[Signature]
5.	Абрамова Ирина	инженер	[Signature]
6.	Абрамова Ирина	инженер	[Signature]
7.	Абрамова Ирина	инженер	[Signature]
8.	Абрамова Ирина	инженер	[Signature]
9.	Абрамова Ирина	инженер	[Signature]
10.	Абрамова Ирина	инженер	[Signature]
11.	Абрамова Ирина	инженер	[Signature]
12.	Абрамова Ирина	инженер	[Signature]
13.	Абрамова Ирина	инженер	[Signature]
14.			
15.			
16.			
17.			
18.			
19.			

Picture 38. List of participants at the training at Cascade of the Toktogul HPPs (Status in October 2018)