

Semi-annual Environmental Monitoring Report

Project Number: 47017-003

Grant Number: 0417-TAJ

Period covered: January - June 2019

Republic of Tajikistan: Wholesale Metering and Transmission Reinforcement Project

(Financed by Asian Development Bank)

Prepared by: "AF Mercados EMI"- Project Implementation Consultant

For: Executing Agency: Open Stock Holding Company "Barqi Tojik"
Implementing Agency: State Establishment «Project Management Unit for
Electro-Energy Sector»

November 2019

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Abbreviations

ADB	Asian Development Bank
BT	Barqi Tojik
CEMMP	Contractor's Environmental, Health and Safety Management and Monitoring Plan
CT	Current Transformer
EHS	Environmental, Health & Safety
EMP	Environmental Management Plan
ESMP	Environmental and Social Management Plan
HPP	Hydropower Plant
HSE	Health, Safety and Environment
FAT	Factory Acceptance Test
IEE	Initial Environmental Examination
kV	Kilovolt
MVA	Megavolt Ampere (unit used to measure apparent power)
NCN	Non-Conformity Note
OHTL	Overhead Transmission Line
PAM	Project Administration Manual
PIC	Project Implementation Consultant
PMU	Project Management Unit
PPE	Personal Protective Equipment
RoW	Right-of-Way
SS	Substation
SEMP	Specific Environmental Management Plan
SAEMR	Semi - Annual Environmental Monitoring Review
SSEMP	Site-specific Environmental Management Plan
TL	Transmission Line
VT	Voltage Transformer

1 INTRODUCTION

1.1 Preamble

1. This report represents the Semi - Annual Environmental Monitoring Review (SAEMR) for the Wholesale Metering and Transmission Reinforcement Project.
2. This report is the 6th EMR for the project.
3. The Project has been extended until March 31, 2020.

1.2 Headline Information

4. In Lot 1 on Wholesale Metering System, the meters Factory Acceptance Test (FAT) was conducted successfully in July 2018 by the Contractor Huawei/ TBEA. The Contractor has selected the subcontractor Cuculus GmbH for the software part. The subcontractor has not started its work during the reporting period so far. A new project Master Plan which includes the detailed design of the software, the FAT, training schedule, Operational Acceptance and the new Project Completion Date has to be submitted. The construction of the foundations and erection of the Current and Voltage Transformers inside the substations is very advanced and it was completed by a 60% by the end of June and 76% by the end of July. Meter deployment has not started so far.
5. Regarding the Amendment 2 of Lot 2's work, which is the renovation of 110 kV switchyard at Rudaki Substation, it started in April 2018. Every activity was developed inside the plot of the Substation and on a working installation. TBEA completed most of the works for the variation order on 13 September 2018.
6. Lot 3 on the feasibility study of the interconnection between Tajikistan and Uzbekistan to re-incorporate Tajikistan to the Central Asia Power System is completed. The implementation of the interconnection activities became part of an independent project.
7. This is the summary of the findings of the inspections undertaken in the current period:

Table 1. Summary of findings.

Main finding	Corrective actions applied or needed	Status
<u>Lot 1</u> Lack of agreement with hospitals for medical services provision.	Advisable to conclude an agreement with hospitals for medical services provision.	It was communicated to the Contractor and the Contractor has not replied yet.
Lot 1 Lack of a contract with a	A contract with a licensed	Pending.

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Main finding	Corrective actions applied or needed	Status
licensed waste management company	waste management company shall be signed.	
Lot 1 Lack of use of Personal Protection Equipment.	Personal Protection Equipment (PPE) is of compulsory use for all the staff in the construction sites. Suitable PPE shall be provided by the Contractor and used by the staff.	Pending.
<u>Lot 2</u> During a visit in May 2019 to the workers camp located in front of Ayni Substation, the concrete floors were still in place. The concrete floors were set by the Contractor when accommodating the piece of land to be used as workers camp.	After agreement with the local government, the concrete floors will be used for other purposes and they want them to remain in place.,	Solved.
<u>Lot 2</u> Waste in the workers camp near Ayni SS.	Waste generated after dismantling the workers camp has to be collected and managed safely.	Pending.
<u>Lot 2</u> -No grievance book available at Rudaki SS. TBEA brought it with them to their home country when finalizing most of the works. A complaints book must be made available until one year after the implementation is completed (around July 2020). No verbal grievances/requests have been received during the absence of the logbook.	TBEA shall place a new complaints book at Rudaki SS.	Pending.
<u>Lot 2</u> Risks to health and safety in Rudaki SS since the lack of compaction of the floor has made it sink, affecting the new rooms of the administration building, some of the electrical equipment that are no longer aligned and the grey water tanks.	Contractor to fix the problems originated by the bad compaction practices.	Pending.
<u>Lot 1 and 2</u> Contractor Monthly Environmental Monitoring Reports not available.	Contractor to submit the Monthly Environmental Monitoring Reports since July 2018.	Pending.

2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES

2.1 Project Description

8. The Republic of Tajikistan has received a grant from the Asian Development Bank (ADB) towards the cost of the Wholesale Metering and Transmission Reinforcement Project. It is expected that the proposed project will improve electricity supply to households and industries in the country by reducing losses through metering entire high and medium voltage transmission grid and expand transmission capacity in Panjakent region presently suffering from load shedding.
9. Parts of this financing are being used for payments under the contract for: Lot 1) Installation of 1,682 wholesale meters and settlement system including 846 current transformers and 744 voltage transformers in most of the substations along the country, introduction of an advanced metering infrastructure, and introduction of a settlement system; Lot 2) Rehabilitation of Substation Rudaki, Extension of Substation Ayni and Construction of new 220 kV Over Head Transmission Line (OHTL) between Substation (SS) Ayni 220 kV and SS Rudaki, approximately 95 km of new single circuit single conductor with rated capacity of 320 MVA; and Lot 3) feasibility study of the interconnection between Tajikistan and Uzbekistan to re-incorporate Tajikistan to the Central Asia Power System.
10. The location of the Project component Lot 2 is presented below in Figure 1 in the scale of the Country.



Figure 1. Location of the Project (Lot 2)

2.2 Project Contracts and Management

11. The Executing Agency for the Project is the public Open Stock Holding Company Barqi Tojik. The Executing Agency has set up a Project Management Unit (PMU) to manage daily coordination, implementation, monitoring and administration activities of the Project.
12. The PMU includes the Environmental Sector of the Projects Monitoring Department whose responsibilities include, among other things, the management of all environmental aspects of the project. The Head of the Environmental Sector of the Projects Monitoring Department is Mr. Karimov Sirojiddin. The Chief EHS Specialist at the PMU is Mr. Aziz Holov.
13. The Project Implementation Consultant (AF Mercados) is providing technical assistance to the PMU in the management and reporting of the project. The PIC is responsible for reviewing and endorsing the Contractor's Environmental Management Plan (SSEMP) and, in particular, for supervising and reporting on the Contractor's performance in the implementation of the SSEMP. The contract with AF Mercados was signed on August 2015 and the current closing date is October 2019.
14. The PIC's international environmental safeguards specialist was Mr. Pasi Vahanne and the national environmental safeguards specialist was Ms. Muazama Burkhanova until July 2018. From that date, the international safeguards specialist is Mrs. Patricia Ramos Peinado.
15. The EHS management of the project is as shown in Figure 2.

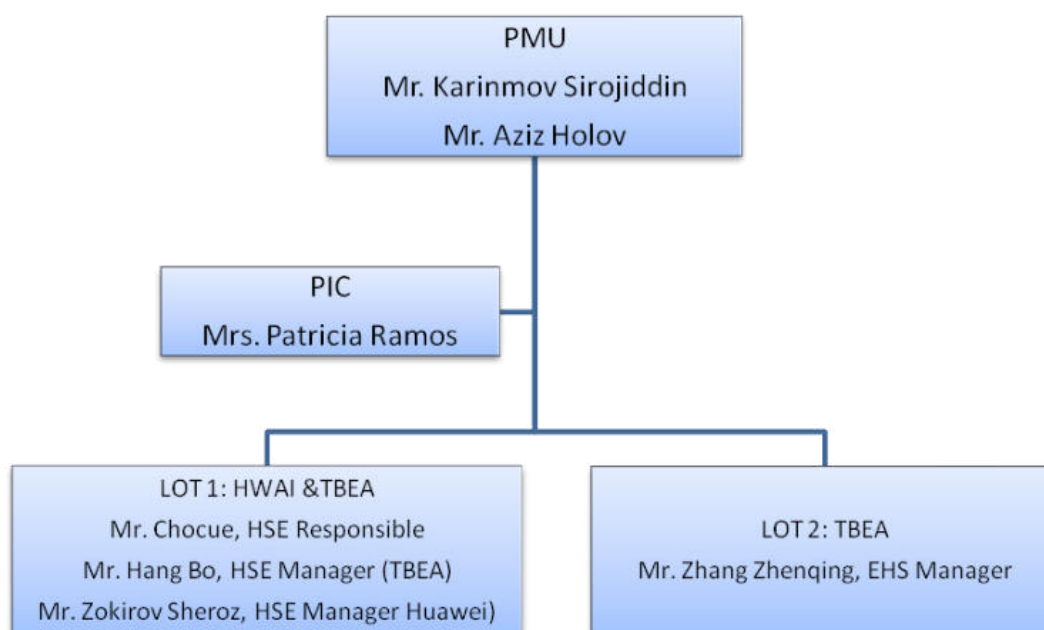


Figure 2. EHS management of the project

16. The contractors for Lot 1 are Huawei & TBEA. The contract was signed on 6 December 2016 and the completion date is July 4, 2019. The contractor for Lot 2 is TBEA and the contract was signed on 28 December 2015 and its end date as stated in the amendment 4 of the contract is 31 December 2019.
17. The names of the main parties and focal points involved in the project can be seen in the below Table 2.

Table 2. Main parties involved and their contact details.

Party	Focal point	Contact details of the focal point
Implementing Agency: Barki Tojik	Head of the Project Management Unit, Mr. Nazarzoda Nazar Rajab	pmu_tj@mail.ru
	Head of the Environmental Sector of the PMU, Mr. Karimov Sirojiddin	pmu_tj@mail.ru
	Chief EHS Specialist at the PMU, Mr. Aziz Holov	pmu_tj@mail.ru
Funding institution: ADB	ADB Regional Environmental Safeguards Consultant. Mrs. Malika Babadzhanova	mbabadjanova1.consultant@adb.org +992918420944
	ADB National Resettlement Specialist. Mr. Faizullo Kudratov	fkudratov.consultant@adb.org
Project Implementation Consultant	AF Mercados EMI Project Director and also directly responsible for lot 1 and 3. Mr. Jose Ignacio Alcon.	joseignacio.alcon@afconsult.com
	AF Mercados EMI responsible for Lot 2. Mr. Stefan Rose	stefan.rose@afconsult.com
	AF Mercados EMI Environmental and Social Specialist, Mrs. Patricia Ramos	patricia.ramos@afconsult.com
Lot 1 Contractor: Huawei & TBEA	Mr. Chocue, HSE Responsible Mr. Hang Bo, HSE Manager (TBEA) Mr. Zokirov Sheroz, HSE Manager Huawei) Mr. Jin Dean, EHS Site Manager (TBEA) Mr. Huseynov Ilhom, EHS Site Manager (Huawei) Mr. Guan Yonggang, EHS Site Manager (TBEA) Mr. Nazarhudoev, HSE Site Manager (Huawei) Mr. Zhurakulov Doshod, HSE Site Manager (Huawei)	

Lot 2 Contractor: TBEA	Mr. Zhang Zhenqing, EHS Manager Mr. Guang Yonggang, EHS Ayni Site Manager Mr. Jin Dean, EHS OHL Site Manager Mr. Che Jinlu, EHS Rudaki Site Manager	
In relation to Lot 2	Specialist of the Environmental Committee of Panjakent District. Mr. Pulodov Murod	+992 927601320
Lot 3	Representative of the Land Committee at Jamoat Lolazor. Mr. Timur Rakhmonov	+992 928470448
	Head of Sughud Substation	+992 929803058

18. The contracts are being managed by the Project Management Unit of the power utility Barqi Tojik with the support of the consultancy company AF-Mercados in the role of Project Implementation Consultant.

2.3 Project Activities During Current Reporting Period

19. Construction activities for the reporting period are described in the Table 3 below.

Table 3. Progress on the construction activities on Lot 2, Lot 2 Amendment and Lot 1.

N	Month 2019	Construction activities	Percentage of completion
1	January	Lot 2: Solving the remarks of the working commission.	93%
2	February	Lot 2: Solving the remarks of the working commission.	100%
3	March	Lot 1: Construction of the new foundations at the substations for the installation of CTs/VTs. Installation of the CTs/VTs.	29,64%
4	April	Lot 1: Construction of the new foundations at the substations for the installation of CTs/VTs. Installation of the CTs/VTs.	42,76%
5	May	Lot 1: Construction of the new foundations at the substations for the installation of CTs/VTs. Installation of the CTs/VTs.	54,07%
6	June	Lot 1: Construction of the new foundations at the substations for the installation of CTs/VTs. Installation of the CTs/VTs.	60,00%

20. In Lot 1 on Wholesale Metering System, the meters Factory Acceptance Test (FAT) was conducted successfully in July 2018 by the Contractor Huawei/ TBEA. The Contractor has

selected the subcontractor Cuculus GmbH for the software part. The subcontractor has not started its work during the reporting period so far. A new project Master Plan which includes the detailed design of the software, the FAT, training schedule, Operational Acceptance and the new Project Completion Date has to be submitted. The construction of the foundations and erection of the Current Transformers (for commercial metering points in 110 kV, 35 kV, 10 kV and 6 kV systems) and Voltage Transformers (for commercial metering points in 110 kV, 35 kV, 10kV, 6kV and 0.4 kV) inside the substations is very advanced and it was completed by a 60% by the end of June. It is required to build 3 foundations for each set of CTs or VTs that will be installed, except for 10kV, 6kV and 0.4kV. Meter deployment has not started so far.

21. The works under lot 1 are expected to be completed by March 2020 in all the subject substations (SSs) located along the country. The CTs and VTs installation will be completed by the end of September 2019. The list of the substations, the network they belong to and the implementation status can be found in Annex II of this document. The installation of wholesale meters started in July 29 and it is scheduled to be completed by February 17, 2020 although it is expected that the completion will happen at a later date since they are running behind schedule.

22. Four SSs were visited under Lot 1, one in Penjakent and three in Dushanbe. This is the status of the visited substations:

- In SS Setora 110kV/10kV Current Transformers and Voltage Transformers were installed.
- In SS Firdavsi 110kV/10kV 2 Current Transformers and 2 Voltage Transformers of 110kV were installed. They are waiting for the meters now.
- In SS Shahri 110kV/10kV 2 Current Transformers and 1 Voltage Transformers of 110kV were installed, 1 extra VT to be installed soon.
- In SS Buston 2 Current Transformers were installed, 1 extra VT to be installed soon.



Figure 3. Picture taken at the installed equipment in “Setora” SS (lot 1), Panjakent Province, May 2019.



Figure 4. Picture taken at the installed equipment in “Bustot” SS (lot 1), Dushanbe, May 2019.



Figure 5. Picture of the built pillars for the equipment installation. Taken at “Shahri” SS (lot 1), Dushanbe, May 2019.

23. The project activities of Lot 2 are the reinforcement of the transmission grid in the Panjakent area, through the construction of a 220 kV Over Head Transmission Line (OHTL) between Ainy and Rudaki Substations, the enhancement and renovation of Rudaki SS, and the construction of a new bay in Ainy SS. The Contractor TBEA completed the works on 25 January 2018 for the original scope.

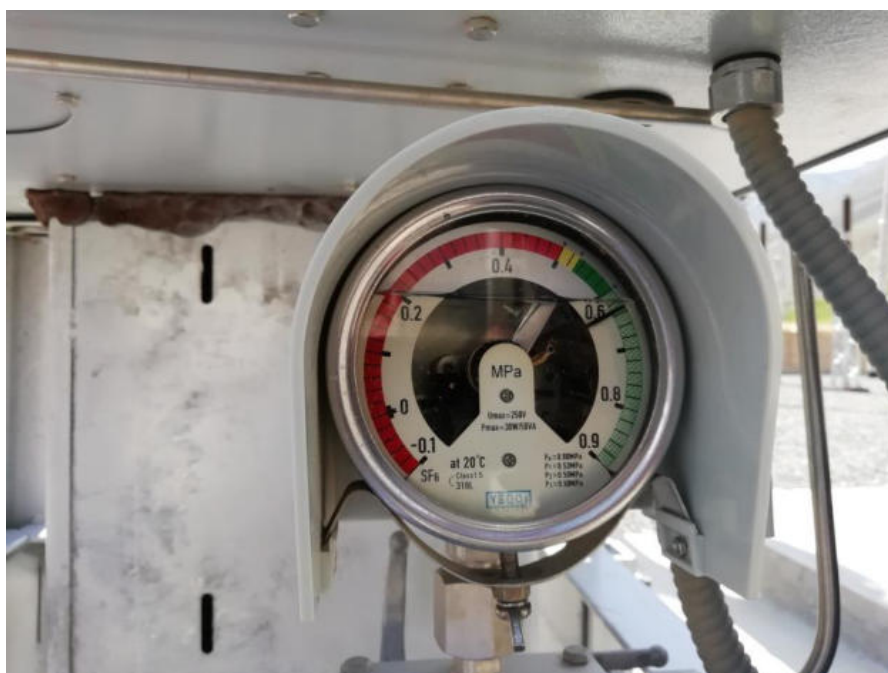


Figure 6. Picture of the SF6 pressure gauge of an installed circuit breaker. Taken at “Ayni” SS (lot 2), Sughd Province, May 2019.

24. Regarding the Amendment 2 of Lot 2's work, which is the renovation of 110 kV switchyard at Rudaki Substation, it started in April 2018. Every activity was developed inside the plot of the Substation and on a working installation. TBEA completed most of the works for the variation order on 13 September 2018.



Figure 7. Picture of newly installed equipment in Rudaki SS (lot 2), Penjakent Province, May 2019.



Figure 8. Picture of the place where they used to be located the temporary toilets, they have finally been dismantled. Rudaki SS (lot 2), Penjakent Province, May 2019.

25. Lot 3 on the feasibility study of the interconnection between Tajikistan and Uzbekistan to re-incorporate Tajikistan to the Central Asia Power System was completed during the previous reporting period. The implementation of the interconnection activities became part of an independent project.

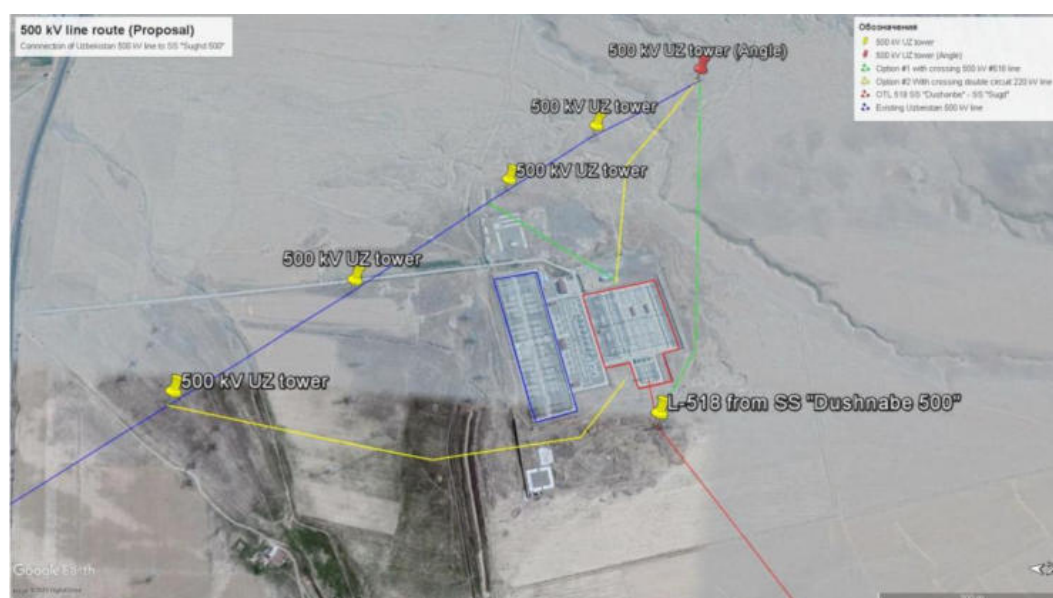


Figure 9. Possible line routes for the new OHTL sections which preliminary technical feasibility study and environmental and social due diligence was performed under Lot 3.

26. In the table below, it can be seen the number of workers employed for each lot during the reporting period.

Table 4. Number of Workers involved in each Lot.

Project lots	Number of workers
Lot 1	40
Lot 2	Approximately 10
Lot 3	N.A.

2.4 Description of Any Changes to Project Design

27. An Amendment number 2 to the contract with the Lot 2 contractor and the Project Implementation Consultant (PIC) were signed in order to include in the project scope the rehabilitation of the 110kV bays at Rudaki SS. The "Due Diligence Report Social and Environmental Issues Barqi Tojik and TBEA Amendment no.2 to contract Lot 2" was prepared in October 2017. The implementation of this variation order started in 16 February 2018 and it got mostly completed by 13 September 2018. The completion certificate was issued on 27 September 2018.

28. The Initial Environmental Examination (IEE) for Wholesale Metering and Transmission Reinforcement Project was updated in December 2016. No changes in the updated IEE were required during the reporting period.

2.5 Description of Any Changes to Agreed Construction Methods

29. No changes.

3 ENVIRONMENTAL SAFEGUARD ACTIVITIES

3.1 General Description of Environmental Safeguard Activities

30. The PIC Environmental and Social Specialist was on mission in Tajikistan from 27 May to 8 June 2019, visiting several project sites to perform direct site observations and holding meetings with Barqi Tojik and the ADB and delivering a workshop. The findings of that mission have been incorporated in this report. No complaints were received, and no accidents happened during the reporting period. The SSEMPs are being generally implemented except some issues that can be found on Table 5.

3.2 Site Inspection

31. These are the details of the combined formal inspections undertaken by environmental safeguard project staff from PMU/PIC during the current reporting period.

Table 5. Inspections undertaken during the current period

Organization	Date of Visit	Inspector's Name	Purpose of Inspection	Significant Findings	Status
PMU	23/01/2019 Visit of: lot 1 «Bobotag» SS, «Sultonobod» SS, «Varzob» SS and SS «Navruz» SS	Aziz Kholov	Review of the environmental aspects of the project activities performed during the last 6 months	Lack of a contract for garbage collection	Pending
				Lack of Personal Protection Equipment	Pending
				Lack of agreement with the hospital for medical services provision.	Pending

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	<p>14/03/2019 Visit of: lot 2 Ayni SS, Rudaki SS,</p> <p>18.04.2019 Visit of: lot 1 «Kurgan-Tube» SS, «Garauly»SS, «Toshabad» SS and «Guliston»SS</p>			<p>No grievance book available at Rudaki SS.</p> <p>Lack of a contract for garbage collection</p> <p>Lack of personal protection equipment</p> <p>Lack of agreement with the hospital for medical services provision.</p>	<p>Pending</p> <p>Pending</p> <p>Pending</p> <p>Pending</p>
PIC	<p>27/05/19-07/06/19. Visit of: Ayni SS, Rudaki SS, the OHTL (lot 2)., «Setora» SS, «Furdavsi» SS, «Shahri SS»and «Bustot» SS (lot 1).</p>	<p>Aziz Kholov</p> <p>Patricia Ramos</p>	<p>Inspection of the environmental aspects of the project activities performed during the last 6 months</p>	<p><u>Lot1</u> - Lack of agreement with the hospital for medical services provision.</p> <p><u>Lot 2</u> - Ayni SS workers camp, waste has to be collected. -No grievance book available at Rudaki SS.</p>	<p>Pending</p> <p>Pending</p> <p>Pending</p>

				<u>Lot 1 and 2</u> - Contractor Monthly Environmental Monitoring Reports not available.	Pending
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32. A detailed inspection on the status of the access roads and RoW was performed by the Chief EHS Specialist at the PMU, Mr. Aziz Holov, the national consultant Mr. Timur Usmanov and the International Environmental and Social Specialist Mrs. Patricia Ramos. The Specialist of the Environmental Committee of Panjakent City, Mr. Pulodov Murod, and the ADB national environmental and social specialists were invited to join the site visits. Mr. Murod expressed that he had been informed on the good restoration status of the access roads and RoW so he did not find any longer needed for him to visit the sites. The ADB national environmental and social specialists were not available to join the site visits since they had to participate in other missions.

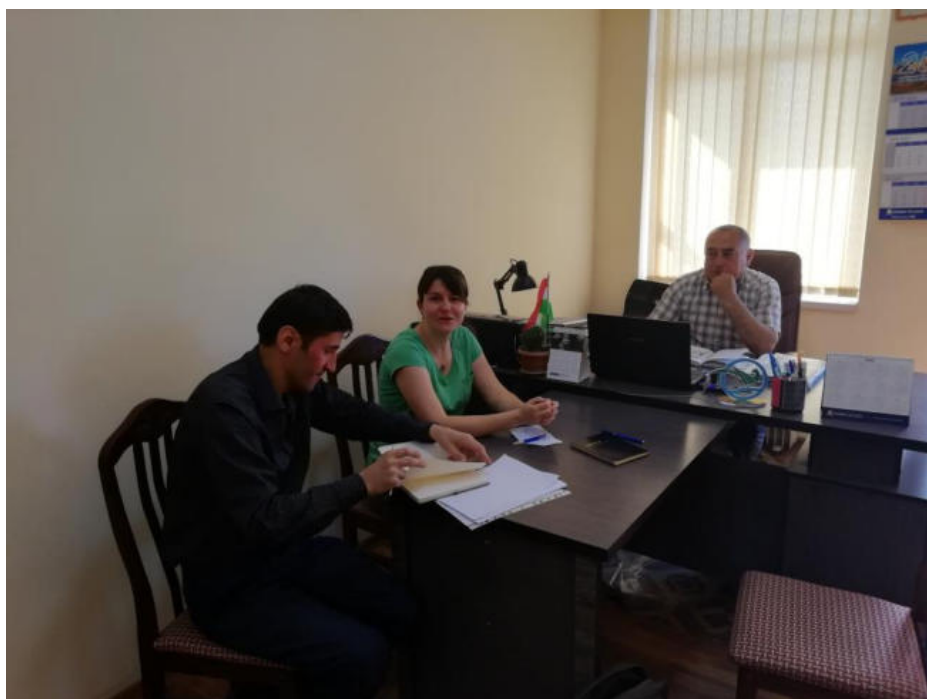


Figure 10. Meeting with the Environmental Committee of Panjakent City, Mr. Pulodov Murod. Panjakent City. May 2019.

33. All the towers that were reported to have garbage and work leftovers or mistaken backfilling in previous reports were checked. No debris or garbage was found, and the backfilling was correct, so the needed correction measures must have been implemented in the past. The access roads have been naturally restored by nature by vegetation colonizing them back. Many landslides have happened on the access roads, covering them fully or partially by land or stones. No permanent structure or too high tree was detected in the RoW. In summary, the status of the access roads and RoW was found to be fully satisfactory. Pictures of the site visits can be found below. A full set of the pictures taken at the visited towers is placed in Annex II (chapter 8.2.2).



Figure 11 and 12. Tower 46 of the OHTL. Sghud Province. May 2019.



Figure 13. Tower 48 of the OHTL. Sghud Province. May 2019.

34. This is the summary of the findings of the inspections undertaken in the current period:
Table 6. Summary of the environmental findings in the current period.

Main finding	Corrective actions applied or needed	Status
Lot 1 Lack of a contract with a licensed waste management company. Minor issue since there is not	A contract with a licensed waste management company shall be signed.	Pending.

Main finding	Corrective actions applied or needed	Status
hazardous waste involved.		
<u>Lot 2</u> During a visit in May 2019 to the workers camp located in front of Ayni Substation, the concrete floors were still in place. The concrete floors were set by the Contractor when accommodating the piece of land to be used as workers camp.	After agreement with the landowner and the local government, concrete floors will be used for other purposes, and for this reason concrete floors were not dismantled.	Solved.
<u>Lot 2</u> Waste in the workers camp near Ayni SS. Minor issue, small amount of waste of non-hazardous nature.	Waste generated after dismantling the workers camp has to be collected and managed safely by a certified waste management company or being brought to a legal dumpsite.	Pending.
<u>Lot 2</u> No grievance book available at Rudaki SS. TBEA brought it with them to their home country when finalizing most of the works. A complaints book must be made available until one year after the implementation is completed (around July 2020). No verbal grievances/requests have been received during the absence of the logbook. Major issue since it is not possible to monitor the Grievance and Redress Mechanism.	TBEA shall place a new complaints book at Rudaki SS.	Pending.
<u>Lot 2</u> Risks to health and safety in Rudaki SS since the lack of compaction of the floor has made it sink, affecting the new rooms of the administration building, some of the electrical equipment that are no longer aligned and the grey water tanks. Major issue.	Contractor to fix the problems originated by the bad compaction practices.	Pending.
<u>Lot 1 and 2</u> Contractor Monthly Environmental Monitoring Reports not available. Major issue.	Contractor to submit the Monthly Environmental Monitoring Reports since July 2018.	Pending.

3.3 Issues Tracking (Based on Non-Conformance Notices)

35. The status of corrective actions proposed during the previous reporting periods that are still pending is presented in Table 7 below.

Table 7. Environmental issues tracking.

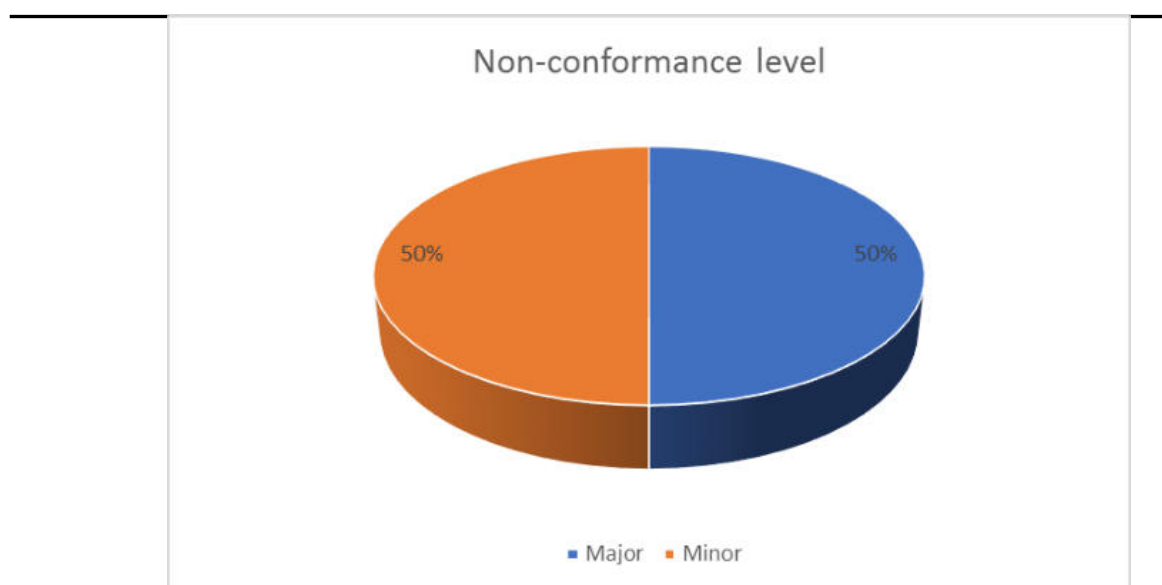
Date of the SAEMR	Non-conformity	Corrective actions applied or needed	Status
2018 S2	<u>Lot 2</u> Waste generated when dismantling the workers camp near Ayni SS was found around.	Collect and manage safely the waste.	Pending.
2018 S2	<u>Lot 2</u> No grievance book available at Rudaki SS. A complaints book must be made available until end September 2019.	Place a grievance book in Rudaki SS in a visible and easily accessible place.	Pending.
2018 S2	<u>Lot 1 and 2</u> Contractor's Monthly Environmental Monitoring Reports not available	Contractor to submit the Monthly Environmental Monitoring Reports since July 2018.	Pending.

36. Summary of Issues Tracking Activity for current period.

Table 8. Summary of Environmental and H&S Issues Tracking Activity for Current Period.

Total Number of Issues for Project	8
Number of Open Issues	7
Number of Closed Issues	1
Percentage Closed	12%
Issues Opened this Reporting Period	3
Issues Closed this Reporting Period	1

Figure 14. Summary of issues by non-conformance level.



37. The 3 major issues in blue in the chart are: no grievance book available at Rudaki SS; Contractor Monthly Environmental Monitoring Reports not available; Risks to health and safety in Rudaki SS since the lack of compaction of the floor has made it sink; and the lack of use of Personal Protection Equipment by the workers in some substations in Lot 1. The 3 minor issues in orange in the chart are: waste in the former workers camp near Ayni SS; lack of agreement with hospitals for medical services provision; and lack of agreement with a waste management company under Lot 1.

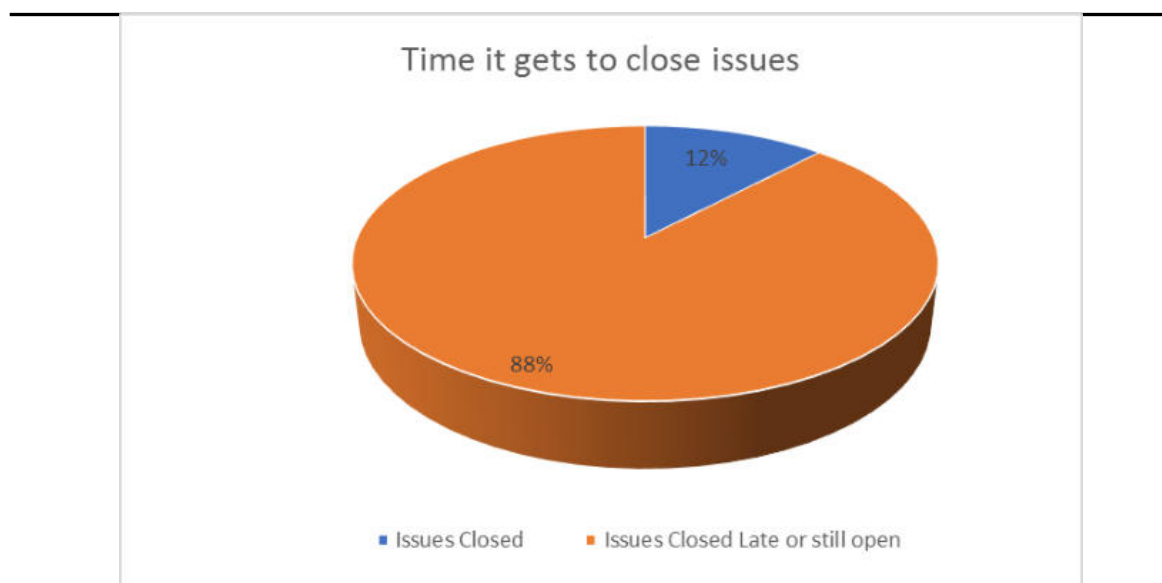
3.4 Trends

38. Information from previous period reports and the current period information.

Table 9. Trends on % of closed issues and % of issues closed late.

Semi-Annual Report No.	Total No. of Issues	% Issues Closed	% Issues Closed Late or still open
6	8	12	88
5	6	50	50
4	11	100	0
3	10	70	30
2	13	85	15
1	12	92	8

Figure 15. Summary of issues by time it gets to close them in the current semi-annual report.



39. The percentage of issues that get closed early is medium-low. There is a recurrent trend for Contractor not submitting the Monthly Safeguards Monitoring Reports. They were received only during the first four months for Lot 2 and they have never been received in relation to Lot 1. Barki Tojik issued a non-conformance notice on it.

3.5 Unanticipated Environmental Impacts or Risks

40. No unanticipated environmental impacts/risks observed in this reporting period.

4 RESULTS OF ENVIRONMENTAL MONITORING

4.1 Overview of Monitoring Conducted during Current Period

41. Environmental Monitoring typically consists of two kinds of activities; visual inspections and inspections at the construction sites, and measurements to gain numerical data. Environmental Monitoring of both Lot 1 and Lot 2 of the Wholesale Metering and Transmission Reinforcement Project is based on the IEE and EMP attached to it, as well as on Contractor's Environmental Monitoring Plan.
- a. Air Quality. In accordance with EMP/SSEMP no instrumental measurement of air quality is foreseen, only visual observations. Vehicles of Contractor were regularly maintained. No other emissions observed/recorded.
 - b. Water Quality. In accordance with EMP/SSEMP no instrumental measurement of water quality is foreseen, only visual observations.
 - c. Noise. All works during the reporting period were conducted inside the SS and included mostly assembly and installation. Therefore, there was no need to measure the noise level.
 - d. Flora and fauna. All works during the reporting period were conducted inside the SS. No illegal pouching, cutting of trees were recorded.

4.2 Trends

42. Non-applicable.

4.3 Summary of Monitoring Outcomes

43. Non-applicable.

4.4 Material Resources Utilization

4.4.1 Current Period

44. Those aspects were not included in the SSEMP for monitoring. It is not possible to provide a reasonable estimate of the water and energy used during the implementation of the project since: (i) some of the activities are performed in bigger facilities and no separate meters are or were in place like in the case of the office work within the Project Management Unit building in Dushanbe or the upgrades in Rudaki and Ayni SSs and (ii) for the construction of the transmission line there was not a water and fuel use inventory system in place since the beginning of the project. Required information has been requested from Contractors and will be incorporated into next SAEMR.

4.4.2 Cumulative Resource Utilization

45. Non-applicable. Those aspects were not included in the SSEMP for monitoring.

4.4.3 Waste Management

46. The domestic waste under Lot 2 in the volume of 27,2 tons was collected and transferred to a controlled dump site either in the city dump sites of Penjakent or Ayni districts. Un-installed substation equipment was transferred to a BT's warehouse located near to Rudaki SS at Sughd Province to reuse the components as spare parts and the refrigeration oil of that equipment was poured in tanks to be filtered and re-used in the future. That metallic tanks is in a regional Barki Tojik maintenance center that it is next door Rudaki Substation, in Penjakent.

4.4.4. Cumulative Waste Generation

Table 10. Cumulative waste generation in the project.

N of Lot	Non-hazardous waste	Hazardous waste	Un-installed equipment
Lot 1	Very limited generation of domestic waste. Managed by the municipal waste management systems.	No hazardous waste has been generated, since there is no need to uninstall any old equipment.	Non-applicable.
Lot 2	Agreement with a certified solid waste management company for all the	Most of them were brought to Dushanbe. During the construction, the	Kept at Barqi Tojik warehouse in Sughd province to be used as spare parts in the future.

	N of Lot	Non-hazardous waste	Hazardous waste	Un-installed equipment
		activities.	gravel polluted with oil was sealed in a box and put on a special dump site near the border with Uzbekistan.	
Lot 3		Non-applicable.	Non-applicable.	Non-applicable.

4.5 Health and Safety

4.5.1 Community Health and Safety

47. During the current reporting period there have been no accidents.

4.5.2 Workers Health and Safety

48. During the implementation of Lot 2, there was a short health and safety briefing delivered to all the workers every morning. The workers had to follow the H&S considerations and guidelines in order to get every morning the “permission access note”.

49. 3 work camps were set in total during the implementation of Lot 2: one on the other side of the road of Ayni SS, another one inside Rudaki SS and a third one half-way of the two SSs, in a rented plot of land that is owned by a construction company and was already being used for similar purposes.

50. Under Lot 2, An agreement was signed with the hospital in Panjakent, so they were aware of the activities going-on and to assure that any injured or sick staff could use their services if needed.

51. 250 workers in total worked in the construction of the OHTL from March 2017 to March 2018. Local workers were hired as drivers and for the digging by hand of the foundations for the towers.

52. 10 workers did all the upgrades in Ayni SS. They were tidying up the site at the end of the working day to avoid trip accidents.

53. 40 workers were working in the rehabilitation of the 110kV switchyard in Rudaki SS.

54. At the SSs, the BT staff fills in a daily journal where the performed activities and incidents if any are written down. The H&S issues and applied mitigation measures are also reported, but there is no reporting on environmental aspects. The technical BT workers count with a H&S passport where it is written down if they passed the periodic exams on H&S aspects, otherwise they cannot continue working for the power utility until they pass them.

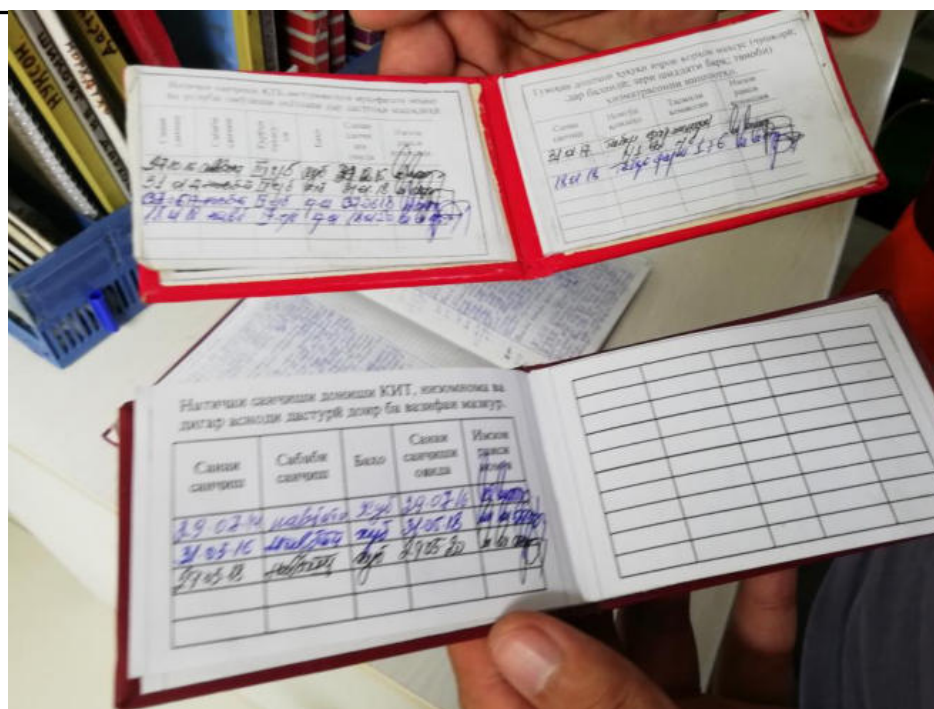


Figure 16. Picture of the H&S passports of the technical BT workers. Ayni SS. Sghud Province. May 2019.

55. Anti-climbing systems were installed in every tower in order to avoid risks such as children willing to climb them.

56. In relation to Lot 1, 4 brigades of TBEA workers move to one substation to another to perform the civil works (mainly digging by hand). They are different to the 6 installation brigades of voltage transformers and current transformers that will follow them. Mr. Chocue who is the contractor EHS responsible expressed that there was no accident since they started with the works on October 10, 2018. Some Tajik people have been hired for doing the civil works, but most of them are Chinese. After the acceptance of the works in relation to the new foundations for the new equipment, the generated hole is covered with soil.

57. There are blocks of residential apartments located very close to the Shajari SS in Dushanbe. Workers doing the civil works work from 8AM to 5PM with a lunch break which it is good to avoid disruptions to the night sleep of the neighbors due to the noise.

58. The contractor EHS responsible for lot 1 pointed out that a briefing on H&S is provided to all the workers before they start to implement the activities. He said that the workers are using the required Personal Protective Equipment (PPE) during the works and they were wearing them when the site inspections were performed. Every H&S aspect is documented in the journal. The Contractor was requested to share copies of the H&S journal and certified dumping sites are being used for the waste. In inspections performed by the PMU to Lot 1 substations where construction works were on-going, it was found that the workers were not using PPE, this major issue will be given special attention during the next inspections. The contractor was requested to maintain the records of all briefings. A sample will be included in

the next Semi-Annual Safeguards Monitoring Report.



Figure 17. TBEA EHS responsible wearing the required hard hat when visiting Bustot SS (Lot 1), Dushanbe, May 2019.

59. During the inspection, they were identified risks to occupational health and safety in Rudaki SS since the lack of compaction of the floor during the construction has made it sink in the areas of the new rooms of the administration building (Figure 9), some of the electrical equipment that are no longer aligned (Figure 10) and the grey water tanks. The cracks in the administration building could let the rain water to come in, which could potentially generate dampness and sinking of that part of the building. The sinking of some areas of the new switchyards pose trip hazards and for the electrical equipment not to be aligned, which could generate technical problems. The sinking of the grey water tanks could mean the lack of alignment with the pipes and potential bad odour and exposure to bacteria. There was no bad odour at the time of the visit in May 2019.



Figure 18. Cracks in the external walls of the new rooms of the administration building due to lack of compaction during its construction. Rudaki SS (lot 2), Penjaket Province, May 2019.



Figure 19. The concrete base of this electrical equipment box is not even, and a gap has been generated between the concrete platform and the walkway. This has been

originated due to lack of compaction during its construction. Rudaki SS (lot 2), Penjakent Province, May 2019.

60. There is no agreement in place with the hospitals for medical services provision under Lot 1 (Huawei and TBEA contractors). This is a minor issue since they could still receive medical treatment at the hospitals if needed.

4.6 Grievance and Redress Mechanism

61. There were no complaints filled during this reporting period nor the previous reporting periods as per the PMU feedback. No independent inspection was possible since there is no Complaints Logbook available in Rudaki Substation.

4.7 Training

62. A workshop was delivered on Health and Safety and Environmental and Social Best Practices. The contents on Health and Safety were taught by Mr. Jose Ignacio Alcon, Team Leader of the project and Power Engineering Specialist and the contents on environmental and social aspects were delivered by Mrs. Patricia Ramos, the International Environmental and Social Specialist of the project. The contents of the H&S part were on: OH&S management system, terms and definitions, regulatory framework, leadership and workers participation, planning, support, communication, documentation, operation, performance evaluation, current status rating, H&S organization, accident ratios, protective equipment, safety procedures, training, . The contents of the environmental and social part were linked to good and bad practices identified during the implementation of the project and covered: basic concepts of social safeguards, land use rights management, grievance and redress mechanism, notifications on expected blackouts, measure of the socio-economic impact, basics of environmental safeguards, contractor's environmental monitoring reports, oil spills management, sump tank management, PCBs, SF₆, asbestos fibers, grey waters management, electronic waste, electromagnetic fields and safeguards implementation monitoring. A total of 14 people participated, mainly from the BT PMU, and from the teams of a 500kV OHTL project and the Interconnection Project to CAPS. The attendance list can be found on Annex VII.



Figure 20. Health and Safety and Environmental and Social Best Practices Seminar. PMU Building, Dushanbe. June 2019.

5 FUNCTIONING OF THE SEMP

5.1 SEMP Review

63. The status of the environmental management plans is presented in Table 11 below.

Table 11. Status of Environmental Management Plans.

Management Plan	Date of approval	Date of Submission
Contractor's Environmental Management Plan, including H&S Plan	January 2017	June 2016
Contractor's Site Specific Environmental Management Plan for Lot 1 and 2	June 2017	June 2017
Original Social and Environmental Management Plan (annex to the IEE)		September 2014
Updated Social and Environmental Management Plan (annex to the revised IEE)		December 2016

64. The Contractor is able in general terms to implement the mitigation and monitoring measures set in the Site-Specific Environmental Management Plans (SSEMPs). The reporting is not being done as frequently as set in the SSEMPs.
65. The mitigation measures set out in the SEMP are still appropriate and they are working as intended.
66. When the SEMP was updated, it was determined that the signaling for birds that is part of the original SEMP was not needed since no birds were crossing across the

line using a recurrent route. The funds that were freed up were used to cover other needs.

6 GOOD PRACTICE AND OPPORTUNITY FOR IMPROVEMENT

6.1 Good Practice

67. Use of security tape to mark out areas where the works are in progress in the Substations, avoiding trip hazards and the exposure to other risks.



Figure 21. Picture taken at “Firdavsi” SS (lot 1), Dushanbe, May 2019.

6.2 Opportunities for Improvement

68. It is a lesson learnt for future projects that when the scope involves the rehabilitation of substations and the power utility is planning to filter the old refrigeration oil of the equipment that will be uninstalled, the project shall fund new tanks where to store the refrigeration oil. If the refrigeration oil is not going to be used anymore, the Project shall finance its safe disposal given that it is a hazardous waste.

7. SUMMARY AND RECOMMENDATIONS

7.1 Summary

69. The implementation of the Environmental Safeguards during the reporting period and for the overall project construction period to date is being effective overall.

Main weaknesses are suggested to be tackled through the recommendations below.

7.2 Recommendations

70. It is a good practice that BT performs semi-annual inspections on H&S aspects to all its facilities and relevant assets. Same way, a corporate quarterly environmental inspection should be performed to detect and remediate dangerous situations such as auto transformer refrigeration oil spills and switchgear oil spills.
71. A General Recommendation out of the scope of the project is to set concrete flooring in the regional spare parts storage for Panjakent region that is located next door to the Rudaki Substation. That way, potential spills will be better controlled and direct interaction with the soil and water resources would be avoided.
72. In the future design on the substations, it should be seriously considered to separate the control room from the equipment room. Nowadays since all the monitoring is done through SCADA and an alerts system, there is no need to be in the same room to have visual contact with the equipment as back in the day with the electro-mechanic equipment. This way it will be avoided that the control center staff is always at 20 degrees temperature which it is a rather cold temperature and it reduces their comfort and concentration ability.
73. The following Corrective Action Plan has been prepared to trouble-shot the found non-conformities. All of the HSE issues (open in previous periods) are also included in the CAP.

Table 12. Corrective Action Plan

Issues, actions and responsible party	Criteria	Schedule
1. Advisable to conclude an agreement with the hospital for medical services provision for Lot 1. Responsible: TBEA and Huawei.	Best practice. It is not part of the Environmental and Social Management Plan, ESMP.	By October 31, 2019
2. Waste generated after dismantling the workers camp near Ayni SS has to be collected and managed safely. Responsible: TBEA.	Environmental and Social Management Plan.	By October 31, 2019.
3. No grievance book available at Rudaki SS. A complaints book must be made available until end September 2019. Responsible: TBEA.	Environmental and Social Management Plan and the Grievance Redress mechanism.	By October 31, 2019.

Issues, actions and responsible party	Criteria	Schedule
4. TBEA to submit the Monthly Environmental Monitoring Reports since July 2018.	Environmental and Social Management Plan	By November 10, 2019.
5. TBEA to fix all the damage in Rudaki Substation originated by lack of compaction during the construction and hence mitigate the H&S risks.	TBEA EPC Contract which it is still in the warranty period.	By October 21, 2019
6. PMU to extend Non-Compliance notices to the Contractors for the open issues above and to attach this Corrective Action Plan to them.	Best practice. The PMU are the ultimate responsible of the implementation of the safeguards.	By October 21, 2019.
7. ADB RETA specialist, PMUES, PIC , CSC will conduct joint site visit.	Corrective actions monitoring.	By November, 2019.
8. TBEA and Huawei (lot 1) to sign a contract with one or several licensed waste management company.	Environmental and Social Management Plan	By November 13, 2019.
9. Lack of use of Personal Protection Equipment.	Environmental and Social Management Plan	By November 5, 2019.

8. ANNEXES

8.1 Annex I: List of Substations Covered by Lot 1

№	Name of Network	Name of Substation	Status in %	
			CT&VT installation	Meter installation
1	Baypaza HPP	Power generation	*	
2	Baypaza HPP	Switchyard- 220kV	*	
3	Central (Markazi) EN	SS «Regar-500» - 500/220/35 kV	*	
4	Central (Markazi) EN	SS «Orjonikidzeabad-2» - 220/110/10 kV	*	
5	Central (Markazi) EN	SS «Djanganl» - 220/110/10 kV	*	
6	Central (Markazi) EN	SS «Dushanbe-500» - 500/220/35 kV	*	
7	Central (Markazi) EN	SS «Novaya» - 220/110/10 kV	*	
8	Central (Markazi) EN	SS «Rogun» - 220/110/35/10 kV	*	
9	Central (Markazi) EN	SS «Zhukovo» - 110/35/10 kV	100	
10	Central (Markazi) EN	SS «Severnaya» - 110/35/10 kV	100	
11	Central (Markazi) EN	SS «Gisar» - 110/35/10 kV	100	
12	Central (Markazi) EN	SS «Chorokoron» - 110/35/10 kV	*	
13	Central (Markazi) EN	SS «Dzherzhinskaya» - 110/35/10 kV	100	
14	Central (Markazi) EN	SS «Lyar» - 110/35/6 kV	100	
15	Central (Markazi) EN	SS «Ptitsefabrika» - 110/35/10 kV	100	
16	Central (Markazi) EN	SS «Pugus» - 110/35/10 kV	*	
17	Central (Markazi) EN	SS «Orjonikidzeabad -1» - 110/35/10 kV	100	
18	Central (Markazi) EN	SS «Obi-Garm» - 110/35/10 kV	100	
19	Central (Markazi) EN	SS «Fayzabad» - 110/35/10 kV	100	
20	Central (Markazi) EN	SS «Mayhura» - 110/10 kV	*	
21	Central (Markazi) EN	SS «DSK» - 110/10 kV	100	
22	Central (Markazi) EN	SS «Simiganch» - 110/10 kV	100	
23	Central (Markazi) EN	SS «Prombasa» - 110/10 kV	100	
24	Central (Markazi) EN	SS «Sultonobod» - 110/6 kV	100	
25	Central (Markazi) EN	SS «Dashtibeg» - 110/6 kV	100	
26	Central (Markazi) EN	SS «Navruz» - 110/6 kV	100	
27	Central (Markazi) EN	SS «Khamza» - 110/10 kV	*	
28	Central (Markazi) EN	SS «Karamgul» - 110/10 kV	*	
29	Central (Markazi) EN	SS «Turgak» - 110/10 kV	*	
30	Central (Markazi) EN	SS «Bobotag» - 110/10 kV	100	
31	Central (Markazi) EN	SS «H.Bulbulon» - 110/6 kV	100	
32	Central (Markazi) EN	SS «Lakayon» - 110/6 kV	100	
33	Central (Markazi) EN	SS «Varzob» - 110/10 kV	100	
34	Central (Markazi) EN	SS «Shakhrinav-2» - 220/110/35/10 kV	*	
35	Central (Markazi) EN	SS «Loihavi» - 110/10 kV	*	
36	Central (Markazi) EN	SS «Chormazak» - 220/10 kV	*	
37	Chanubi EN	SS «Kolhozobod» - 220/110/10 kV	*	
38	Chanubi EN	SS «Rumi» - 220/110/10 kV	*	
39	Chanubi EN	SS «Praydelnaya» - 220/110/10 kV	*	
40	Chanubi EN	SS «Promvodhoz» - 110/35/10 kV	100	
41	Chanubi EN	SS «Chapaeva» - 110/35/10 kV	100	
42	Chanubi EN	SS «Kalinina» - 110/35/10 kV	100	
43	Chanubi EN	SS «Dusty» - 110/35/10 kV	100	

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№	Name of Network	Name of Substation	Status in %	
			CT&VT installation	Meter installation
44	Chanubi EN	SS «Lomonosova» - 110/35/10 kV	*	
45	Chanubi EN	SS «Pogranichnik» - 110/6 kV	100	
46	Chanubi EN	SS «Karadum» - 110/35/6 kV	100	
47	Chanubi EN	SS «Iskra» - 110/35/6 kV	100	
48	Chanubi EN	SS «Kurgan-Tube» - 110/35/6 kV	100	
49	Chanubi EN	SS «Gidrouzel» - 110/35/10 kV	100	
50	Chanubi EN	SS «Guliston» - 110/35/10 kV	100	
51	Chanubi EN	SS «Beshkent» - 110/35/10 kV	*	
52	Chanubi EN	SS «Orositelnaya» - 110/35/6 kV	100	
53	Chanubi EN	SS «Garauly» - 110/35/6 kV	100	
54	Chanubi EN	SS «Oj-Kamar» - 110/35/6 kV	100	
55	Chanubi EN	SS «Kirovobad» - 110/10 kV	*	
56	Chanubi EN	SS «Toshraabad» - 110/6 kV	100	
57	Chanubi EN	SS «Beregovaya» - 110/35/6 kV	100	
58	Chanubi EN	SS «Djilikul» - 110/10 kV	*	
59	Chanubi EN	SS «Sverdlova» - 110/10 kV	100	
60	Chanubi EN	SS «Istiklol» - 110/35/10 kV	100	
61	Chanubi EN	SS «Pyandzh» - 110/10 kV	100	
62	Chanubi EN	SS «Geran-2» - 220/110/10 kV	*	
63	Chkalovsk city EN	SS «Ubilejnaya» - 110/35/10 kV	100	
64	Dangara City	SS «Lolazor» - 220/110/10 kV	*	
65	Dangara City	SS «Sebiston» - 220/35/6 kV	100	
66	Dangara City	SS «Korgar» - 110/35/10 kV	100	
67	Dushanbe City	SS «Glavnaya» - 110/35/6 kV	100	
68	Dushanbe City	SS «XBK» - 110/35/10 kV	25	
69	Dushanbe City	SS «TTM» - 110/10 kV	33.3	
70	Dushanbe City	SS «Kafer.vodozabor» - 110/35/6 kV	75	
71	Dushanbe City	SS «Vostochnaya» - 110/35/6 kV	81.81	
72	Dushanbe City	SS «Akademgorodok» - 110/35/10 kV	100	
73	Dushanbe City	SS «Shursay» - 110/10 kV	100	
74	Dushanbe City	SS «Vakhdat» - 110/6 kV	66.66	
75	Dushanbe City	SS «Karamova» - 110/35/10 kV	75	
76	Dushanbe City	SS «Bahor» - 110/10 kV	100	
77	Dushanbe City	SS «Bustion» - 110/10 kV	100	
78	Dushanbe City	SS «Botsad» - 110/10 kV	50	
79	Dushanbe City	SS «Zavodskaya» - 110/35/10 kV	85.71	
80	Dushanbe City	SS «O. Sooruzheniya» - 110/35/6 kV	100	
81	Dushanbe City	SS «Sovetskaya» - 110/10 kV	100	
82	Dushanbe City	SS «Sportivnaya» - 110/35/10 kV	100	
83	Dushanbe City	SS «Sohili» - 110/10 kV	100	
84	Dushanbe City	SS «Promishlenaya» - 110/35/10 kV	**	
85	Dushanbe City	SS «Kasri Milat» - 110/10 kV	*	
86	Dushanbe City	SS «Shahri» - 110/10 kV	100	
87	Dushanbe City	SS «Jugo-Zapadny Vodozabor» - 110/6 kV	100	
88	Dushanbe City	SS «Firdavsy» - 110/10 kV	80	
89	Dushanbe City	SS «Navbahor» - 110/10 kV	66.66	

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№	Name of Network	Name of Substation	Status in %	
			CT&VT installation	Meter installation
90	Dushanbe City	SS «Luchob» - 110/10 kV	100	
91	Dushanbe City	SS «Anzob» - 110/6 kV	50	
92	Dushanbe City	SS «Kaharova» - 110/10 kV	*	
93	Dushanbe City	SS «Aviator» - 110/6 kV	100	
94	Dushanbe TPP-2	TPP Power generation	*	
95	Dushanbe TPP-9	Substation own needs	*	
96	Dushanbe TPP-9	Switchyard 6 kV	*	
97	Dushanbe TPP-9	Switchyard- 220kV	*	
98	Isfara EN	SS "Isfara" 110/35/10 kV	100	
99	Isfara EN	SS "Kulkent" 110/35/10 kV	100	
100	Isfara EN	SS "Shurob" 110/35/6 kV	*	
101	Isfara EN	SS "October" 110/35/10 kV	*	
102	Isfara EN	SS "Zumrad" 110/10 kV	*	
103	Isfara EN	SS "Matpary" 110/6 kV	100	
104	Isfara EN	SS "Shorsu" 110/10 kV	*	
105	Istarafshan	SS «Uzlovaya» - 220/110/10 kV	100	
106	Istarafshan	SS «Nov» - 110/35/6kV	100	
107	Istarafshan	SS «Sugd-500» - 500/220/35 kV	*	
108	Istarafshan	SS «Shahriston» - 220/10 kV	*	
109	Istarafshan	SS "KNS-2" 220/110/10 kV	*	
110	Istarafshan	SS "KNS-1" 220/10 kV	*	
111	Istarafshan	"KNS-3" 110/10 kV	100	
112	Istarafshan	SS "KNS-4" 110/10 kV	*	
113	Istarafshan	SS "Mekhnat" 110/35/10 kV	*	
114	Istarafshan	SS "Digmay" 110/6 kV	100	
115	Istarafshan	SS "Partsesd" 110/10 kV	*	
116	Istarafshan	SS "Gonji" 110/10 kV	100	
117	Istarafshan	SS "Kaftar" 110/10 kV	100	
118	Istarafshan	SS "Jomi" 110/35/10 kV	*	
119	Istarafshan	SS "Fabrichnaya" 110/10 kV	100	
120	Istarafshan	SS "Ura-Tube" 110/35/10 kV	*	
121	Istarafshan	SS "Chorbog" 110/35/10 kV	100	
122	Istarafshan	SS "Proletarsk" 110/35/10 kV	100	
123	Istarafshan	SS "Gulakandoz" 110/10 kV	100	
124	Kayrakkumskaya	Power generation	*	
125	Khujand city EN	SS «Zarechnaya» - 110/10 kV	100	
126	Khujand city EN	SS «Novaya» - 110/35/10 kV	100	
127	Khujand city EN	SS «Avichena» - 110/6 kV	100	
128	Khujand city EN	SS «Nagornaya» - 110/10 kV	*	
129	Kulyab City	SS «Bohtar» - 110/10 kV	*	
130	Kulyab City	SS «Somoni» - 110/6 kV	100	
131	Kulyab City	SS «Ismailova» - 110/35/6 kV	*	
132	Kulyab City	SS «Amirshoeva» - 110/10 kV	*	
133	Kulyab EN	SS «Hatlon» - 220/110/10 kV	*	
134	Kulyab EN	SS «Kulob» - 110/35/10 kV	*	
135	Kulyab EN	SS «Bose» - 110/35/10 kV	100	

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№	Name of Network	Name of Substation	Status in %	
			CT&VT installation	Meter installation
136	Kulyab EN	SS «Kizil-su» - 110/35/6 kV	*	
137	Kulyab EN	SS «Farkhor» - 110/35/6 kV	*	
138	Kulyab EN	SS «Toakala» - 110/10 kV	100	
139	Kulyab EN	SS «Hoaling» - 110/10 kV	100	
140	Kulyab EN	SS «Sijarfak» - 110/10 kV	*	
141	Kulyab EN	SS «Kulob-Darje» - 110/35/6 kV	100	
142	Kulyab EN	SS «Shugnou» - 110/35/6 kV	*	
143	Kulyab EN	SS «Dahana» - 110/35/10 kV	100	
144	Nurek City EN	SS «Shar-Shar» - 220/35/10 kV	100	
145	Nurek City EN	SS «Nurek» - 220/35/6 kV	*	
146	Nurek HPP-7	Power generation	*	
147	Nurek HPP-7	Substation own needs	*	
148	Nurek HPP-7	Switchyard 220 kV	*	
149	Penjikent EN	SS "Ajni-220" 220/110/10 kV	*	
150	Penjikent EN	SS "Pudaki-220" 220/110/35/10 kV	*	
151	Penjikent EN	SS "Setora" 110/10 kV	100	
152	Penjikent EN	SS "Istiglol" 110/6 kV	100	
153	Penjikent EN	SS "Dshishikrut" 110/6 kV	100	
154	Penjikent EN	SS "Sarvoda" 110/6 kV	100	
155	Penjikent EN	SS "Kolhozchien" 110/10 kV	100	
156	Penjikent EN	SS "Jery" 110/6 kV	100	
157	Penjikent EN	SS "Koshona" 110/10 kV	100	
158	Penjikent EN	SS "Zarafshon" 110/10 kV	100	
159	Penjikent EN	SS "Ainy" 110/35/10 kV	100	
160	Rasht EN	SS «Tegermi» - 110/10 kV	100	
161	Rasht EN	SS «Komsomolobod» - 110/10 kV	100	
162	Rasht EN	SS «Plemsovkhoz» - 110/10 kV	100	
163	Rasht EN	SS «Fedina» - 110/10 kV	100	
164	Rasht EN	SS «Dzhirgital» - 110/10 kV	100	
165	Rasht EN	SS «Tojikobod» - 110/35/10 kV	100	
166	Rasht EN	SS «Garm» - 110/35/10 kV	*	
167	Rasht EN	SS «Lyahsh» - 110/35/10 kV	100	
168	Rasht EN	SS «Hakimi» - 110/10 kV	*	
169	Sugd EN	SS «Hodjend» - 220/110/10 kV	*	
170	Sugd EN	SS «Leninabadskaya» - 220/110/10 kV	*	
171	Sugd EN	SS «H.Bakirgan» - 110/35/10 kV	*	
172	Sugd EN	SS «Kanibadam» - 220/110/35/10 kV	*	
173	Sugd EN	SS "Asht" 220/110/10 kV	*	
174	Sugd EN	SS "Buston" 220/110/10 kV	*	
175	Sugd EN	SS «Bulok-2» - 110/35/10 kV	100	
176	Sugd EN	SS «Zarya» - 110/35/6 kV	*	
177	Sugd EN	SS «Sovetobod» - 110/35/6 kV	100	
178	Sugd EN	SS «Dzharbulak» - 110/35/10 kV	100	
179	Sugd EN	SS «Sumchak» - 110/35/6 kV	100	
180	Sugd EN	SS «ANS-5» - 110/35/6 kV	100	
181	Sugd EN	SS «Vstrecha» - 110/35/10 kV	100	

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№	Name of Network	Name of Substation	Status in %	
			CT&VT installation	Meter installation
182	Sugd EN	SS «Mahram» - 110/35/6 kV	100	
183	Sugd EN	SS «Hlopzavodskaya» - 110/35/6 kV	*	
184	Sugd EN	SS «Kovrovaya» - 110/35/6 kV	*	
185	Sugd EN	SS «Dargot» - 110/35/6 kV	100	
186	Sugd EN	SS «Yantak-1» - 110/35/10/6 kV	*	
187	Sugd EN	SS «DVZ-1» - 110/35/6 kV	*	
188	Sugd EN	SS «Gozien» - 110/6 kV	100	
189	Sugd EN	SS «Gafurov» - 110/10 kV	100	
190	Sugd EN	SS «ANS-1» - 110/10 kV	100	
191	Sugd EN	SS «Collectornaya» - 110/6 kV	*	
192	Sugd EN	SS «Eti-tepa» - 110/6 kV	*	
193	Sugd EN	SS «Navruz» - 110/10 kV	*	
194	Sugd EN	SS «Ak-dzhar» - 110/6 kV	100	
195	Sugd EN	SS «SFK» - 110/6 kV	100	
196	Sugd EN	SS «Adrasman» - 110/35/6 kV	100	
197	Sugd EN	SS «DVZ-2» - 110/6 kV	100	
198	Sugd EN	SS «DVZ-3» - 110/6 kV	100	
199	Sugd EN	SS «ANS-3» - 110/6 kV	*	
200	Sugd EN	SS «ANS-4» - 110/6 kV	100	
201	Tursunzoda EN	SS «Ravshan» - 220/35/10 kV	*	
202	Vaksh HPP	HPP - 5 Power generation	*	
203	Vaksh HPP	Switchyard 220 kV	*	
204	Vaksh HPP	Switchyard 110 kV	*	
205	Vaksh HPP	Switchyard 35 kV	*	
206	Vaksh HPP	Substation own needs	*	
207	Vaksh HPP	HPP - 4 Power generation	*	
208	Vaksh HPP	Switchyard 110 kV	*	
209	Vaksh HPP	Switchyard 35 kV	*	
210	Vaksh HPP	HPP - 6 Power generation	*	
211	Vaksh HPP	Switchyard 6 kV	*	
212	Vaksh HPP	Substation own needs	*	
213	Varzob HPP	Varzob HPP-1	*	
214	Varzob HPP	Varzob HPP-2	100	
215	Yavan TPP-10	Power Generation	*	
216	Yavan TPP-10	Substation own needs	*	
217	Yavan TPP-10	Switchyard 220 kV	*	
218	Yavan TPP-10	SS 110/6 kV «Nasosnaya stanchiya №1» (YTPP)	*	
219	Yavan TPP-10	SS 110/6 kV «Nasosnaya stanchiya №2» (YTPP)	*	
220	Yavan TPP-10	SS 110/6 kV «Nasosnaya stanchiya №3» (YTPP)	*	
221	Central (Markazi) EN	SS «TMK» - 110/35/10 kV	*	
222	Central (Markazi) EN	SS «Парвоз» - 110/10 kV	*	
223	Central (Markazi) EN	«Ushniya Porta» - 110/35/10 kV	*	
224	Chanubi EN	SS «Vodii Zarrin» - 110/10kV	*	
225	Chanubi EN	SS «Navobod» - 110/10kV	*	
226	Dushanbe City	SS «Касри теннис» - 110/10 kV	*	

№	Name of Network	Name of Substation	Status in %	
			CT&VT installation	Meter installation
227	Istarafshan	SS "Zafarobod" 110/35/10 kV	*	
228	Istarafshan	SS "Stepnaya" 110/35/10 kV	*	
229	Istarafshan	SS "Ulduzkok" 110/35/6 kV	*	
230	Khujand city EN	SS «Rادی»- 110/10 kV	*	
231	Sugd EN	SS «Aprelevskaya» - 110/6 kV	*	
232	Sugd EN	SS «Metallzavod» - 110/6 kV	*	
233	Sugd EN	SS «Tajikskaya» - 110/35/6 kV	*	

Note: Work on the installation of current transformers and voltage transformers is very advance and the installation of electric meters has not been started yet.

* - substations where the installation of current transformers and voltage transformers are not provided.

** - at this substation, the reconstruction will be carried out as part of another project.

8.2 Annex II: Pictures

8.2.1 Pictures taken at the former workers camp near “Ayni” SS, Lot 2, May 2019.



Figure 1: Presence of concrete floors.



Figure 2: Presence of construction material waste after dismantling the camp.



Figure 3: Presence of construction material waste after dismantling the camp.

8.2.2 Pictures taken at the RoW and towers of the built power transmission line, Lot 2, May 2019.



Figure 1. Tower 46 of the OHTL on agricultural land. Sghud Province. May 2019.



Figure 2. Tower 46 of the OHTL on agricultural land. Sghud Province. May 2019.



Figure 3. Tower 47 of the OHTL. Sghud Province. May 2019.



Figure 4. Tower 48 of the OHTL placed on rock. Sghud Province. May 2019.



Figures 5 and 6. Tower 100 of the OHTL and access road. Sghud Province. May 2019.



Figures 7 and 8. Tower 100 of the OHTL and access road. Sghud Province. May 2019.



Figure 9. Tower 112 of the OHTL. Sghud Province. May 2019.



Figure 10. Access road for Tower 142 of the OHTL. Sghud Province. May 2019.



Figure 11. Access road for Tower 142 of the OHTL that cannot be transited after the landslides. Sghud Province. May 2019.



Figure 12. Unknown tower number of the OHTL. Sghud Province. May 2019.



Figure 13. Tower 158 of the OHTL. Sghud Province. May 2019.



Figure 14 and 15. Tower 164 of the OHTL. Sghud Province. May 2019.



Figure 16. Tower 182 of the OHTL. Panjakent Province. May 2019.



Figure 17. Tower 183 of the OHTL. Panjakent Province. May 2019.



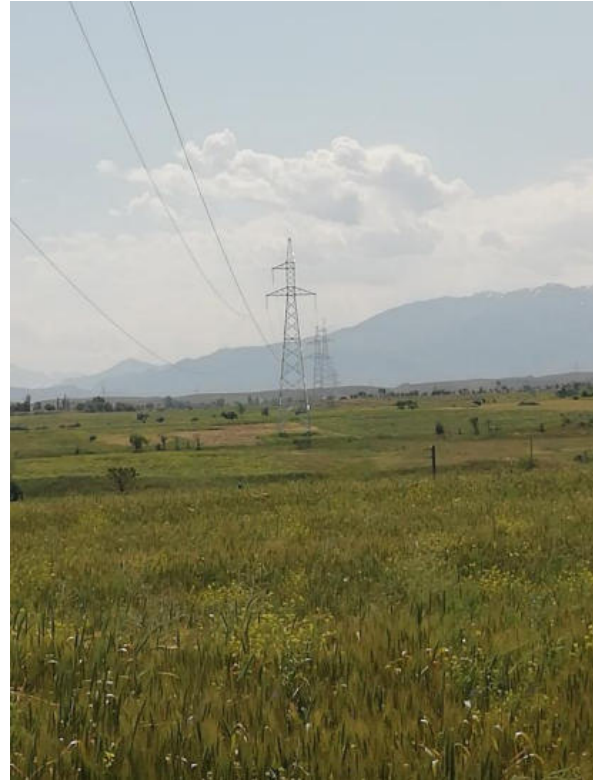
Figure 18. Tower 183 of the OHTL. Panjakent Province. May 2019.



Figures 19 and 20. Tower 190 of the OHTL on agricultural land. Panjakent Province. May 2019.



Figures 21 and 22. Tower 216 of the OHTL. Panjakent Province. May 2019.



Figures 23 and 24. Tower 216 of the OHTL. Panjakent Province. May 2019.



Figure 25. Tower 232 of the OHTL. Panjakent Province. May 2019.

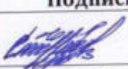



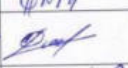

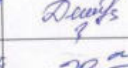

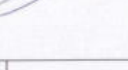

8.3 Annex III: Attendance sheet of the delivered seminar on ESHS best practices




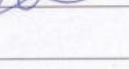
Wholesale Metering and Transmission Reinforcement Project

Data: June 07, 2019

Time: 9:100

Place: PMU

#	Organization/Company Организация/Компания	Representative Имя и фамилия	Designation Должность	Signature Подпись
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2.	ИСК "Шабакон Борон и. Душанбе"	Талбонов Турсунали	мухандис нембар ХР ва АФ	
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13.	AF MERCADOS	JOSE IGNACIO ALCON	SAFETY CONDUCTOR AND OTL	
14.	AF Mercados	Shatipovs Madana	translator, administ.	
15.				
16.				
17.				
18.				