

# Semi-annual Environmental Monitoring Report

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Project Number: 47017-003  
Grant Number: 0417-TAJ  
Period covered: July - December 2018

## Republic of Tajikistan: Wholesale Metering and Transmission Reinforcement Project

(Financed by Asian Development Bank)

Prepared by: AF MercadosEMI - Project Implementation Consultant

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

April 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
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 5<sup>th</sup> EMR for the project.

### 1.2 Headline Information

3. 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 software part of the project was rejected, and the Contractor shall propose new software suppliers. The construction of the foundations and erection of the Current and Voltage Transformers inside the substations has started in Dushanbe. Meter deployment has not started so far. The works under lot 1 are expected to be completed by July 2019 in all the subject substations (SSs) located along the country.
4. 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. It is pending to finalize setting concrete floors in the protections room, deliver one more training on maintenance and the final check on the equipment.
5. Lot 3 on the feasibility study of the interconnection between Tajikistan and Uzbekistan to re-incorporate Tajikistan to the Central Asia Power System has been completed during the reporting period. The implementation of the interconnection activities became part of an independent project.
6. 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 the hospital for medical services provision and agreement for garbage removal.	Advisable to conclude an agreement with the hospital for medical services provision and agreement for garbage removal.	It was communicated to the Contractor and the Contractor has not replied yet.
<u>Lot 1 and 2</u> Lack of use of Personal Protective Equipment in some	Personal Protective	Solved. Communicated

Main finding	Corrective actions applied or needed	Status
sites.	Equipment has to be compulsory used in any risky situation.	during the inspection and corrected straight away.
<u>Lot 2</u> Need to bring the workers camp near Ayni SS back to the previous condition.	In the letter attached as Annex II, the Contractor has expressed that "After agreeing with the landowner and the local government, we were informed that concrete floors would be used for other purposed, and this is the reason why we did not disassemble the concrete floors".	Partially solved. It will be checked in the next visit by the PMU, ADB and/or PIC that there is no waste dumped around the former workers camp area.
<u>Lot 2</u> The temporary toilets for workers in Rudaki SS are still in place. Suggestion to demolish them.	In the letter attached as Annex II, the Contractor has expressed that the dismantling of the temporary toilet was denied to us by the head of the substation. And we are attaching a letter from the representative of the substation with the task order not to dismantle the temporary toilet.	Solved.
<u>Lot 2</u> No grievance book available at Rudaki SS. A complaints book must be made available until end September 2019.	In the letter attached as Annex II, the Contractor has expressed that "we have created a new register of complaints at the Rudaki Substation".	Solved. Visual check to be performed in the next site visit.
<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.

## 2 PROJECT DESCRIPTION AND CURRENT ACTIVITIES

### 2.1 Project Description

7. The Republic of Tajikistan has received financing (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.
8. 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.

9. The location of the Project component Lot 2 is presented below in Figure 1 in the scale of the Country.

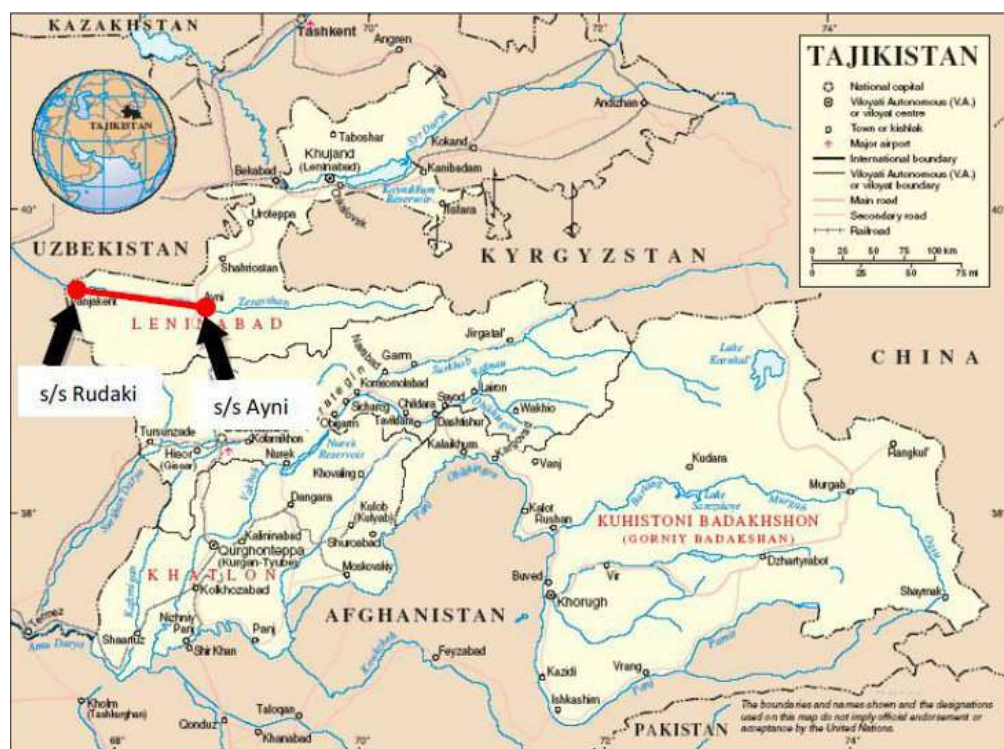


Figure 1. Location of the Project (Lot 2)

## 2.2 Project Contracts and Management

10. The Executing Agency for the Project is the 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.
11. 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.

12. 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 expected closing date is December 2019.
13. 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.
14. The EHS management of the project is as shown in Figure 2.

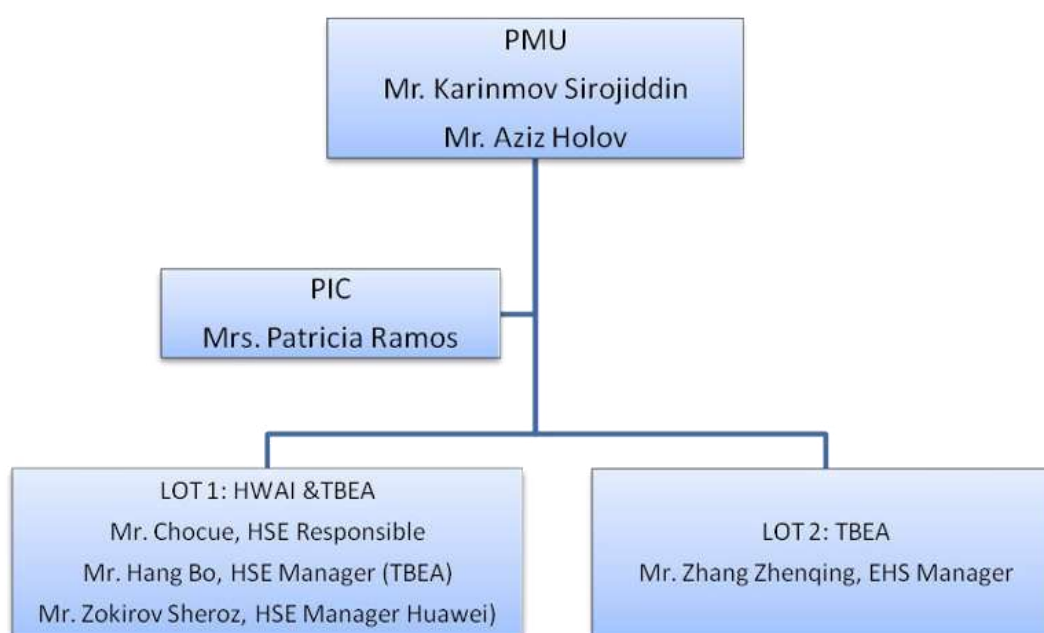


Figure 2. EHS management of the project

15. 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.
16. 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 Sherov, 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

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

## 2.3 Project Activities During Current Reporting Period

18. 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 2018	Construction activities	Percentage of completion
1	July	Lot 2, second amendment: civil works at 110 kV Switchyard in Rudaki SS	100%
2	August	Lot 2, second amendment: electromechanical assembly in Rudaki SS	100%
3	September	Lot 2, second amendment: commissioning of the works in Rudaki SS	100%
4	October	-	-
5	November	-	-
6	December	Lot 1: start of the works. Construction of the new foundations at the substations for the installation of CTs/VTs.	2%

19. 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 software part of the project was rejected, and the Contractor has to propose new software suppliers. 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 has started in Dushanbe. Meter deployment has not started so far. The construction works on installation of CTS and VTs under lot 1 are expected to be completed by July 2019.



Figure 3. Picture showing the digging done for installing the new foundations for the installation of the new equipment at “Shahri” SS, Dushanbe, December 2018.



Figure 4. EHS responsible from the contractor BTEA. Picture taken at “Shahri” SS, Dushanbe, December 2018.



Figure 5. Picture showing the digging done for installing the new foundations for the installation of the new equipment at “Buston” SS, Dushanbe, December 2018.

20. A total of 233 substations are covered by Lot 1 of the Project. The list of the substations and the network they belong to can be found in Annex I of this document.
21. 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 newbay in Ainy SS. The Contractor TBEA completed the works on 25 January 2018 for the original scope. It is mentioned in the report than civil works were finalized in Ayni and Penjikent SS and only installation of equipment is expected. The post-construction environmental inspection will be conducted in 2019 and check-lists will be provided in the next SA-EMR.



Figure 6. New bay built at Ayni SS, Panjakent Province. Completed at a previous reporting period. December 2018.



Figure 7. Tower that belongs to the constructed OHTL that was completed at a previous period. December 2018.

22. 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. It is pending to finalize setting concrete floors in the protections room, deliver one more training on maintenance and the final check on the equipment.



Figure 8. Renovation of 110 kV switchyard at Rudaki Substation, Panjakent Province. December 2018.

23. Lot 3 on the feasibility study of the interconnection between Tajikistan and Uzbekistan to re-incorporate Tajikistan to the Central Asia Power System has been completed during the 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 has been performed under Lot 3.

24. 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

25. 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 signed on 27 September 2018.
26. 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

27. No changes.

### 3 ENVIRONMENTAL SAFEGUARD ACTIVITIES

#### 3.1 General Description of Environmental Safeguard Activities

28. The PIC International Environmental and Social Specialist was on mission in Tajikistan from 27 November to 5 December 2018, visiting several project sites and holding meetings with BarqiTojik, the ADB, and the Specialist of the Environmental Committee of Panjakent District. The findings of that mission have been incorporated in this report.

#### 3.2 Site Inspection

29. These are the details of the formal inspections undertaken by environmental safeguard process staff 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	18/06/18 Visit of: Ayni SS, Rudaki SS, the OHTL (lot 2).	Karimov S.	Inspection of the environmental and social aspects	The headsets for working with noisy machinery have not been provided	Corrected during the visit
	06/09/18 Visit of: Rudaki SS, the OHTL (lot 2).	Karimov S.		Missing of some SIZ workers has been indicated	Corrected during the visit
	15/11/18 Visit of: Ayni SS, Rudaki SS, the OHTL (lot 2).	Holov A.			Monitoring of corrective actions has been executed

Organization	Date of Visit	Inspector's Name	Purpose of Inspection	Significant Findings	Status
	24/10/18 Visit of: Karamova SS, BachorSS, Varzob SS, (lot 1)	Holov A.	Inspection of the environmental aspects	Advisable to conclude an agreement with the hospital for medical services provision and agreement for garbage removal.	There is no reply from Contractor
	15/11/18 Visit of: Dashtibed SS, SochiliSS, NavruzSS, (lot 1)	Holov A.		Advisable to comply with regulations on clothes and shoes for workers.	Corrected during the visit
	25/12/18 Visit of: GulistonSS, Garavut iSS, (lot 1)	Holov A.		Advisable to comply with regulations on clothes and shoes for workers.	Corrected during the visit
<b>PIC</b>	27/11/18- 06/12/18. Visit of: Ayni SS, Rudaki SS, the OHTL (lot 2)., "Shahri" SS and "Bustot" SS (lot 1).	Patricia Ramos	Inspection of the environmental aspects of the project activities performed during the last 6 months	<p><u>Lot 1</u></p> <p>- Hygienic condition of toilets of the SSs visited in Tajikistan is not up to standard.</p> <p><u>Lot 2</u></p> <p>- Ayni SS workers camp has to be brought back to previous condition.</p> <p>-No grievance book available at Rudaki SS.</p>	

30. The Specialist of the Environmental Committee of Panjakent City, Mr. Ploduf Murod, expressed his interest in visiting the line in a future mission together with other City

Committees. Same way, the ADB national environmental and social specialists expressed their will to perform site visits next time that the PIC international environmental and social specialist is in the country. Therefore, all of them will be given notice about the next mission of the PIC international environmental and social specialist in order for the joint site visits to take place.

31. This is the summary of the findings of the inspections undertaken in the current period:

Table 6. Summary of the findings in the current period.

Main finding	Corrective actions applied or needed	Status
<u>Lot 1</u> Lack of agreement with the hospital for medical services provision and agreement for garbage removal.	Advisable to conclude an agreement with hospitals for medical services provision and agreement for garbage removal.	It was communicated to the Contractor and the Contractor has not replied yet.
<u>Lot 2</u> Need to bring the workers camp near Ayni SS back to the previous condition.	In the letter attached as Annex II, the Contractor has expressed that "After agreeing with the landowner and the local government, we were informed that concrete floors would be used for other purposed, and this is the reason why we did not disassemble the concrete floors".	Partially solved. It will be checked in the next visit by the PMU, ADB and/or PIC that there is no waste dumped around the former workers camp area.
<u>Lot 2</u> The temporary toilets for workers in Rudaki SS are still in place. Suggestion to demolish them.	In the letter attached as Annex II, the Contractor has expressed that the dismantling of the temporary toilet was denied to us by the head of the substation. And we are attaching a letter from the representative of the substation with the task order not to dismantle the temporary toilet.	Solved.
<u>Lot 2</u> No grievance book available at Rudaki SS. A complaints book must be made available until end September 2019.	In the letter attached as Annex II, the Contractor has expressed that "we have created a new register of complaints at the Rudaki Substation".	Solved. Visual check to be performed in the next site visit.
<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.

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

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

Date of the SAEMR	Non-conformity	Corrective actions applied or needed	Status
2017 S2	Towers 7,73,100,142,171,197,223 - Garbage and work leftovers were detected in these towers	Pick them up till the complete cleaning of each area	To be assessed during the next inspections.
2017 S2	Towers 142, 164, 183, 201, 221, 223 - Mistaken backfilling can provoke some kind of soil slide	Implement remedy works.	To be assessed during the next inspections.

33. Summary of Issues Tracking Activity for current period.

Table 8. Summary of Issues Tracking Activity for Current Period.  
Summary Table

Total Number of Issues for Project	6
Number of Open Issues	3
Number of Closed Issues	3
Percentage Closed	50%
Issues Opened This Reporting Period	3
Issues Closed This Reporting Period	3

Figure 10. Summary of issues by non-conformance level.



### 3.4 Trends

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

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

Quarterly Report No.	Total No. of Issues	% Issues Closed	% Issues ClosedLate
5 (current)	6	50	50
4	11	100	0
3	10	70	30
2	13	85	15
1	12	92	8

35. The percentage of issues that get closed early is very high. The is a recurrent trend for Contractor not submitting the Monthly Environmental Reports and the toilets at the substations and the temporary ones provided for the workers not being in hygienic condition.

### 3.5 Unanticipated Environmental Impacts or Risks

36. Non-applicable.

## 4 RESULTS OF ENVIRONMENTAL MONITORING

### 4.1 Overview of Monitoring Conducted during Current Period

37. 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 were conducted inside the SS and included mostly assembly and installation. That is why level of noise was not measured.
  - d. Flora and fauna. All works were conducted inside the SS. No illegal pouching, cutting of trees were recorded.

### 4.2 Trends

38. Non-applicable.

### 4.3 Summary of Monitoring Outcomes

39. Non-applicable.

## 4.4 Material Resources Utilization

### 4.4.1 Current Period

40. 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.

### 4.4.2 Cumulative Resource Utilization

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

### 4.4.3 Waste Management

42. The domestic waste 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 Sghud 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.

### 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
<b>Lot 1</b>	Very limited generation of domestic waste. Managed by the municipal waste management systems.	Further information will be sought from the Contractor and included in the next semi-annual report.	Kept at Barqui Tojik warehouse in Sghud province to be used as spare parts in the future.
<b>Lot 2</b>	Agreement with a certified solid waste management company for the whole activities.	Most of them were brought to Dushanbe. Gravel polluted with oil was sealed in a box and put on a special dump site near the border with Uzbekistan. Note: Further information will be sought and included in the next semi-annual	Kept at Barqui Tojik warehouse in Sghud province to be used as spare parts in the future.

N of Lot	Non-hazardous waste	Hazardous waste	Un-installed equipment
		report.	
<b>Lot 3</b>	Non-applicable.	Non-applicable.	Non-applicable.

## 4.5 Health and Safety

### 4.5.1 Community Health and Safety

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

### 4.5.2 Worker Safety and Health

44. 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”.
45. 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.
46. 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.
47. 250 workers in total worked in the construction of the OHTL. Local workers were hired as drivers and for the digging by hand of the foundations for the towers.
48. 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.
49. 40 workers were working in the rehabilitation of the 110kV switchyard in Rudaki SS.
50. 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.
51. Anti-climbing systems were installed in every tower in order to avoid risks such as children willing to climb them.
52. 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 installation brigade 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.

53. There are blocks of 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.
54. 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).

#### **4.6 Grievance and Redress Mechanism**

55. There were no complaints filled during this reporting period nor the previous reporting periods.

#### **4.7 Training**

56. There is need for additional training for the BT supervisors on EHS for reviewing aspects such as avoidance of water and soil pollution by oil spills, hygienic condition of toilets and effective monitoring of environmental aspects. Regular instruction of BT workers on environmental, health and safety issues would be very beneficial. It is suggested to deliver a seminar to the BT supervisors with a "Training of Trainers" approach so later on they will be the ones with the duty to train regularly in these aspects to the rest of the BT staff that work at facilities (non-office staff).

### **5 FUNCTIONING OF THE SEMP**

#### **5.1 SEMP Review**

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

Table 11. Status of Environmental Management Plans.

<b>Management Plan</b>	<b>Date of approval</b>	<b>Date of Submission</b>
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		December 2016

Management Plan	Date of approval	Date of Submission
IEE)		

58. The Contractor is able in general terms to implement the mitigation and monitoring measures set in the Site Environmental Management Plan (SEMP). The reporting is not being done as frequently as set in the SEMP.
59. The mitigation measures set out in the SEMP are still appropriate and they are working as intended.
60. 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

61. A good practice that will be implemented is using the same soil to refill the holes made for setting in the new foundations for the new equipment at the subject SSs under Lot 1.



Figure 11. Soil put aside will be used to refill the holes made for setting in the new foundations. Shahri SS, Dushanbe, December 2018.

62. Another good practice is setting spikes at the towers of the OHTL in order to prevent birds setting on it and getting familiar with the towers. The less they are around the towers, the less probable it is they get electrocuted with the conductors.



Figure 12. Spikes set at the OHTL towers. Panjakent region. December 2018.

63. Counting with a new fence around the Rudaki SS that has been also funded by the Project is good from an environmental view since it prevents big and medium size mammals getting into the SS and being injured and it partially isolates the potential sources of pollution from the natural environment.



Figure 13. New fence at Rudaki SS. Panjakent region. December 2018.

64. The pressure in the installed SF6 circuit breakers is checked every day. If it gets lower, someone from the BT regional office comes to check on it in order to avoid freeing

into the atmosphere this powerful Green House Gas and contribute to climate change.

## **6.2 Opportunities for Improvement**

65. Recommendations for improvement have been included in the same section.

## **7. SUMMARY AND RECOMMENDATIONS**

### **7.1 Summary**

66. The implementation of the Environmental Safeguards during the reporting period and for the overall project construction period to date is being effective overall. Main weakness are suggested to be tackled through the recommendations below.

### **7.2 Recommendations**

67. 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 (detected in Rudaki SS in the old auto transformers still in use and the auto transformer oil stored in the old tanks) and switchgear oil spills.
68. It is suggested that an EHS seminar to the BT's supervisors is organized on the next mission of the international environmental and social specialist of the PIC. Aspects such as avoidance of water and soil pollution by oil spills, hygienic condition of toilets and effective monitoring on environmental aspects are suggested to be included.
69. 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.
70. 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.



## 8. ANNEXES

### 8.1 Annex I: List of Substations Covered by Lot 1

No	Name of Network	Name of Substation
1	BaypazaHydropowerplant	Power generation
2	BaypazaHydropowerplant	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
10	Central (Markazi) EN	SS «Severnaya» - 110/35/10 kV
11	Central (Markazi) EN	SS «Gisar» - 110/35/10 kV
12	Central (Markazi) EN	SS «Chorokoron» - 110/35/10 kV
13	Central (Markazi) EN	SS «Dzherzhinskaya» - 110/35/10 kV
14	Central (Markazi) EN	SS «Lyar» - 110/35/6 kV
15	Central (Markazi) EN	SS «Ptitsefabrika» - 110/35/10 kV
16	Central (Markazi) EN	SS «Pugus» - 110/35/10 kV
17	Central (Markazi) EN	SS «Orjonikidzeabad -1» - 110/35/10 kV
18	Central (Markazi) EN	SS «Obi-Garm» - 110/35/10 kV
19	Central (Markazi) EN	SS «Fayzabad» - 110/35/10 kV
20	Central (Markazi) EN	SS «Mayhura» - 110/10 kV
21	Central (Markazi) EN	SS «DSK» - 110/10 kV
22	Central (Markazi) EN	SS «Simiganch» - 110/10 kV
23	Central (Markazi) EN	SS «Prombasa» - 110/10 kV
24	Central (Markazi) EN	SS «Sultonobod» - 110/6 kV
25	Central (Markazi) EN	SS «Dashtibeg» - 110/6 kV
26	Central (Markazi) EN	SS «Navruz» - 110/6 kV
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
31	Central (Markazi) EN	SS «H.Bulbulon» - 110/6 kV
32	Central (Markazi) EN	SS «Lakayon» - 110/6 kV
33	Central (Markazi) EN	SS «Varzob» - 110/10 kV
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
41	Chanubi EN	SS «Chapaeva» - 110/35/10 kV
42	Chanubi EN	SS «Kalinina» - 110/35/10 kV
43	Chanubi EN	SS «Dusty» - 110/35/10 kV

<b>№</b>	<b>Nameof Network</b>	<b>Nameof Substation</b>
44	Chanubi EN	SS «Lomonosova» - 110/35/10 kV
45	Chanubi EN	SS «Pogranichnik» - 110/6 kV
46	Chanubi EN	SS «Karadum» - 110/35/6 kV
47	Chanubi EN	SS «Iskra» - 110/35/6 kV
48	Chanubi EN	SS «Kurgan-Tube» - 110/35/6 kV
49	Chanubi EN	SS «Gidrouzel» - 110/35/10 kV
50	Chanubi EN	SS «Guliston» - 110/35/10 kV
51	Chanubi EN	SS «Beshkent» - 110/35/10 kV
52	Chanubi EN	SS «Orositelnaya» - 110/35/6 kV
53	Chanubi EN	SS «Garauty» - 110/35/6 kV
54	Chanubi EN	SS «Oj-Kamar» - 110/35/6 kV
55	Chanubi EN	SS «Kirovobad» - 110/10 kV
56	Chanubi EN	SS «Toshabad» - 110/6 kV
57	Chanubi EN	SS «Beregovaya» - 110/35/6 kV
58	Chanubi EN	SS «Djilikul» - 110/10 kV
59	Chanubi EN	SS «Sverdlova» - 110/10 kV
60	Chanubi EN	SS «Istiklol» - 110/35/10 kV
61	Chanubi EN	SS «Pyandzh» - 110/10 kV
62	Chanubi EN	SS «Geran-2» - 220/110/10 kV
63	Chkalovskcity EN	SS «Ubilejnaya» - 110/35/10 kV
64	Dangara City	SS «Lolazor» - 220/110/10 kV
65	Dangara City	SS «Sebiston» - 220/35/6 kV
66	Dangara City	SS «Korgar» - 110/35/10 kV
67	Dushanbe City	SS «Glavnaya» - 110/35/6 kV
68	Dushanbe City	SS «XBK» - 110/35/10 kV
69	Dushanbe City	SS «TTM» - 110/10 kV
70	Dushanbe City	SS «Kafer.vodozabor» - 110/35/6 kV
71	Dushanbe City	SS «Vostochnaya» - 110/35/6 kV
72	Dushanbe City	SS «Akademgorodok» - 110/35/10 kV
73	Dushanbe City	SS «Shursay» - 110/10 kV
74	Dushanbe City	SS «Vakhdat» - 110/6 kV
75	Dushanbe City	SS «Karamova» - 110/35/10 kV
76	Dushanbe City	SS «Bahor» - 110/10 kV
77	Dushanbe City	SS «Bustion» - 110/10 kV
78	Dushanbe City	SS «Botsad» - 110/10 kV
79	Dushanbe City	SS «Zavodskaya» - 110/35/10 kV
80	Dushanbe City	SS «O. Sooruzheniya» - 110/35/6 kV
81	Dushanbe City	SS «Sovetskaya» - 110/10 kV
82	Dushanbe City	SS «Sportivnaya» - 110/35/10 kV
83	Dushanbe City	SS «Sohili» - 110/10 kV
84	Dushanbe City	SS «Promishlenaya» - 110/35/10 kV
85	Dushanbe City	SS «KasriMilat» - 110/10 kV
86	Dushanbe City	SS «Shahri» - 110/10 kV
87	Dushanbe City	SS «Jugo-ZapadnyVodozabor» - 110/6 kV
88	Dushanbe City	SS «Firdavsy» - 110/10 kV
89	Dushanbe City	SS «Navbahor» - 110/10 kV
90	Dushanbe City	SS «Luchob» - 110/10 kV
91	Dushanbe City	SS «Anzob» - 110/6 kV

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<b>№</b>	<b>Nameof Network</b>	<b>Nameof Substation</b>
92	Dushanbe City	SS «Kaharova» - 110/10 kV
93	Dushanbe City	SS «Aviator» - 110/6 kV
94	Dushanbe TPP-2	TPP Power generation
95	Dushanbe TPP-9	Substation ownneeds
96	Dushanbe TPP-9	Switchyard 6 kV
97	Dushanbe TPP-9	Switchyard- 220kV
98	Isfara EN	SS "Isfara" 110/35/10 kV
99	Isfara EN	SS "Kulkent" 110/35/10 kV
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
104	Isfara EN	SS "Shorsu" 110/10 kV
105	Istarafshan	SS «Uzlovaya» - 220/110/10 kV
106	Istarafshan	SS «Nov» - 110/35/6kV
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
112	Istarafshan	SS "KNS-4" 110/10 kV
113	Istarafshan	SS "Mekhnat" 110/35/10 kV
114	Istarafshan	SS "Digmay" 110/6 kV
115	Istarafshan	SS "Partsed" 110/10 kV
116	Istarafshan	SS "Gonji" 110/10 kV
117	Istarafshan	SS "Kaftar" 110/10 kV
118	Istarafshan	SS "Jomi" 110/35/10 kV
119	Istarafshan	SS "Fabrichnaya" 110/10 kV
120	Istarafshan	SS "Ura-Tube" 110/35/10 kV
121	Istarafshan	SS "Chorbog" 110/35/10 kV
122	Istarafshan	SS "Proletarsk" 110/35/10 kV
123	Istarafshan	SS "Gulakandoz" 110/10 kV
124	Kayrakkumskaya	Power generation
125	Khujandcity EN	SS «Zarechnaya» - 110/10 kV
126	Khujandcity EN	SS «Novaya» - 110/35/10 kV
127	Khujandcity EN	SS «Avichena» - 110/6 kV
128	Khujandcity EN	SS «Nagornaya» - 110/10 kV
129	Kulyab City	SS «Bohtar» - 110/10 kV
130	Kulyab City	SS «Somon» - 110/6 kV
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
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
139	Kulyab EN	SS «Hovaling» - 110/10 kV

<b>№</b>	<b>Name of Network</b>	<b>Name of Substation</b>
140	Kulyab EN	SS «Sijarfak» - 110/10 kV
141	Kulyab EN	SS «Kulob-Darje» - 110/35/6 kV
142	Kulyab EN	SS «Shugnou» - 110/35/6 kV
143	Kulyab EN	SS «Dahana» - 110/35/10 kV
144	Nurek City EN	SS «Shar-Shar» - 220/35/10 kV
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 "Sitara" 110/10 kV
152	Penjikent EN	SS "Istiglol" 110/6 kV
153	Penjikent EN	SS "Dshishikrut" 110/6 kV
154	Penjikent EN	SS "Sarvoda" 110/6 kV
155	Penjikent EN	SS "Kolhozchien" 110/10 kV
156	Penjikent EN	SS "Jery" 110/6 kV
157	Penjikent EN	SS "Koshona" 110/10 kV
158	Penjikent EN	SS "Zarafshon" 110/10 kV
159	Penjikent EN	SS "Ainy" 110/35/10 kV
160	Rasht EN	SS «Tegermi» - 110/10 kV
161	Rasht EN	SS «Komsomolobod» - 110/10 kV
162	Rasht EN	SS «Plemsovkhoz» - 110/10 kV
163	Rasht EN	SS «Fedina» - 110/10 kV
164	Rasht EN	SS «Dzhirgital» - 110/10 kV
165	Rasht EN	SS «Tojikobod» - 110/35/10 kV
166	Rasht EN	SS «Garm» - 110/35/10 kV
167	Rasht EN	SS «Lyahsh» - 110/35/10 kV
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
176	Sugd EN	SS «Zarya» - 110/35/6 kV
177	Sugd EN	SS «Sovetobod» - 110/35/6 kV
178	Sugd EN	SS «Dzharbulak» - 110/35/10 kV
179	Sugd EN	SS «Sumchak» - 110/35/6 kV
180	Sugd EN	SS «ANS-5» - 110/35/6 kV
181	Sugd EN	SS «Vstrecha» - 110/35/10 kV
182	Sugd EN	SS «Mahram» - 110/35/6 kV
183	Sugd EN	SS «Hlopszavodskaya» - 110/35/6 kV
184	Sugd EN	SS «Kovrovaya» - 110/35/6 kV
185	Sugd EN	SS «Dargot» - 110/35/6 kV
186	Sugd EN	SS «Yantak-1» - 110/35/10/6 kV
187	Sugd EN	SS «DVZ-1» - 110/35/6 kV

<b>№</b>	<b>Nameof Network</b>	<b>Nameof Substation</b>
188	Sugd EN	SS «Gozien» - 110/6 kV
189	Sugd EN	SS «Gafurov» - 110/10 kV
190	Sugd EN	SS «ANS-1» - 110/10 kV
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
195	Sugd EN	SS «SFK» - 110/6 kV
196	Sugd EN	SS «Adrasman» - 110/35/6 kV
197	Sugd EN	SS «DVZ-2» - 110/6 kV
198	Sugd EN	SS «DVZ-3» - 110/6 kV
199	Sugd EN	SS «ANS-3» - 110/6 kV
200	Sugd EN	SS «ANS-4» - 110/6 kV
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 ownneeds
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 ownneeds
213	Varzob HPP	Varzob HPP-1
214	Varzob HPP	Varzob HPP-2
215	Yavan TPP-10	Power Generation
216	Yavan TPP-10	Substation ownneeds
217	Yavan TPP-10	Switchyard 220 kV
218	Yavan TPP-10	SS 110/6 kV «Nasosnayastanchiya №1» (YTPP)
219	Yavan TPP-10	SS 110/6 kV «Nasosnayastanchiya №2» (YTPP)
220	Yavan TPP-10	SS 110/6 kV «Nasosnayastanchiya №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 «VodiiZarrin» - 110/10kV
225	Chanubi EN	SS «Navobod» - 110/10kV
226	Dushanbe City	SS «Касритеннис» - 110/10 kV
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	Khujandcity EN	SS «Radiy»- 110/10 kV
231	Sugd EN	SS «Aprelevskaya» - 110/6 kV
232	Sugd EN	SS «Metalzavod» - 110/6 kV
233	Sugd EN	SS «Tajikskaya» - 110/35/6 kV

## 8.2 Annex II: Pictures

### 8.2.1 Pictures taken at “Shahri”SS, Lot 1, December 2018.



Figure 1. Digging works for building the new foundations for the new equipment that will be installed.



Figure 2. Environmental and H&S inspection performed by the PIC.



Figure 3. This picture shows the proximity of the apartments' building to the SS (potential annoyance because of the noise that is mitigated due to the adequate working hours).

#### 8.2.2 Pictures taken at "Buston"SS, Lot 1, December 2018.



Figure 4: Complete set of fire safety equipment readily available.

### 8.2.3 Pictures taken at “Ayni”SS, Lot 2, December 2018.



Figure 5: Temperature at the protections and communications room is kept optimum in order to avoid fires and enable the equipment to perform well. Good practice.



Figure 6: The control room is not separated by a wall of the communications and protections room where the temperature is kept stable at 20°C which is unpleasant for the control room workers and it makes it harder for them to focus. Bad practice.

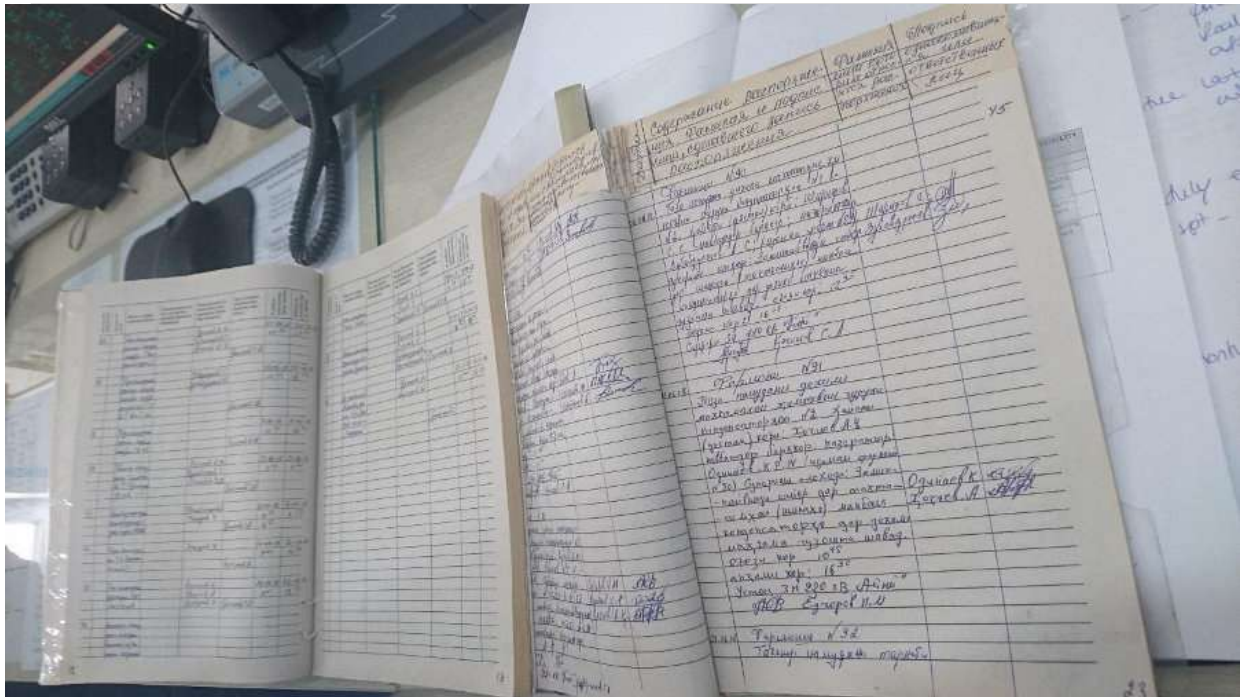


Figure7: Journals that are filled daily with H&S aspects by the SS staff, but they do not cover the monitoring on environmental aspects.



Figure 8: condition of the former workers' camp located near Ayni SS. Presence of concrete floors.



Figure 9: condition of the former workers' camp located near Ayni SS. Presence of construction material waste after dismantling the camp.

#### 8.1.4 Pictures taken at "Rudaki" SS, Lot 2, December 2018.



Figure 10: temporary toilets located next to the switchyard.



Figure 11: new toilet (2 in total) built under the Project.



Figure 12: new fire safety equipment purchased under the Project that is located near a new auto transformer.



Figure 13: Safety box in full-set condition.

#### 8.2.4 Pictures taken at the OHTL, Lot 2, December 2018.



Figure 14: Safety notice located at every tower of the OHTL that informs on the risk of electrocution.



Figure 15. OHTL routing.

### 8.3 Annex III: Letter from the contractor on the found non-compliances.

