Environmental Monitoring Report

PUBLIC

4 Semestral Report
June 2024

Pakistan: Balochistan Water Resources Development Sector Project

Prepared by Balochistan Irrigation Department and the Agriculture and Cooperatives Department for the Islamic Republic of Pakistan and the Asian Development Bank (ADB).

Semi – Annual Environmental Monitoring Report

PUBLIC

Project Number: 48098-002
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Pakistan: Balochistan Water Resources Development Sector Project

(Financed by the ADB)

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For: Executing Agency - Baluchistan Irrigation Department
Implementing Agency - Agriculture and Cooperatives Department (ACD)

Endorsed by: Project Management Office (PMO)

NOTES

I. The fiscal year (FY) of the Government of the Islamic Republic of Pakistan and its agencies ends on 30 June.
II. In this report "$" refer to US dollars.

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Table of Contents

List of Tables & Figures

Abbreviations

ADB	Asian Development Bank
BOD	Biological Oxygen Demand
BWRDP	Baluchistan Water Resources Development Project
CAP	Corrective Action Plan
CDC	Centre for Disease Control
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
EPA	Environmental Protection Agency
ERP	Emergency Response Plan
ERT	Emergency Response Team
ESMMC	Environmental and Social Management and Monitoring Cell
FCC	Flood Carrier Channel
GRM	Grievance Redress Mechanism
HSE	Health, Safety and Environment
HTV	Heavy Transport Vehicle
IFC	International Finance Corporation
IEE	Initial Environmental Examination
ILO	International Labor Organization
LTV	Light Transport Vehicle
NEQS	National Environmental Quality Standards
PIC	Project Implementation Consultant
PEQS	Punjab Environmental Quality Standards
PM	Particulate Matter
PMO	Project Management Office
PPE	Personal Protective Equipment
RD	Reduced Distance
RoW	Right of Way
SAEMR	Semi Annual Environmental Monitoring Report
SFA	Social Framework Agreement
SOP	Standard Operating Procedure
SSEMP	Site Specific Environmental Management Plan
TMP	Traffic Management Plan
TSS	Total Suspended Solid
WHO	World Health Organization

1. Introduction

1.1. Preamble

1. This report represents the 4th Semi - Annual Environmental Monitoring Review for Baluchistan Water Resources Development Sector Project (BWRDP) from July, 2023 to December, 2023. This report indicates, the project documentation review, site visits, meetings with contractors, consultants and overall findings etc.

1.2. Background of the Project

2. The Asian Development Bank (ADB) is partnering with the Government of Balochistan (GoB), to undertake the Balochistan Water Resources Development Sector Project (BWRDSP) Zhob and Khuzdar Districts.

3. The BWRDSP will support the implementation of the integrated water resources management policy of the Government of Balochistan (GOB). The policy provides a comprehensive framework for the province to address the issues of water management and development in the context of basin approach, with water harvesting, and groundwater recharging as an integral part of watershed management.

4. About 11 potential subprojects out of the extensive list of over 300 possibilities were chosen in the Zhob and Mula river basins for potential ADB financing based on a set of criteria such as, water and land availability, economic viability, and a balanced approach to extending development support to different tribal groups. The project was approved by ADB on 31 August 2018 for a concessional loan of $100 million from ADB's ordinary capital resources (L3700-PAK), a grant of $3 million from the Japan Fund for Poverty Reduction (JFPR, G9197-PAK), and a grant of $2 million from the High-Level Technology Fund (HLTF, G0597-PAK). The loans and grants became effective on 7 March 2019. The physical completion of the project is expected on 30 July 2026.

1.3. Purpose of the Project

5. The purpose of the project will be as following:

   - Construct new small dams and flood irrigation (spate) systems;
   - Improve 276 km of canals, drains, and karezes (subsurface water channels);
   - Develop a satellite-based water information system; and
   - Build capacity of the local communities, the Baluchistan Irrigation Department (BID), and the Agriculture and Cooperative Department (ACD). The indicative outcome of the BWRDP project will be to improve land and water resources, agricultural production and farm income.

6. Government of Baluchistan has now hired the services of the Consultants for Project Design, Construction Supervision and Implementation Support for Baluchistan Water

Resources Development Sector Project (hereinafter called 'the Consultants) will help GoB in preparing detailed design of three core sub- projects and also feasibility studies and detailed design of balance of eight non-core sub-projects. The location map of the sub-project is shown in **Figure 1-1.**

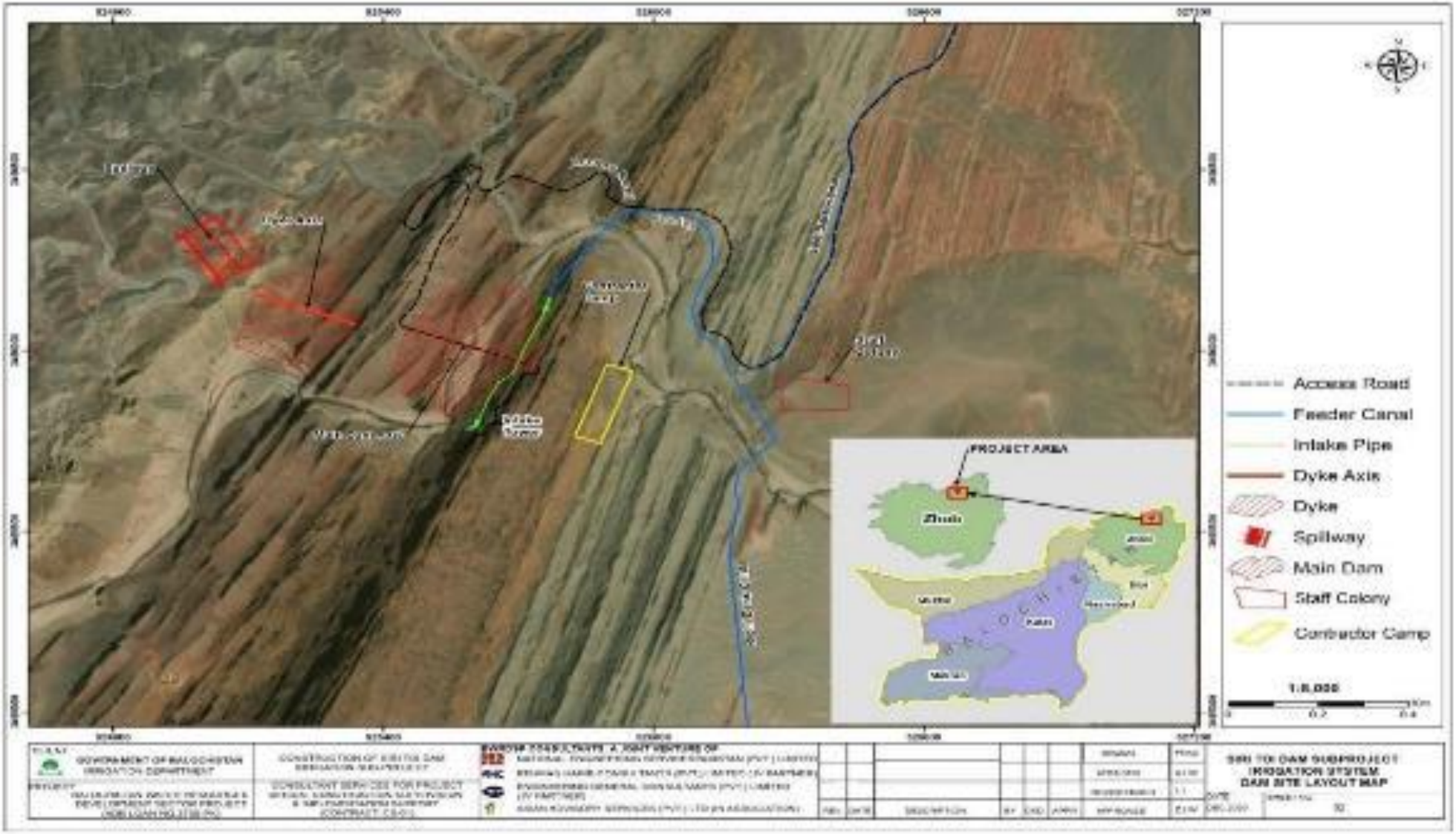


Figure 1-1: Location Map of the Project Area

1.4. Project Impacts and Salient Feature

7. This Semi-Annual Environmental Monitoring Report External (SAEMR) has been prepared for the Sri Toi Dam project, based on the site visit, project safeguards document and Internal Monitoring Reports (IMR) 2023.

8. **Salient Features:** Salient features of Sri Toi Dam Subproject are shown below:

Table 1-1 Salient features of Sri Toi Dam Subproject

Feature Description	Detailed Design	Feasibility Design
Type of structure	Central Clay Core Earth fill Dam	Central Clay Core Earth fill Dam
Location	N 3496638.09, E 525794.05.96	N 3496638.09, E 25794.05.96
Dam Height (m)	72.00	66.00
Storage Capacity (MCM)	42.32	36.49
Catchment Area (sq.km)	961.00	961.00
Spillway Crest Length (m)	148.00	135.00
Spillway Type	Ogee ungated overflow	Ogee ungated overflow
Spillway Design Flood	PMF/10,000 years return period	PMF/10,000 years return period
Dyke/Saddle (No.)	1	1
Right Bank Main Canal and Distributaries (km)	29.00	58.87
Left Bank Main Canal and Distributaries (km)	45.40	
Intake Structure Height (m)	3	10.00, 20.00 & 30.00
Steel outlet Pipe (m)	34	1600
Khushkaba Area (Ha)	361	361
Design Command Area (Ha)	3,948	3,948
Watershed Development Area (Ha)	3750	3750
Average Annual Available Water (MCM)	32.16	57.00

1.5. Components of the Project

9. The following works are proposed under Sri Toi dam sub-project:

- A 287 m long and 67m high earth fill dam with clay core on Sri Toi River.
- A 235 m long and 32m high earth fill dyke with clay core on side ridge to plug the reservoir.
- A spillway in a length of 148 m on the left abutment of the dyke.
- A total length of 345m steel pipeline from intake structure of the dam up to start of the command area followed by irrigation main canal, left, right canals of a total length of 74km for the design command area
- Necessary cross drainage works including aqueducts, super-passages, RCC-pipe crossings, and other minor hydraulic structures

10. **Selection of dam axis:** The dam axis has been selected after reviewing the general topography of the area through site visits and analysis of satellite-based imagery and terrain. The selected dam axis has good rock on abutments and the foundation geology.

11. **Reservoir characteristics:** The reservoir Area-Elevation-Capacity curve has been developed. Terrain of the area is very steep and narrow and the storage volume at lower elevation is quite insignificant. This necessitates the design of a dam with a height of 67 m in order to store 30 MCM, required to fulfil the needs of the design command area. The river downstream of the dam location opens to vast flat lands about 1.5 kms downstream of the proposed dam, where sporadic human settlements exist.

12. **Spillway design discharge:** The spillway design flood is estimated for 10,000yrs return period and checked for Probable Maximum Flood (PMF) for Sri Toi River. Flood discharges for 10, 25 and 50 years return period has been computed for diversion arrangements during construction.

13. **Spillway location:** The proposed spillway is located towards the left abutment of the dyke. The spillway width is 148m, at which it will safely pass 10,000-year design flood with 4-5 m head. The spillway has a USBR Type-II stilling basin which is adequately sized to dissipate the erosive energy. An earthen channel from the stilling basin will convey the flood water back to the river and away from the dam.

14. **Command Area:** Construction of the proposed dam will cover the command area up to 3,948 ha, beside of sustained water supply to the present command area being cultivation seasonal basis by growing vegetables and grains. The proposed reservoir would recharge the subsurface flow of karezes, shallow wells and tube wells, protect the agriculture land and human settlements from devastation of floods during flood seasons and develop grazing zones for livestock. The stored water will support drinking, agriculture purpose and other domestic uses.

1.6. Project Contracts and Management

15. The GOB, through its Irrigation Department, is the executing agency, and the Agriculture and Cooperatives Department (ACD) is the implementing agency, are wholly responsible for the Project implementation, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. The Project Management Office has been established in Quetta for overall project implementation and coordination.

16. The environmental management teams for this project and their respective roles are as provided below as Table 1.2.

Table 1-2: Project Environment Team

Organization	Discipline/ Designation	Deployed Team	Location	Contact No	Email Id
PMO	Project Director	Sufyan Durrani	Quetta	0333 5172464	pd.bwrdsp@gmail.com

Consultants	Environment Specialist	Dr Akhtar Iqbal	Lahore	0300-8381968	enviro@rehmanhabib.com
Consultants	Environment Specialist	Sibghat Ullah Khan	Quetta	0331-9017601	sibghat.envir86@gmail.com
Contractor HSE	HSE In charge	Mohammad Nawaz	At dam site Seri Toe	0331 8916102	

17. The GoB, through the Irrigation Department, is the executing agency of the project and the Agriculture and Cooperatives Department (ACD) is the implementing agency, with active support from relevant departments (Forestry and Wild Life, and Livestock and Dairy). A project management office (PMO) has been established in Quetta for overall project implementation and coordination. The PMO, led by a Project Director, have direct responsibility for Output 1 and Output 3. A project implementation office (PIO) has been established in the ACD to implement the Output 2. For Output 1, the PMO has been supported by Deputy Director Irrigation in Zhob and Khuzdar districts, and by District Forest Officers and their staff in Zhob and Khuzdar districts (for implementation of watershed protection measures). For Output 2, the PIO has been supported by Deputy Directors on farm water management and their staff in Zhob and Khuzdar districts. Output 3 will be implemented by the PMO with support from the PIO.

18. The consultants Environment Team consists of Two Environment Specialist Dr Akhter Iqbal; and Mr. Sibghatullah; Junior Environment Specialist. All the contractors have Environmentalists/ HSE Supervisors. The BWRDSP Consultants are tasked with specific responsibility to assist PMO in ensuring safeguard compliance of civil works – with emphasis on the monitoring of implementation of EMP through the Contractors SSEMP and related aspects of the project.

1.7. Safeguard Documentation Status

19. As per ADB SPS, 2009 and EARF for the project, in both design and construction phases of the subprojects, the PMO with the support of CSC conducted Rapid Environmental Assessment (REA) Surveys of all the subprojects and submitted to ADB. All the REA's were approved by ADB and the project is falling in the category A of the ADB SPS categorization for the environmental safeguard. Subsequently the Environment Impact Assessment Report has been prepared and approved by the ADB and Baluchistan Environmental Agency.

20. SSEMP of Sri Toi Dam ICB 01 had been approved on 9th December 2022. The construction works on ICB 01 started in November 2022 respectively.

1.8. Relationship with Contractors

21. As discussed with the PMO, Consultant team, Contractors Safeguards personals and reportedly, a good working relationship is being maintained among the contractors and the consultants during the execution of the subprojects. No constraint with respect to working relationship have been noted. As reported in the environmental monitoring reports, training is arranged on site for the different Environment Compliance

parameters occasionally, say very few and not as per requirement, however when working at site will be increased, the trainings quantum will also be improved.

2. Project Activities during Current Reporting Period

22. The Siri Toi Dam subproject (ICB 01) is situated in Union Council Sambaza, Tehsil, and District Zhob. The primary dam structure will be an Earth fill Dam with a height of 72 meters and a length of approximately 304 meters. For a Command Area of 3948 hectares, more than 28,243 meters of main and distributary channels have been designed, along with about 50 kilometers of secondary channels. The construction contract for this project has been awarded to M/s Noor ul Haq & Brothers.

23. The Siri Toi Dam camp is located at a considerable distance from the local community/settlement. The total area of the leased land for the camp is estimated to be 20 acres. The camp includes various facilities, such as consultant and contractor offices, consultant and contractor staff residences, accommodations for laborers, mess for staff and labor, a residency for FC, and a Mosque. The contractor staff has been accommodated in the camp, which also features worksite facilities capable of housing between 100 and 200 workers, with an average permanent staffing and workers on-site.

24. The construction has been started on contract no. ICB-01 Sri Toi Dam, the contractor's works progress includes; Road Access, Dyke and Spillway area construction. The complete progress report is presented in below table:

Table 2-1: Siri Toi Dam Subproject ICB-01 works till Dec, 2023 physical progress

Sr. No	Activity	Status in %
1.	Dyke	1,99
2.	Slope Protection	58.41
3.	Curtain and consolidation grouting	3.65
4.	Spillway	86.17
5.	Access Road	35.51
6.	General Items	78.15

Table 2-2: Details of ongoing construction activities

S. No.	Siri Toi Dam ICB 01	
1.	Camp establishment	Masonry
2.	Earth work (Spillway)	Excavation
3.	Dyke	Key Trench Excavation

4.	Access Road	Excavation

Table 2-3: Detail of material and sources of Siri Toi Dam subproject ICB 01 are as under

Sr. No.	Name of Material	Source of Material	Quantities Used
1	Cement	D.G Lucky, Lucky cement, Fauji cement, Mapple leaf cement	50,700 bags
2	Steel	Agha steel, Faizan steel, Naveena steel	179,990 Kg
3	Earth work and excavation	Borrow Material areas	3,200,000 cu.m
4	Crush aggregates	As per approved sources nearby site	56,640 Tons
5	Sand		93,360 Tons

- The campsite has facilities for offices, residential accommodation for staff, as well as workers/labours. Kitchen, dining, and washroom areas have been developed, but not to ensure hygienic requirements.
- A material testing laboratory has been constructed inside the camp.
- A dispensary has been provided near the offices, which has facilities with para medical staff along with some emergency medicines. A full-time ambulance facility is provided for any serious emergencies.
- In accordance with SSEMP (Site Specific Environmental Management Plan), a waste collection area has been provided in the camp with proper signs.
- A diesel-powered generator is also stationed in the camp.
- Security rooms and a mosque have also been provided in the camp, which are close to the main entrance of the camp.
- The following table presents the number of workers during the period July to December 2023. The number of workers has increased manifold in each month, which is attributed to the increase in the volume of work.

Table 2-4: Manpower Technical/skilled/ unskilled staff details

Designation	Numbers
Project Manager	1
Chief Surveyor/Quantity Surveyor	1
Surveyor	3
Surveyor Helper	3

General Forman	2
Material Engineer	1
Lab Technician	1
Lab Helper	1
AutoCAD Operator	2
Accountant	1
Storekeeper	1
Procurement Officer	1
Supervisor	1
Mechanic	2
Auto Electrician	1
Batching Plant Operator	1
Batching Plant Helper	1
Crush Plant Operator	1
Crush Plant Helper	2
Heavy Machinery Operator	40
Heavy Machinery Helper	24
Diesel Store	3
Security Guard	3
Cook	2
Cook Helper	2
Labor	44
Mason	14
Steel fixer	2
Total	161

25. Details of machinery/equipment of sites has been given in Table 2.5.

Table 2-5: List of Machinery/Equipment

Name of Machine	**Numbers**
Excavator	12
Roller	3
Grader	3
Loader	3
Dozer	2
Transit Mixer	2
Dumper	9
Tractor 240	3
Tractor 385	3
Tractor Trolley	1

Pickup	3
Generator	5
Water Bowser	4
Batching Plant	1
Crush Plant	1
Diesel Tank	5
Tractor with Blade	-
Mechanical Hand Mixture Machine	-
Water Pump for dewatering	-
Jack Hammer	-
Light Travelling Vehicle	-
Welding Plants	-
Motor Cycle	2
Low Bed	-
Steel Machine	7
Toyota Car (Surf)	2
Total	69

3. Environmental Safeguards Activities

3.1. Environmental Management

26. The Management was carried out by Environmental Specialist in presence of contractor`s Environmental Engineer through site inspections. The site inspection by Consultant Environmentalist were not adequate as per requirement. The Contractor's environmental/HSE manager performed the duty occasionally and the day-to-day monitoring of the construction sites by HSE Inspector. Activities carried out by Supervision consultant during the monitoring period are provided below:

- Site inspection and provision of recommendations to the Contractor's personnel on constant usage of PPE and ensuring the improvement of situation with the placement of solid waste containers and regular cleaning of the site.
- Support and consultation with contractor's Environmental, Health and Safety personnel for the effective implementation of environmental mitigation measures;
- Assistance and guidance in preparation of Contractor's Environmental Monthly Report;
- Participation in meetings arranged by the PMO and ADB.
- Preparation of Semi-Annual Environmental Monitoring Report;
- Reviewing the Cost Estimates for EMP implementation;
- Provision of training activities to the contractors on EMP implementation and SSEMP preparation;
- Supervision of the preparation of SSEMPs by the contractor;
- Constant communication with engineers on updates on the project design and works;

27. The External Environmental Monitor visited the site once during the reporting period, the last visit was in November, 2023 and observed the following:

- Provided Guidance and Assistance to the contractor & consultant Environment & HSE staff about the Environment compliance at site and documentation.
- Support and consultation with contractor's Environmental, Health and Safety personnel for the effective implementation of environmental mitigation measures;
- Provision of technical guidance to the contractors on EMP implementation and further improvement;
- Review of documentation prepared by contractor and consultant;
- Constant communication with engineers on updates on the project design and works;

3.1.1. Camp Site Arrangements, Borrow Area, Disposal Areas Etc.

28. The location of Sri Toi Dam camp is far away from the local community/settlement. The total area of the leased land is 20 Acres (Est.). Construction camp consists of consultant and contractor offices, consultant and contractor staff residency, labor accommodation, mess for staff and labor, residency of FC, Masjid. Contractor staff. Camp includes worksite facilities that can house between 150 and 200 workers, with an average permanent staffing and workers on site.
29. The construction camp has the accessibility to safe drinking water, as per water analysing results.
30. The Sanitary and toilet facilities, washing facilities, Kitchen/mess exists, but require more facilitation and Hygienic improvement.
31. For the construction activities, borrow areas have been selected for the extraction of materials which are already approved by the Engineers. Borrow Area Management Plan has been prepared by contractor that pertains to the measures that need to be incorporated during identification of borrow area location, material extraction and rehabilitation.
32. Waste disposal site has been established to cater the waste from labour camp and site office, but the arrangements are not adequate as per Waste Management Plan.

Figure 3-1: Camp Site Location

3.1.2. Emergency Response Arrangements:

33. Emergency response plan has been drafted but not implemented on site in true spirit yet. Emergency response procedure and contact details shall be displayed in the project area at site, to whom may be contacted in the event of fire as elaborated hereof, like Site Supervisor, Environmental Specialist, Fire Brigade, Nearby Doctor/hospital. All these are planned but not implemented/required at present.

34. Emergency Response Plan (ERP) has been elaborated in plain words subsequently at all prone areas/dangerous spots and will be monitored on daily basis. Monitoring safety observation cards will be produced for inspection. If any unsafe act/unsafe condition observed in the project will be mitigated on immediate basis.

3.1.3. Any Changes to Project Design or construction methods

35. No change to project design or construction method has taken place during the reporting period of this report with the initially developed method statements still applicable.

3.1.4. Non-Conformance Practices

During the reporting period, BWRDSP consultants stated that under Sub-Project ICB 01; “contractor is properly working for the environmental compliance noted during the site visits”. At the beginning of the project, verbal non-conformances were discussed between BWRDSP Consultants Environmental Specialists. As part of the environmental monitoring support being provided by PMO, daily, weekly and monthly environmental monitoring checklists were timely submitted to consultant by the Contractor`s staff. But during site visit, it was observed that there was no record of these checklists.

It was observed by the site visit that the periodic visit of the consultant’s environmental specialists was not enough to cope up with the environmental conditions set for this project. Along with that, no HSE staff regularly stay at site., No complaint register was found at site office, no flag person was there to guide the crane driver,

36. Oil spillage was observed causing soil contamination (At diesel store site and near generator placement) and, Snacks were found in the oil room. Various non-compliances were observed during the field visit by the monitoring consultant, which signifies that ample supervision is not being carried out by the consultants.

37. As per Consultant`s statement, some non-conformances were observed under Sub-Project ICB-01, and considering the contractor`s lack of experience in environmental management, it took several months period for the Contractor of ICB 01 to understand, prepare and submit SSEMP.

38. The non-compliances were related to wearing full set of PPE, regular cleaning of the Site, installation of proper warning and information signs, no covering of trucks during the transportation of material, stagnant water, uneven surfaces and other issues. Based on consultant`s statement, BWRDSP Contractor was asked to introduce corresponding corrective measures and Consultants warned the Contractor that the Non-Conformance Notices will be issued, in case the Contractor does not follow the recommendations in the EMP and SSEMP. As per consultant's statement, there are some open issues observed at the end of reporting period. However, instrumental monitoring should be regularly carried out as per requirement and frequency set in the SSEMP.

39. No trends in environmental issues under subprojects were identified in the previous Semi-Annual EMR. The Environment issues are limited and varies place to place.

3.1.5. Grievance Redressal Mechanism (GRM)

40. No grievance is received up till the reporting period at the project site because project site is in closed vicinity, away from local population and have no direct public interaction. The compliant registers are also not placed at all the sites/labour camps. During the visit, it was directed to place the Complaint Register and maintain the HSE record properly. The GRM formalities were completed but actual implementation at site was not seen at site.

3.1.6. Environmental monitoring

41. During the reporting period, BWRDSP consultant has not carried out environmental and social monitoring according to the EMMP. Since start of the project up till now only two times Environmental Monitoring were carried out.

42. The Contractor's environmental team performed the day-to-day monitoring of the construction sites by HSE Inspector to some extent and started to implement measures per EMP.

3.1.7. Air Quality

43. Potential sources of air pollution during construction were the kick-off dust, and the movement of dumper trucks transporting construction related material, excavation activities at borrow area/camp site. The instrumental Monitoring was carried out during the reporting period, as it is requirement as per EMMP. The results are within limits.

44. The consultant`s visual observations stated that the contractor has carried out regular water sprinkling at dust prone areas during the construction activities. However, some violations were observed and the contractor was advised to take care and control the dust emissions. During the site visit, it was observed that the trucks carrying the excavated material were not covered. Visual observations were also made for fitness

of the vehicles to minimize the smoke emissions. The consultant environment specialist ensured that the dust should be reduced to maximum possible level so that it may not affect the workers and the surrounding environment including the native people.

3.1.8. Noise and Vibration

45. The consultant and contractor stated that no significant non-compliance issues with regards to high noise levels were observed. No complaints from workers and public were registered during this reporting period. The contractor was advised to provide workers with proper safety equipment e.g. ear plugs and ear muffs on need basis during working hours to avoid any harm to their hearing ability. The instrumental Monitoring was carried out during the reporting period, as it is requirement as per EMMP. The results are within limits.

46. The safety signs and signage have also not been arranged properly by the contractors to warn people, especially about the high intensity or level of noise being generated by the machinery. During consultant team visits, contractors were assisted to re-install signboards inside and outside the camp site.

3.1.9. Surface Water and Ground Water

47. At site it was observed that construction activities have the potential to cause damage to surface water resources at Sri Toi Dam project. Becouse at some places the waste water indirectly flow to riverine side and construction machinery directly hit the excavated material in the river. It was directed by our team through consultant to ensure that construction activities near any water bodies should not contaminate the surface water sources. The implementation of the mitigation measures as per EMP to be monitored and assessed in the field visit by supervision consultant. As per statement of consultants no surface water or ground water contamination was reported due to oil spillages and solid waste dumping. Potable water was supplied to the workers working at the site.

48. The instrumental monitoring was carried out during the reporting period, as it is requirement as per EMMP. The results are within limits according the NEQS.The frequency for instrumental monitoring is half yearly, but since start of the project only two times monitoring was conducted up till now. Only Drinking water, air and noise monitoring ware conducted.

3.2. Waste Management

49. The contractor staff is assisted to mark the designated area for solid waste management. Few signboards were observed during the reporting period by us (External Monitor). Besides that, open dumping of solid waste was also observed. The

waste produced at the sites under sub-project ICB-01 are mainly household and construction waste and is being managed as follows:

Sr. #	Name of Sub-Project	Solid Waste generated in Kilograms/day	Types of Waste	Remarks
1	Sri Toi Dam ICB 01	1.2 Kg/day	Plastic, polythene bags	Solid waste is preferable reused, recycled and disposed of at designated dumping site.
		2 Kg/day	Solid waste/ cans etc	
		1 Kg/day	Kitchen waste/ Organic waste	

3.3. Health and Safety

3.3.1. Community Health and Safety

50. The contractor environmental specialist is assisted by the consultant team to provide adequate training to staff for caring community health and safety. Installation of signboards at designated spots, camp site may be barricaded and constantly monitored to ensure that residents and domestic animals/livestock (cow, goats, sheep & dogs) stay away from construction area. Moreover, no incidents related to the community health and safety occurred or were reported.

3.3.2. Worker Safety and Health

51. The provision of adequate First Aid kit, medical room, ambulance and medical technician was ensured during site visits. Construction activities in camp have minor impacts on safety and health of workers. Prior to starting the project engineering and administrative control measures were taken by the contractor. For example, provision of Personal Protective Equipment's (PPE) to the work force is ensured on site. Other safety measures to avoid exposure to accidents due to operation of construction, vehicle movements and machinery operations were to be ensured. However, the contractor has 4WD vehicles to deal with any kind of emergency. No significant incidents related to the workers' health and safety have occurred during the current reporting period.

3.4. Training

52. The contractor conducted the HSE training for their workers and administrative staff once in the reporting period. The trainer was well qualified and had broad knowledge of handling HSE issues during construction. The training was arranged by the Contractor for safety awareness regarding execution of works with the summary of trainings conducted provided. The laborers were encouraged to participate in this training and advised that safety should be ensured as a priority. The training requirements are not adequate and need further improvement, as the project is in far flung areas and laborers & other staff is unaware about Environment compliance issues, especially Health and Safety. The training must be required as per EMP

requirements reported at sub heading 8.10.3 of EIA Report and SSEMP at subheading 1.9.

3.5. Corrective Action Plan (CAP)

Environmental Specialist of PIC has carried out visits and monitored the project for implementation of EMP. Accordingly, CAP was prepared for EMP non-compliances for Sri Toi Dam project. The present CAP submitted by the PIC is not fully justified as per requirements, it needs further improvement and reporting. Most non-compliances were dealt with as verbal instructions, which should be in written from with a follow up. The important Non-Compliance Issues are identified in the following table:

S. No.	Action	Date of Completion	Implementation Responsibility	Supervision Responsibility	Status/Remarks
1.	Proper disposal of Medical Waste	At earliest	Contractor	PIC	Open
2.	Proper Drainage of Wastewater	At earliest	Contractor	PIC	Open
3.	Generator to be placed on proper platform with appropriate measures	At earliest	Contractor	PIC	Open
4.	Hygiene improvement of kitchen and washrooms along with protection	Routinely	Contractor	PIC	Open
5.	Regular training and site visits by Contractor and Consultant`s Environment Specialist	Routinely	Contractor	PIC	Open
6.	Oil spillage was observed causing soil contamination and, Snacks were found in the oil room which needs to be remedied	At earliest	Contractor	PIC	Open
7.	The employees/ workers need to wear full set of PPE	Routinely	Contractor	PIC	Open
8.	Regular cleaning of the Site, installation of proper warning	Routinely	Contractor	PIC	Open

	and information signs,				
9.	Covering of trucks during the transportation of material	Routinely	Contractor	PIC	Open

3.6. SSEMP Documentation & Functioning

53. SSEMP is the driving force for the BWRDP environmental staff in taking guidance on what to do and when to do ensuring that project poses minimal environmental risks.

54. With respect to institutional arrangement for implementation/functioning and control of the SSEMP, Environmental and Social Management Cell (ESMC) of PMO comprising one Environmental Specialist and one Environmentalist and all the Contractors have qualified Environmentalist have been designated for EMP implementation.

55. The roles and responsibilities of each member have been clearly defined which enabled smooth functioning of Environment Compliance and implementing majority of the mitigation measures achieving satisfactory environmental compliance performance.

56. The scope of work under SSEMP has been clearly defined and no deviation in scope of work has been reported/observed.

57. Moving ahead for implementation of SSEMP, checklists for daily, weekly and monthly monitoring of mitigation parameters have been developed and put in practice so that the Contractor's Environmentalist is using/filling all the monitoring checklists along with online coordination with PMO Environmental Specialist. But regularity filling and implementation of these checklists was not maintained during the reporting period.

58. SSEMP required provision of training to workers and staff on key issues such as:

- Importance of compliance with EMP
- Potential environmental impact of construction activities
- Health, safety and environmental issues
- Emergency preparedness and response

59. SSEMP requires instrumental monitoring for environmental parameters in all media such as air, water and soil. SSEMP provides clear guidance in this regard.

60. SSEMP also provides clear guidance on whom to involve for such instrumental monitoring. As such an EPA certified laboratory must be hired for conducting instrumental monitoring of environmental parameters.

61. SSEMP contains measures as mentioned in the Project's EMP. Hence, SSEMP requires site inspections and implementation of all mitigation measures including

control over dust, noise, emissions, traffic, safety, all types of pollutions in water, air and soils, etc. Keeping in view the measures in SSEMP, BWRDP performed not to the mark measures, with regards to environmental compliance during this period indicating the effectiveness and clarity of the SSEMP.

62. No request made by BWRDP for changes to the current mitigation measures for consideration by ADB.

4. Good practice and opportunity for improvement

4.1. Good Practices

63. A good liaison should be established between PMO, Supervisory consultant and contractor to follow the environmental safeguard guidelines.

64. BWRDP Environmental team should be more efficient in implementing mitigation measures in accordance with EMP. A good understanding to EMP has been felt among the environmental team of BWRDP which is the key to successful implementation of EMP.

65. Flora and Fauna are not unnecessarily damaged, like damage to the trees and other ecological species due to construction activities.

66. Establishment of Contractor's camp is within the permissible standards and Parameters.

67. Some of the observations were related to proper disposal of solid waste within the camp area. The staff was guided to carry out best practices pertaining to these issues.

68. One of the important functions environmental team performs is the effective oversight of work and workers at all sites. Such effective oversight ensured low yield of wastes and control over associated hazards and risks.

69. Contractor`s Environmental specialist does not hold regular awareness and trainings including tool box talk. This practice shows that every worker is not aware of the possible hazards and is, thus, unable to avoid or mitigate the risks. The project recognizes that an ignorant worker is a danger at any construction site as the worker can put everyone else at risk.

70. As per records, regular trainings were not held on sites for the labourers on standard safety and security practices.

71. A proper level of housekeeping has not been observed at site. Good housekeeping ensured vector borne disease control, avoidance of foul smell in the area, control over accidents due to slip and overturning, wastewater management, solid waste disposal, etc.

4.2. Opportunities for Improvement

72. Data may be stored in the folder separately for each project. When such single source point is created, the authorized personnel only will retrieve required information without wasting time. This folder will ensure safety of data and documents which will be the property of PMO and ADB.

73. Construction sites should be appropriately barricaded and avoid contamination of Camp soil by oil leakage from machinery. HSE Supervisor should be present at site throughout construction period and report all noncompliance measures in the

Corrective Action Plan. All the concerned staff has been instructed to improve OHS performance levels including use of PPEs, implementation of working hours etc. Training sessions must be conducted more frequently.

74. Awareness training of workers to control the spread of the COVID-19 epidemic and safety on construction sites. Visitors or meetings in a closed room should not be allowed or cancelled, and safety signs regarding Covid-19 be displayed. Material transportation should be done at night to avoid traffic issues. Entrance of the public within project vicinity must be prohibited, and more vigilance is needed.

75. The Contractor's Environment Specialist should continue to provide both off-site and on-site HSE training to the Contractor's top and middle management, and workers for capacity building, providing them with the necessary awareness on how to deal with HSE issues that arise on a day-to-day basis.

5. Summary and Recommendations

76. Overall, the project seems somewhat satisfactorily implemented with mitigation measures and has achieved some improvement in performance. There is no major adverse impact on surface water quality and ensured regular water sprinkling. The use of PPE was non-satisfactory and working environment at the project area has been safe as no major incident/accident or casualty was reported.

77. The Corrective Action Plan shown in the project records is not satisfactory and needs further guidance and improvement. Trainings are required to increase the perspective and capacity to cover all the Environmental Compliance Parameters. Contract clauses regarding health, safety, and environmental issues should be strictly followed.

78. Use of PPE during masonry work and working at height is strictly enforced. At present, the PPE trend is limited and needs to be efficiently adopted during construction activities. The presence of a trained medical person and the contractor's environmental/HSE officer should be ensured during working hours. The stacking of construction materials on site should be according to EMP.

79. Record of HSE cases and daily/weekly record of quantum of solid waste, usage of water other resources like fuel, water, materials etc. should be properly maintained by contractor. The records were checked and it was observed that these were not being maintained regularly.

80. Reflect all major findings and recommendations of this report in the next SAEMR. The Compliant register must be maintained and updated at all the construction sites and camps.

81. Regular training and site visits by Contractor and Consultant Environment Specialist at the regular basis are also required.

The important Non-Compliance Issues identified are Proper disposal of solid Waste, Proper removal of stagnant water, unpaved surface, casual behavior towards the use of PPEs, absence of sign boards, well maintaining of oil room, covering of excavated material trucks, Records of checklists, HSE records, improvement required for laborers wash rooms and kitchen and absence of complaint register.

Annexure: Photolog

- **Contractor's Camp**

UPS

Front side

Front side

Parking Area

Assembly Area

- **Consultants' Camp**

Board

Front

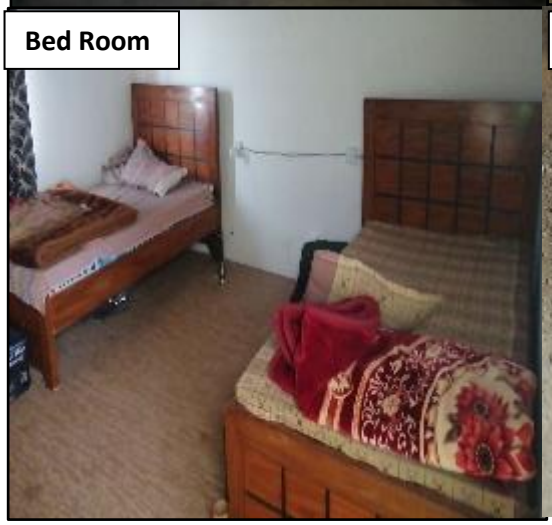
Office Area

Office

Kitchen

Dining Hall

Bed Room



Stagnant Water

- **Labors' Camp**


Board
LABOUR CAMP
SITE AREA
Bed Room
Bed Room
Eating Area
Water storage tank for washroom
Water taps
Waste Bin
Washrooms

- **Dispensary**

- **Store Room**

- **Oil Room**

- **Laboratory**

Lab

Samples

Office

- **Construction Site**

- **Others**

Scrap Yard

Fuel Filling Station

Welding Station

Dish Network

Car Wash Area

Stagnant Water

Solid waste and open pits