Bangladesh Water Development Board (BWDB)

Coastal Embankment Improvement Project, Phase-1 (CEIP-1) 2nd Revised

Bi-annual Environmental Monitoring Report
for
January - June 2023

CEIP-1 PMU
with the assistance of
DDCS&PMS Consultants and M&E Consultants

October 17, 2023
Revised: December 3, 2023

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Acronyms and Abbreviations

BOD	Biochemical Oxygen Demand
BWDB	Bangladesh Water Development Board
CEIP-1	Coastal Embankment Improvement Projet, Phase-1
CIF	Climate Investment Fund
COD	Chemical Oxygen Demand
Covid-19	Causal agent for corona virus disease
DDCS&PMSC	Detailed Design, Construction Supervision and Project Management Support Consultant
DO	Dissolved Oxygen
DoE	Department of Environment
DOF	Department of Forest
DPP	Development Project Pro-forma
EAP	Environmental Action Plan
ECC	Environmental Clearance Certificate
ECR	Environment Conservation Rules
EIA	Environmnental Impact Assessment
EHS	Environment and Health Safety
EMF	Environmental Management Framework
ESMP	Environment and Social Management Plan
EMP	Environmental Management Plan
GoB	Government of Bangladesh
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
ISM	Implementation Support Mission
KUET	Khulna University of Engineeing& Technology
LPG	Liquefied petroleum gas
M&E	Monitoring and Evaluation
OHS	Occupational Health Safety
PAD	Project Appraisal Document
pH	Acidity/alkalinity
PMU	Project Management Unit
PPCR	Pilot Program for Climate Resilience
PPE	Personal Protective Equipment
RAP	Resettlement Action Plan
R/S	River Side
TDS	Total Dissolved Solids
WB	World Bank

Executive Summary

Introduction: This Bi-annual Environmental Monitoring Report for Coastal Embankment Improvement Project (CEIP-1) has been prepared during the period January-June, 2023 to fulfill the safeguard policy requirement of government of Bangladesh (GOB) and the World Bank (WB). The Government of Bangladesh (GOB) has undertaken the implementation of the Coastal Embankment Improvement Project, Phase-1 (CEIP-1) with the loan assistance of World Bank (WB) and grant assistance of the Climate Investment Fund's Pilot Program for Climate Resilience (PPCR). The1st phase of this Project (CEIP-1) includes rehabilitation and improvement of ten (10) polders, to be implemented under two packages. The present Phase-1 activities belong to part of the total of 139 polders of Bangladesh Water Development Board (BWDB) having nearly 5,700 km embankment along with various water management structures. Polderization started in Bangladesh by BWDB in the early sixties for protection of land and other human resources from diurnal tidal flooding. It also provided control of salinity intrusion and sedimentation. Lack of proper maintenance, damage by the devastating cyclones/storm surges (Sidr and Aila which took place in 2007 and 2009, respectively) and siltation of the peripheral rivers have necessitated the adoption of CEIP, which will not only rehabilitate the embankment, but also raise the embankment height to combat high tides and storm surges which have been intensified by global warming and sea level rise. Cyclone Amphan (2020) and YAAS (2021) have also confirmed the need for CEIP-1 implementation in the coastal areas of Bangladesh.

CEIP has also emphasized improvement of the environmental, social and economic issues are addressed during its pre-construction and construction stages. Due to outbreak of COVID-19 since December 2019 the Project is adopting emergency management to minimize spread of Corona infection following the COVID-19 OHS Protocols for Construction Sites as a guideline and incorporated to the project Emergency Preparedness Plan (EPP) to ensure the health and safety of the project workers.

Project objectives: The project development objective as approved and agreed upon by the World Bank and the Government of Bangladesh is to increase the resilience of coastal population to natural disasters and climate change. More specifically, the project aims at

- reducing the loss of assets, crops and livestock during natural disasters;
- reducing the time of recovery after natural disaster such as cyclone;
- improving agricultural production by reducing saline water intrusion which is expected to worsen due climate change; and
- improving the Government of Bangladesh's capacity to respond promptly and effectively to an eligible crisis or emergency. This objective will be achieved by rehabilitating and improving the Polder system in the coastal area.

Project components: The Project has five components; four components are related to polder improvement and a fifth component (with a provisional zero amount) has been included to allow for rapid reallocation of loan proceeds during an emergency, under streamlined procurement and disbursement procedures:

Component A	-	Rehabilitation and Improvement of Polders.
Component B	-	Implementation of Social Action and Environment Management Plans.
Component C	-	Construction Supervision, Monitoring & Evaluation of Project Impact, Supervision of Social and Environment Plans, and Delta Monitoring
Component D	-	Project Management, Technical Assistance, Training and Strategic Studies.
Component E	-	Contingent Emergency Response Component

Environmental category of the project: According to Environmental Conservation Rules (ECR) 2023 of DoE, the project is categorized as "Red" requiring that EIA and RAP have to be

submitted for obtaining and Environmental Clearance Certificate (ECC). ECC is updated until the project completion period. According to WB safeguard policy, the project is classified as Category "A" involving significant environmental adverse impact. An Environmental Management Framework (EMF) has been formulated which includes various steps for protection of physical, ecological, socio-cultural resources along with economic development and protection of occupational health and safety (OHS). These steps were followed during the reporting period to address environmental considerations.

Project location: Out of total 139 Polders in the country, CEIP-1 includes 10 Polders in 2 Packages. Their locations are given in table below along with the area of each Polder that will be protected by the embankment works.

Location and gross protected area (ha) of CEIP-1 polders

Sl. no.	Polder no.	Location		Gross protected area (ha)
		Upazila	District	
Package-1				
1	32	Dacope	Khulna	8,097
2	33	Dacope	Khulna	8,600
3	35/1	Sharankhola and Morelganj	Bagerhat	13,058
4	35/3	Bagerhat	Bagerhat	6,790
			Total=	**36,545**
Package-2				
5	39/2C	Bhandaria and Motbaria	Pirojpur	10,748
6	40/2	Patharghata	Barguna	4,453
7	41/1	Barguna Sadar	Barguna	4,048
8	43/2C	Golachipa	Patuakhali	2,753
9	47/2	Kolapara	Patuakhali	2,065
10	48	Kolapara	Patuakhali	5,400
			Total=	**29,467**
			CEIP-1 Total	**66,012**

Environmental Management Team Organization: An environmental management team exists in CEIP-1 which involves the Contractors, the Construction Supervision and Project Management Support Consultants and other GoB agencies as implementers and the CEIP-1 PMU headed by the Project Director provides coordination and oversight. Third Party M&E Consultants spot check compliance, evaluate impacts and report to the Project Director.

Environmental documents prepared: Environmental Impact Assessment (EIA) has been prepared for each polder of both the packages. EHS risk assessment have been done for each polder and based on these assessments Environmental Action Plan (EAP) for work Package W-01 and Contractor's Environmental and Social Management Plan (C-ESMP) have been prepared which have been concurred from the World Bank. The Emergency Preparedness Plans (EPP) for Covid-19 measures for both W-01 and W-02 have been prepared and being implemented following OHS protocols of the WB. These are live documents which are continuously being updated considering the need of the project. In additon to these the following documents are also kept in each camp/CC block sites for confirmation of the Environmental Safeguard practices:

1. EIA reports including EMP
2. Emergency prepared plan (EPP) for COVID-19
3. Updated EAP reports for Package W-01
4. Updated C-ESMP reports for Package W-02
5. Polder specific EHS risk assessment reports
6. Health and safety (H&S) plan
7. Environment and social incident response toolkit (ESIRT)
8. Annual Environmental audit report including action plan

9. Bi-Annual Environmental Monitoring report including action plan
10. EHS compliance register
11. EHS non-compliance register
12. Waste management/disposal register
13. Noise level measurement register
14. Toolbox/training register
15. Register for grievances
16. Environmental monitoring reports
17. Hearing test report
18. Report on EMP monitoring by CRTS of KUET under environment mitigation works
19. River bank erosion monitoring under environment mitigation works CEIP-1/W02 (Final report)
20. Report on construction of alternative or by-pass channels at work sites
21. Final report on capacity building and training to the WMOS regarding gate operation and post project monitoring
22. WMO (WMA&WMG) Monitoring report
23. Report on farm survey
24. Report on habitat (tree) observation
25. Catch assessment survey in connection with environment mitigation works
26. Final report on fisheries activities in Polder areas
27. Fortnightly EMP monitoring Checklist.

Improvement in EHS management: There have been subtaintial achievement in EHS management of the Project during the reporting period which is depicted as follows

- Improvement in supply and use of Personal Protective Equipment (PPE) in all sites.
- Regular toolbox talks were held before start of work.
- Establishment of separate lane for forklift movement and for the pedestrians in CC block manufacturing plant site
- Introduced incident reporting in Accident register following the World Bank's Environment & Social Incident Response Tool-kit (ESIRT)
- Implementing Covid-19 measures in work sites and camp sites.
- Obtaining approval on working site and EIA from the Department of Environment (DoE) of Bangladesh;
- Obtaining Environmental Clearance Certificate (ECC) and its annual basis renewal from the Department of Environment (DoE) of Bangladesh;
- Implementation of the key actions of aide memoire related to environmental safeguard issues;
- Participate in working meetings related to projects;
- Ensure project's compliance with the Environmental Legislation of Bangladesh as well as with the rules and requirements of donor, the World Bank and others;
- Ensure coordinating among involved parties during project implementation period;
- Participate in environmental component monitoring in respect of approved EAP and C-ESMP;
- Review and analysis of existing documentation and
- Mitigation of environmental risk and protection issues.

Key EHS compliance (Package-2)

Monitoring of key EHS risk management according to EAP/C-ESMP in Package-1 respectively have been carried out during the Month of January to June 2023 are as follows:

Sl. no.	Polder/site	Specific individual area	EHS Risk issues	Measures taken to mitigate the risk issues	Remarks
1.	Polder 39/2C Construction of embankment		Lockout-tagout (LOTO) of automatic CC plants of Polder 39/2C	• All required EHS measures and some COVID-19 measures were compiled by the contractor and the workers also adopted the measures for their safety and security. • 2 automated CC block manufacturing plants of Polder 39/2C were kept closed and kept encircled by security enclosures	Few CC blocks were manufactured in Nadmulla CC plant during the month of June, 2023 and although 2 units of automated CC manufacturing plants of this Polder at Charkhali and Telikhali were demobilsed
		Starting and ending of working length	May occur accident, top soil disruption	• Demarcated all work sites clearly • Installed cautionary/ informative signals to indicate the entry and exits of vehicles and movement of construction equipment in the working area. • Disposed of the excess soil at site with no objection from local authority. • Conducted regular toolbox talk before starting the work • Informed the community before the start of work • Provided PPE to the workers during conduct of work • Erected the wire up to enough height before starting and ending of the work • Checked the physical conditions of excavator regularly • Checked the physical conditions of compaction vehicle regularly • Checked the physical conditions of truck regularly • Conducted training on driving safety at regular interval • Borrow area of earth was fixed on agreement with land owners • Documented all borrow agreements	

Sl. no.	Polder/site	Specific individual area	EHS Risk issues	Measures taken to mitigate the risk issues	Remarks
				• Complied barrow area excavation with safe distance from embankment as per technical specification.	
2.	Polders 40/2,41/1, 43/2Cand 48 Manufacturing of CC block (by mixer machine)		Stockpile area	• Sprayed water at regular intervals • Maintained safe height of the stockpile • Provided coverage of stockpiled materials	
			Electric firing	• Checked the switch board and wire system regularly • Provided fire extinguisher and sand at strategic locations	
			Fuel Storage	• Established fuel storage shed • Paved the fuel storage area • Provided firefighting equipment and checked the expiration date of hydrants • Avoided underground storage of fuel • Maintained minimum distance during fueling and re-fueling • Made available of fuel absorbent facility at site	
			Waste storage and disposal	• Provided separate collection bins for different waste types • Installed designated dumping area • Installed decanting boxes • Established facility for collection of industrial waste • Ensured safe waste disposal	
3.	Polder 40/2, 41/1, 43/2C& 48 Re-sectioning of Embankment and slope protection works of Polders 40/2 and Polder 48	Starting and ending of working length	May occur accident, top soil disruption	• Installed cautionary/ informative signals to indicate the entry and exits of vehicles and safe movement of construction equipment in the working area. • Disposed the excess soil at site with no objection from local authority. • Erected the wire up to enough height before starting and ending of the work • Checked the physical conditions of excavator regularly • Checked the physical condition of compaction vehicle regularly • Checked the physical	

Sl. no.	Polder/site	Specific individual area	EHS Risk issues	Measures taken to mitigate the risk issues	Remarks
				condition of trucks regularly • Conducted training on driving safety at regular interval • Borrow area of earth was fixed on agreement with land owners • Documented all borrow agreements • Complied barrow area excavation with safe distance from embankment as per technical specification.	
4.	All Polders under Package-2	COVID-19 crisis	Infection and Spreading of the germ of novel corona virus has reduced a lot at present	• Checking of body temperature of workers by experienced personnel at all work sites before entrance. • Made arrangement for hand washing/hand sanitizer • Provided additional PPE with considerations to the COVID-19 situation • Improvement of workers' awareness on control of outbreak and spread of COVID-19	Infection of COVID-19 germs has reduced a lot at present, thus adoption of precautionary measures has also reduced accordingly

Afforestation: Afforestation in the project area is being implemented by Bangladesh Forest Department (BFD) after signing 6 nos. of MoU between BWDB and BFD. Pilot planting of selected mangrove and other salt tolerant species are planted on BWDB owned land to demonstrate the critical role of a protective belt on the tidal inundation zone on the riverside of the embankment (Foreshore) as well as in the embankment slopes. The progress of plantation till June 2023 is stated herewith.

Afforestaion Status till June 2023

Sl no.	Polder	Revised targeted area (ha)	Planted area (ha)	Targeted seedling	Planted seedlings
1	32	91.424	91.424	229060	229060
2	33	77.48	77.48	188200	188200
3	35/1	110.028	110.028	267800	267800
4	35/3	69.488	69.488	173700	173700
Sub-total		**348.42**	**348.42**	**858800**	**858800**
1	39/2C	60.5	60.5	140000	140000
2	40/2	62.00	62.00	150000	150000
3	41/1	63.36	63.36	150900	150900
4	43/2C	36.20	36.20	88000	88000
5	47/2	66.60	66.60	166500	166500
6	48	64.00	64.00	151000	151000
Sub-total		**351.66**	**351.66**	**846400**	**846400**
CEIP-1 Total		**700.08**	**700.08**	**1705200**	**1705200**
Achievement		**-**	**100%**	**-**	**100%**

Testing of Environmental Parameter: Testing of various environmental parameters like Water quality (Surface and drinking), Soil quality and Air quality are measured once a year. The Contractors of Package-3 has already tested the environmental parameters as asked to carry out tests for 2023. Samples were collected under supervision of DDCS&PMS Consultants and testing were carried by Consultancy Research & Testing Services (CRTS) of Khulna University of Engineering and Technology (KUET) and tests were performed in their laboratory.

Training: The Contractor of Package 02 conducted a robust training program. About 3157 participants (Staff and workers) were trained during January to June 2023 period. The contractor of Package W-02 also maintained the Covid-19 protocol while conducting the training program in worksites. Among the six polders the civil construction works are almost completed in Polder no. 47/2 during FY: 2019-2020. Hence constructions works are on-going in five polders and training was provided as instructed & recommended by the Environmental Specialists team of PMU as well as DDCS&PMS consultant.

Programme for the next term: Major environment-related activities will be carried out during the period from July-December, 2023 are as follows:

1. Combating Covid-19 while performing defect liability work
2. Obtaining renewal on ECC from the Department of Environment (DoE)
3. Preparing O&M manual accordingly EMP
4. Finalizing annual environmental audit report
5. Preparing 16th Bi-annual environmental report
6. Preparing documentation on Environmental Safeguard practices
7. Completing the decommissioning activities in Pkg. 01 & 02 areas
8. Monitoring the function of WMOs
9. Finalizing the ESIA report for the following phase of CEIP-1
10. Taking approval on ESIA reports (previous third package) from DoE
11. Obtaining site clearance from DoE for CLIMATE project

Conclusion and Recommendations:

The quality of compliance with the environmental conditions are gradually improving with the improvement of the perception of its importance through regular monitoring and awareness of the contractor and the employees concerned by PMU, DDSC & PMSC, Field Offices and third party M&E Consultants. Fisheries related activates would be impacted the bio-diversity and improved the socio-economic status of the Polder community and has been implement by 2022. Decommissioning work as per Environmental code of practice is also being practiced in Pkg. 01. However, there is further scope for improvement of environmental management practices by imposing frequent and effective practices learned from over past six years. Regular monitoring and on-the-job training by PMU, DDSC & PMSC, Field Office of Khulna & Patuakhali would be helpful asis expected. The following recommendations are made to address by both Contractors to improve the EHS quality:

1. Management of Covid-19 according to approved EPP and from past experience
2. Assure the use of PPE by the workers while implementing defect work
3. Documentation on Environmental Safeguard practices
4. Completing the decommissioning activities in Pkg. 01 & 02 areas
5. Finalizing as well as implementing annual environmental audit report

1. Introduction

The Government of Bangladesh (GOB) has undertaken the implementation of the Coastal Embankment Improvement Project, Phase-1 (CEIP-1) 2nd Revised with the loan assistance of World Bank (WB) and grant assistance of the Climate Investment Fund's Pilot Program for Climate Resilience (PPCR). The 1st phase of this Project (CEIP-1) includes rehabilitation and improvement of ten (10) polders, to be implemented under two packages. The present Phase-1 activities belong to part of the total of 139 polders of Bangladesh Water Development Board (BWDB) having nearly 5,700 km embankment along with various water management structures.

Polderization started in Bangladesh by BWDB in the early sixties for protection of land and other human resources from diurnal tidal flooding. It also provided control of salinity intrusion and sedimentation. Lack of proper maintenance, damage by the devastating cyclones/storm surges (SIDR and AILA which took place in 2007 and 2009, respectively) and siltation of the peripheral rivers have necessitated the adoption of CEIP, which will not only rehabilitate the embankment, but also raise the embankment height to combat high tides and storm surges which have been intensified by global warming and sea level rise. Cyclone Amphan (2020), YAAS (2021), SITRANG (2022) have also confirmed the need for CEIP-1 implementation in the coastal areas of Bangladesh.

CEIP has also emphasized on improvement of the environmental, social and economic issues which are addressed during its pre-construction and construction stages. Due to outbreak of COVID-19 since December 2019 the Project is adopting emergency management to minimize spread of Corona infection following the COVID-19 OHS Protocols for Construction Sites as a guideline and incorporated to the project Emergency Preparedness Plan (EPP) to ensure the health and safety of the project workers.

1.1 Project development objectives

The project development objective as approved and agreed upon by the World Bank and the Government of Bangladesh is to increase the resilience of coastal population to natural disasters and climate change. More specifically, the project aims at

(a) reducing the loss of assets, crops and livestock during natural disasters;

(b) reducing the time of recovery after natural disaster such as cyclone;

(c) improving agricultural production by reducing saline water intrusion which is expected to worsen due to climate change; and

(d) improving the Government of Bangladesh's capacity to respond promptly and effectively to an eligible crisis or emergency.

This objectives will be achieved by rehabilitating and improving the Polder system in the coastal area.

1.2 Project components

The Project has **five components**; four components are related to polder improvement and a fifth component (with a provisional zero amount) has been included to allow for rapid reallocation of loan proceeds during an emergency, under streamlined procurement and disbursement procedures:

Component A - Rehabilitation and Improvement of Polders

A1: Rehabilitation and Improvement of Polders.

A2: Afforestation.

Component B - Implementation of Social Action and Environment Management Plans

B1: Implementation of Social Action Plan.

B2: Implementation of Social Management and Resettlement Policy Framework (SMRPF) and Resettlement Action Plans (RAPs).

B3: Implementation of Environmental Management Framework (EMF) and Environmental Management Plans (EMPs).

Component C - Construction Supervision, Monitoring & Evaluation of Project Impact, Supervision of Social and Environment Plans, and Delta Monitoring

C1: Detailed Design and Construction Supervision

C2: Third Party Monitoring and Evaluation of Project.

C3: Long Term Monitoring, Research and Analysis of Bangladesh Coastal Zone.

Component D - Project Management, Technical Assistance, Training and Strategic Studies

Component E - Contingent Emergency Response Component

The scope and scale of the project can be understood from the targets that have been agreed for the key performance indicators as shown in Table 1 below:

Table 1: Targets for Key Performance Indicators as per PAD/DPP and their Status

Sl. no.	PDO indicators as per PAD/DPP	Indicator type	Total project target	Cumulative value as of December, 2022	Cumulative value as of June 30, 2023
1	Gross area protected	outcome	66,012 ha	55,914 ha (84.70 %)	55,914 ha (84.70 %)
2	Direct beneficiaries from increased resilience to climate change (number) and % women (PPCR core indic. A1.3)	outcome - core	724,202 (50% women)	582,636	582,636
3	Cropping intensity	outcome	180%	Pkg 01 - 167% Pkg 02 - 205%	Pkg 01 - 167% Pkg 02 - 205%
4	Contingent Emergency Appropriation	input	No target	No target	No target
5	Length of embankment construction/resectioning	output	408.000 km	328.238 kms	377.478 kms
6	Drainage structures replaced and upgraded	output	88 nos.	72 nos.	84 nos.
7	Regulators upgraded	output	8 nos.	2 nos.	2 nos.
8	Flushing inlets replaced and upgraded	output	80 nos.	49 nos.	68 nos.
8A	Flushing inlets repaired	output	44 nos.	15 nos.	15 nos.
9	Length of drainage channels excavation	output	305.00 km	258.13 km	290.166 km
9A	Riverbank Protection works	output	9.370 km	9.524 km	9.524 km
9B	Slope Protection works	output	28.000 km	24.027 km	28.45 km
10	Area Afforested (PPCR core indic. B3)	output - core	600.00 ha	610.00 ha	700.08 ha
11	Water Management Organizations functioning (meeting regularly, operations, no. of disputes)	outcome	10 nos.	10 nos.	10 nos.
12	Improved coastal monitoring - studies undertaken	output	2 no	Draft report submitted	Submitted
13	Grievance Redress Committees (GRC) established	output	10 no. of polders	10 polders (Pkg-01:15 GRC; Pkg-02:21 GRC)	10 polders (Pkg-01:15 GRC; Pkg-02:21 GRC)

The main information of the Project's works Package 01 including project executing agency, funding agency, consultant, contractor, project location, project components, project cost, etc. are furnished below:

Table 2: Salient features of the project under Package-01

Sl. no.	Name of the Project	:	Coastal Embankment Improvement Project, Phase-1 (CEIP-I) 2nd Revised
1.	Project Executor	:	Bangladesh Water Development Board underMinistry of Water Resources
2.	Funding Agency		World Bank IDA Credit 52800 & TF 14713 and PPCR of Climate Investment Fund Grant
3.	Name of the DSC Consultant	:	Royal HaskoningDHV (the Netherlands) in association with DevConsultants Ltd., Develops Project Management, CEGIS, Institute of Water Modeling and DHI
4.	Name of Contractor for Works Package 01	:	First Engineering Bureau of Henan Water Conservancy (China)
5.	Project Location	:	Coastal Polders of Khulna and Bagerhat, Bangladesh
6.	Re-sectioning/ Construction of embankment	:	197.882 Km
7.	Construction of forward embankment	:	0.00 km
8.	Construction of total drainage sluices	:	38 drainage sluices
9.	Construction of drainage sluices under AILA	:	7 sluices
10.	Repairing of drainage sluices	:	2 sluices
11.	Construction of total flushing inlets	:	29 flushing inlets
12.	Re-excavation of drainage channels	:	150.299 km
13.	Total bank protection works	:	4.25 km
14.	Total slope protection of embankment	:	19.529 km
15.	Construction of cross dam	:	1 no.
16.	Contract Duration (month)	:	89 months to 30 June 2023
17.	Project Cost	:	Original contract amount: BDT 6,969,113,205 Revised Contract Amount: BDT 7,243,662,887.49
18.	Date of Contract Signing	:	01 November 2015
19.	Commencement Date	:	26 January 2016
20.	Physical Construction Period	:	26 January 2016 – 30 June 2023
21.	Land Acquisition	:	131.60 ha

The main information of the Project's Works Package 02 including project executor, funding agency, consultant, contractor, project location, project components, project cost etc. are furnished below:

Table 3: Salient features of the project under Package-02

Sl no.	Name of the Project	:	Coastal Embankment Improvement Project, Phase-1 (CEIP-I)
1.	Project Executor	:	Bangladesh Water Development Board under Ministry of Water Resources
2.	Funding Agency		World Bank IDA Credit 52800 & TF 14713 and PPCR of Climate Investment Fund Grant
3.	Name of the DSC Consultant	:	Royal HaskoningDHV (the Netherlands) in association with DevConsultants Ltd., Develops Project Management, CEGIS, Institutes of Water Modeling and DHI.
4.	Name of Contractor for Works Package 02	:	Chongqing International Construction Corporation (China)
5.	Project Location	:	Coastal Polders of Pirojpur, Jhalakhati, Patuakhali and Barguna Districts of Bangladesh
6.	Re-sectioning/ Construction of embankment	:	150.892 km
7.	New Embankment completed	:	59.250 Km
8.	Construction of total drainage sluices	:	38 drainage sluices
9.	Repairing of drainage sluices	:	3 sluices
10.	Construction of flushing inlets	:	24 nos.
11.	Repairing of flushing inlets	:	1 nos.
12.	Re-excavation of drainage channels	:	107.837 km
13.	Total bank protection works	:	5.274 km
14.	Total slope protection of embankment	:	5.497 Km
15.	Construction of Clossure		-
16.	Dismantling of drainage sluice	:	37 nos.
17.	Dismantling of flushing inlets	:	56 nos.
18.	Dismantling of HBB road		46.40 km
19.	Construction of flood wall	:	-
20.	Contract Duration (month)	:	71.5 months to 30 June 2023
21.	Project Cost	:	Original Contract Amount: BDT 10,899,564,634.65 Revised Contract Amount: BDT 11,487,869,276.99
22.	Date of Contract Signing (NTP)	:	08 March 2017
23.	Commencement Date	:	12 July 2017
24.	Physical Construction	:	12 July 2017 – 30 June 2023
25.	Land Acquisition	:	172.34 ha

1.3 Project location

Out of total 139 Polders in the country, CEIP-1 includes 10 Polders in 2 Packages. Their locations with area are given in Table 4 along with the area of each Polder that will be protected by the embankment works.

Table 4: Location and gross protected area (ha) of CEIP-1 polders

Sl. No.	Polder No.	Location		Gross protected Area (ha)
		Upazila	District	
Package-1				
1	32	Dacope	Khulna	8,097
2	33	Dacope	Khulna	8,600
3	35/1	Sharankhola and Morelganj	Bagerhat	13,058
4	35/3	Bagerhat	Bagerhat	6,790
				36,545
Package-2				
5	39/2C	Bhandaria and Motbaria	Pirojpur	10,748
6	40/2	Patharghata	Barguna	4,453
7	41/1	Barguna Sadar	Barguna	4,048
8	43/2C	Golachipa	Patuakhali	2,753
9	47/2	Kolapara	Patuakhali	2,065
10	48	Kolapara	Patuakhali	5,400
				29,467
CEIP-1 overall				**66,012**

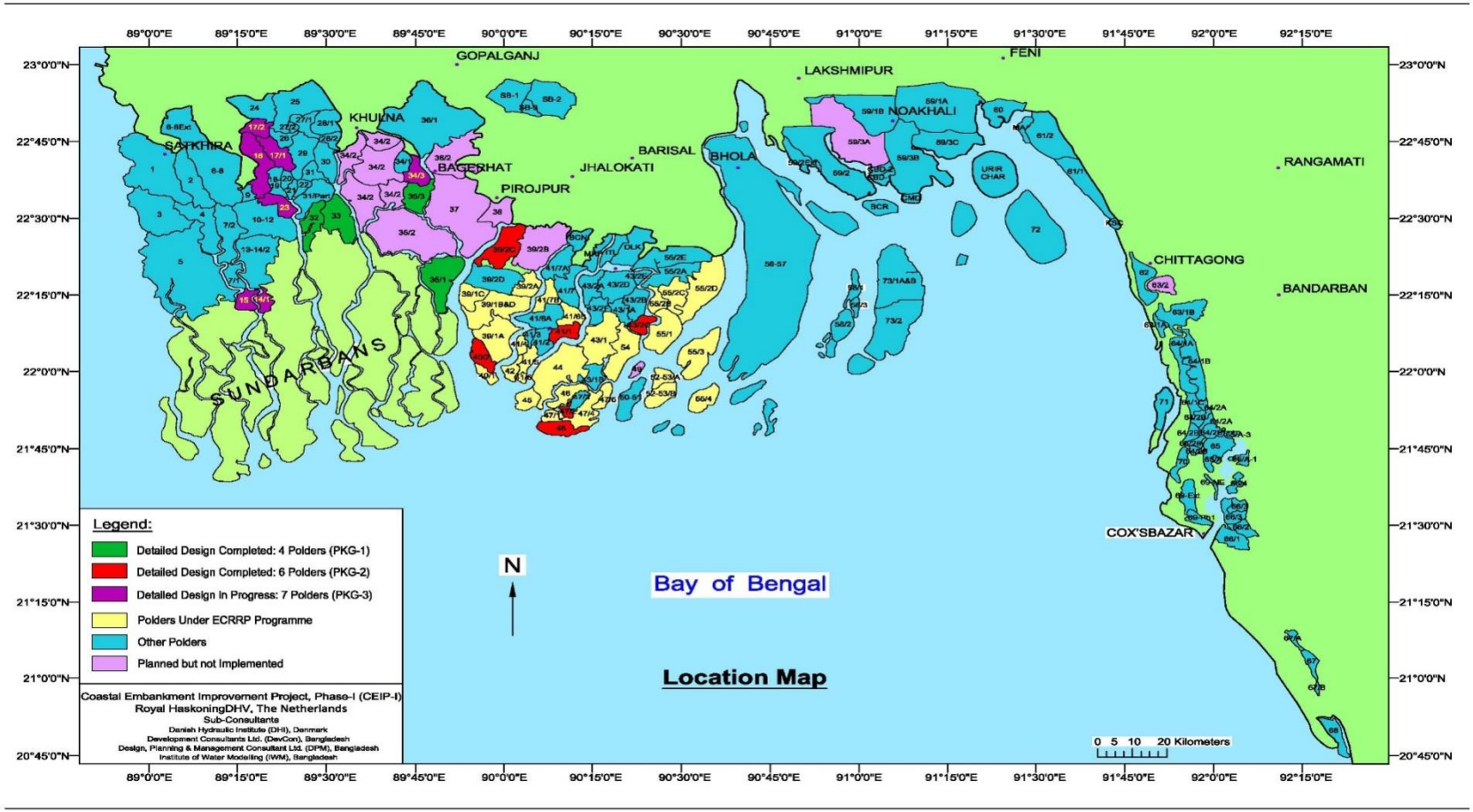

Figure 1: Location map of CEIP-1 polders

2. The background of this report

Implementation of the Environmental Management Plan (EMP) during the construction and post-construction stages is necessary for sustainable development as well as to ensure protection of the environment as the embankment construction project is being implemented.

From 12-16 June 2016, the World Bank undertook an Implementation Support Mission (ISM) to assess CEIP-1's progress, issues, safeguards compliance, etc. On 12 June 2016, a joint meeting was held with participation of WB, PMU of BWDB, Safeguards Consultants of BWDB and M&E Consultants. In the meeting, it was decided that the implementing agency with the support of the DDCS&PMS Consultants and M&E Consultants will prepare a separate Bi-annual Environmental Monitoring Report covering the implementation of EMPs, EAPs and compliance with Environmental Safeguards and identifying any pertinent issues. It is from that perspective, this Environmental Monitoring Report has been prepared. This fifteenth Bi-annual Environmental Monitoring Report focuses on the period 01 January to 30 June 2023.

This report has been prepared through a collaboration between PMU, the M&E Consultants and the DDCS&PMS Consultants. It is important to note that the team has attempted to address the comments in this report that were made by the World Bank on the 13th Bi-annual Environmental and previous Monitoring Report.

3. Environmental safeguards and EMF

According to the classification of Environment Conservation Rules (2023) of GOB, the construction, reconstruction, expansion of polders and flood control embankment is categorized as "Red". For the Red category project/industries, Environmental Impact Assessment (EIA) report along with Environmental Management Plan (EMP) and Resettlement Action Plan (RAP) have to be prepared for submission to obtain environmental clearance from the Department of Environment (DoE). ECC is updated until the project completion period. Moreover, according to World Bank environmental operational directives, the project is classified as a Category "A" type project because the project is likely to involve significant adverse environmental impacts that are sensitive, diverse, or unprecedented, which may affect an area broader than the facilities subject to physical works.

All required safeguard measures are to be adopted for avoiding/reducing/mitigating the environmental and social impacts for environmental sustainability of CEIP-1. The major issues of consideration include protection of (a) physical and ecological resources (b) protection of socio-cultural resources (c) protection of economic development (d) protection of occupational health and safety (OHS). A participatory approach will be followed to enhance sustainability of the CEIP-1 investment.

CEIP-1 implementers will follow the guidelines of EMF during pre-construction, construction and operation and maintenance of all polders to ensure satisfactory environmental management. The EMF has spelled out a set of steps, procedures and mechanisms to ensure an adequate level of attention is given to environmental considerations at every stage of the project cycle along with the related GoB regulatory and WB safeguard requirements.

4. Staffing and organization

4.1 Environmental management team organization

An environmental management team exists in CEIP-1 which involves the Contractors, the Construction Supervision and Project Management Unit (PMU) Consultants headed by the Project Director provides coordination and oversight. Third Party M&E Consultants spot check compliance evaluate impacts and report to the Project Steering Committee.

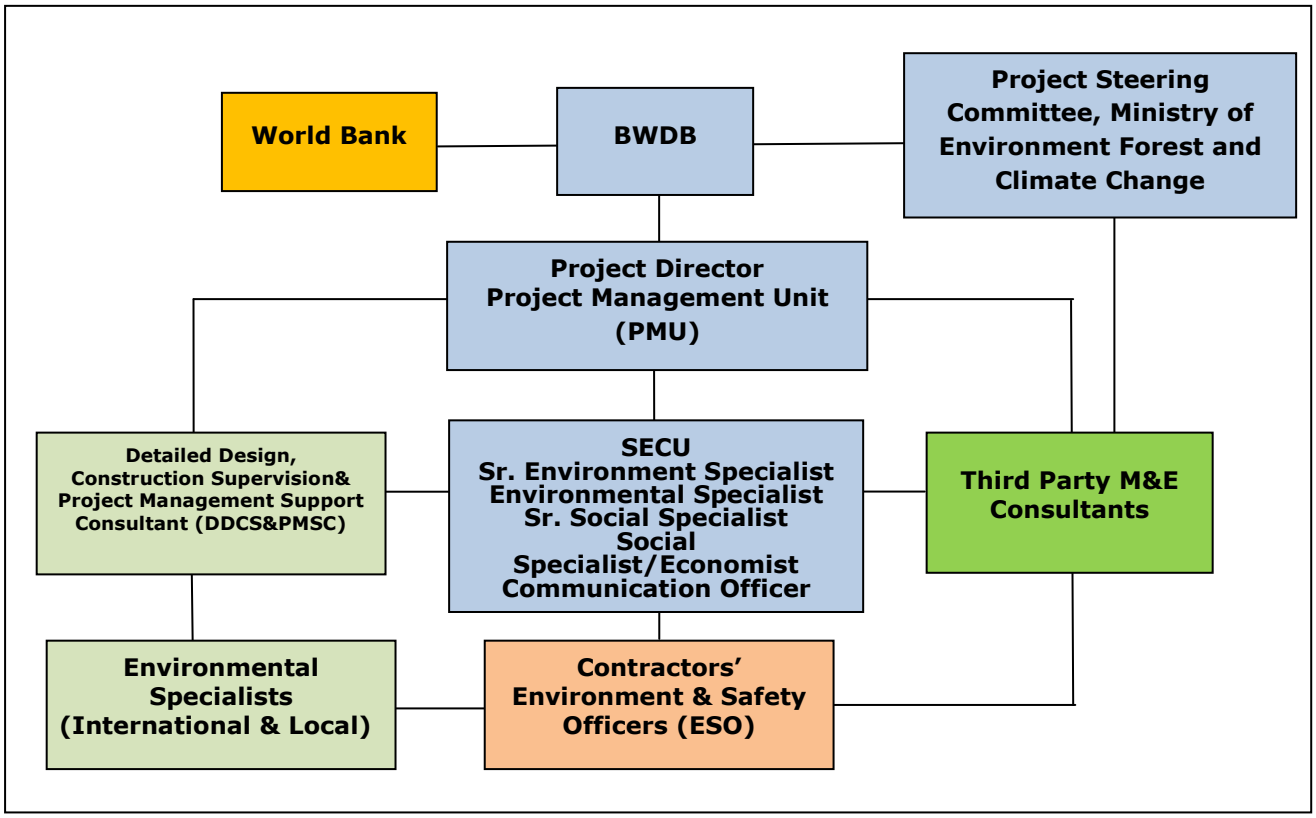

Figure 2: Organizational chart for environmental management and monitoring

A directory of PMU, DDCS&PMS Consultant, M&E Consultant and Contractor staff that are concerned with environment is presented in Table-5.

Table 5: Concerned environmental, health and safety personnel in CEIP-1

Sl.	Name	Designation	Place of posting	Mobile no.	E-mail Address
Project Management Unit (PMU), BWDB					
01	Syed Hasan Imam PEng.	Chief Engineer & Project Director	Dhaka	+88029899373	pdpmuceip@gmail.com
02	Mohammad Samiul Hoque	Executive Engineer	Dhaka	01726233262	ee2pmuceip1@gmail.com
03	Md. Asraful Alam	Executive Engineer	Khulna	01318235115	xen.ceip1.khulna@gmail.com
04	Md. Arif Hossen	Executive Engineer	Patuakhali	01318-235407	xenceip1@gmail.com
05	Dr. Md. Towhidul Islam	Environmental Specialist	Khulna	01911493918	towhidenvs@gmail.com
06	Mr. Akbar Hossain	Sr. Forestry Specialist	Dhaka	01711543475	ahossain56.bd@gmail.com
07	Mr. Aftabul Alam	Sr. Social Specialist	Dhaka	01716132723	aftabulalam.7787@gmail.com
Royal HaskoningDHV, DDCS&PMS Consultant					
08	Jean Henry (Harrie) Laboyrie	Team Leader	Dhaka	01935146720	harrie.laboyrie@rhdhv.com
09	A K M Momtaz Uddin	Deputy Team Leader	Dhaka	01711026230	akmmomtaz@gmail.com
10	Mohammad Ali	Deputy Resident Engineer-2	Patuakhali	01711320432	ceip1patuakhali@gmail.com
11	Abu Bakr Siddique	Environmental Specialist	Dhaka	01795095607	abs_1947@yahoo.com asiddique1947@gmail.com
12	Mr. Harunur Rashid	CSE	Barguna	01720043618	-
13	A.K.M.Mazibur Rahman	CSE	Patuakhali	01712540050	akmmr1955@gmail.com
14	Sadequl Islam	CSE	Pirojpur	01822213320	sadequl477@gmail.com
Third Party M&E Consultant					
15	Jan T. Twarowski	Team Leader	Dhaka	01745573470	tl.me.ceip1@gmail.com
16	Mr. Mahidur Rahman	Deputy Team Leader	Dhaka	01711173629	dtl.me.ceip1@gmail.com
First Engineering Bureau of Henan Water Conservancy (China), Package W-01					
17	Mr. Sun Huaxin	Project Manager	Khulna	01991996805	chwe_ceip1_bd@hotmai.com
18	Ren Gaofei	EHS Manager	Khulna	01771894869	18738153286@163.com
19	Prodip Sarker	EHS Officer	Khulna	01716717871	prodip.babu80@yahoo.com
20	Mr. Xing	EHS Engineer	Polder 32	01918517537	1097373443@qq.com
21	Aporup Roy	Local EHS Officer		01751630797	Aporoy09@gmail.com
22	Gao Xing	EHS Engineer	Polder 35/1	01646737474	1065708430@qq.com
23	Md. Thamidul	Local EHS Officer		01936503679	md.masudr921@gmail.com

Sl.	Name	Designation	Place of posting	Mobile no.	E-mail Address
Chongqing International Construction Corporation(China), Package W-02					
24	Mr. Wu Weiwen	Acting Project Manager	Dhaka	-	cicobangladesh@gmail.com
25	Madainyong	EHS in-Charge	Patuakhali	01617776707	madianyong1218@gmai.com
26	MA ZE MOU	Polder Manager	Polder 39/2C	01887707644	1303535200@qq.com
27	WANG JIAN	EHS Manager		01887707650	281196254@qq.com
28	Mr. Taher	Local EHS Officer		01712003561	-
29	Dai Jinping	Polder Manager	Polder 40/2	01858859721	102600333@qq.com
30	Cheng Guangyong	EHS Manager		01621654962	981444742@qq.com
31	Emon	Local EHS Officer		01939648808	emon.islam8808@gmail.com
32	Yang dong	Polder Manager	Polder 41/1	01644783390	471215409@qq.com
33	Luotao	EHS Manager		01645649518	1498290447@qq.com
34	Mr. Azahar	Local EHS Officer		01797181079	sajaldavid92@gmail.com
35	Wang Taofu	Polder Manager	Polder 43/2C	01762563982	362933938@qq.com
36	Zen Shaungmiao	EHS Manager		01610398276	845534141@qq.com
37	Hemayet Uddin	Local EHS Officer		01719459671	hemayetuddin91@gmail.com
38	Li Xiang	Polder Manager	Polder 48	01870509678	273893947@qq.com
39	TianJiezhong	EHS Manager		01760921187	38722575@qq.com
40	Md. Musa	Local EHS Officer		0176463243	mahinmusa71@gmail.com

4.2 PMU staffing

The social, environmental and communication Unit (SECU), planned to be comprised of five specialists, has been established under the Project Management Unit (PMU). This unit closely monitors the compliance with all safeguards requirements during the implementation of the CEIP-I. Now five SECU Specialists (except communication officer) are Environmental Specialist, Senior Forestry Specialist, Senior Social Specialist, Senior Revenue Specialist and Social Specialist are working continuously in a coordinated way to support the project.

Specifically, SECU's environmental team is responsible to:

- Follow Covid-19 OHS manual
- Obtaining approval on working site and EIA from the Department of Environment (DoE) of Bangladesh;
- Obtaining Environmental Clearance Certificate (ECC) and its annual basis renewal from the Department of Environment (DoE) of Bangladesh;
- Implementation of the key actions of aide memoire related to environmental safeguard issues;
- Participate in working meetings related to projects;
- Ensure project's compliance with the Environmental Legislation of Bangladesh as well as with the rules and requirements of donor, the World Bank and others;
- Ensure coordinating among involved parties during project implementation period;
- Participate in environmental component monitoring in respect of approved EAP and C-ESMP;
- Review and analysis of existing documentation;

- Monitor environmental risk and protection issues;
- Review reports in compliance with the requirements of the donors as well as in accordance with the Bangladesh Environmental Legislation;
- Review comments and complaints; elaborate recommendations;
- Prepare official letters to projects Implementation Agency and/or consultant ;
- Review documents submitted by consultants; and
- Establish and maintain working relations with other organizations of Bangladesh, International organizations for the purpose of implementation of the objectives, tasks and functions specified under this Bi-Annual report.

4.3 Consulting services for engineering design, construction supervision and project management support

The Contract for these Consulting Services was signed between BWDB and the Royal Haskoning DHV (Netherlands)/Devcon/DPM/IWM/DHI on 30 December, 2014 and became effective on 21 January 2015. Consultants hold office in Dhaka, Khulna and Patuakahli. The TOR for supervision consultant requires (The Engineer) to ensure EMP implementation. The consultant's office is supported by national environmental specialist to ensure environmental compliance of the project as it progresses.

The DDCS&PMS consultant is responsible to:

- Implementation of Covid-19 OHS manual
- Review and approve environmental documentation submitted by the Contractor;
- Review and approve the Contractor's Environmental Action Plan (EAP)/C-ESMP in line with requirement of the EMP;
- Supervise construction works and monitor the implementation of mitigation measures under the EMP and EAP/C-ESMP;
- Preparation, review and updating of EIA reports
- Maintain working relationship with the Contractor and the Employer (PMU, BWDB);
- Provide support to PMU in obtaining environmental clearance certificates;
- Undertake correspondence with the Employer, the cntractor as prescribed by the contract for execution of the civil works on site.

4.4 Civil works construction contractors

The Contract for civil works construction under Package W-01 was signed between the BWDB (The Employer) and the First Engineering Bureau of Henan Water Conservancy (The Contractor) on 01 November 2015. On the other hand, the Contract for civil works construction under Package W-02 was signed between the BWDB (The Employer) and the Chongqing International Construction Corporation (The Contractor) on 08 March 2017. The Contractor of Package W-01 is assigned for rehabilitation/reconstruction and upgrading of four Polders, namely Polder 32, Polder 33, Polder 35/1 & Polder 35/3 ; whereas the Contractor of Package W-02 for six Polders, namely Polder 39/2C, Polder 40/2, Polder 41/1, Polder 43/2C, Polder 47/2 & Polder 48, respectively under CEIP-I. The above Polders are wide-spread in their geographical locations. The Contractor holds site office in each Polder and has appointed Environment, Health & Safety (EHS) Managers (Chinese) & Officers (local) as presented in the table 5 above.

The CRTS (CIVIL) of KUET, Khulna has undertaken the laboratory analysis of Water, Soil, and measure Air and Noise qualities of the Polders that compose important part of EAP/EMP of the Polders under CEIP-1.

The Faculty of Agriculture, Patuakhali Science & Technology University (PSTU), Patuakhali has carried out the habitat observation & farm survey in different Polder under contract Package: W-02/CEIP-1.

The Faculty of Fisheries, Patuakhali Science & Technology University (PSTU), Patuakhali has carried out following fisheries related activities in different Polder under contract Package: W-02/CEIP-1.

- Catch assessment survey
- Construction of fish sanctuaries
- Net pen culture
- Aquatic mammal movement
- Training conducted on pond culture, improved culture & rice cum galda farming
- Field demonstration
- Awareness building up to local community for conservation of threatened fish species

The expatriate EHS Manager, expatriate Local EHS Officer of the Contractors are responsible for implementation of the EMP as follows:

- Formulation & implementation of Covid-19 OHS manual
- To prepare environmental documentation, mentioned in Contract, EAP, EIA and EMP;
- To ensure that physical monitoring is undertaken properly;
- To review works schedules;
- To participate in progress meetings;
- Help identify practical solutions to actual and potential problems;
- Use trends in monitoring data to predict/identify possible future problems;
- To provide frequent environmental field supervision;
- To notify non-compliance and take relevant actions;
- To keep records: maintain site diary and checklists, complete files; and
- Communicate with local community regarding works progress.

4.5 Third party M&E consultants

The contract for the Third Party M&E Consultancy was signed between BWDB and Sheladia Associates, Inc. (USA) in association with BETS Consulting Services, Ltd. (Bangladesh) on 01 October 2015. The contract became effective on 23 October and Sheladia mobilized its team on 01 November, 2015.The M&E Consultants are responsible for monitoring and evaluation of implementation progress of all project works and activities and its impacts as well the implementation of the EMP and the SAP/RAP. The M&E reports are to evaluate the success in project implementation in terms of meeting the project's objectives, and assess its physical, hydrological, environmental, social, and economic impacts. The M&E team is to provide continuous feedback to the GoB, the PSC and development partners on the project's performance, and on mitigation of negative impact under various components, so that corrective actions can be undertaken in a timely manner if necessary.

5. EMP budget

An amount of BDT 6 core (approximately) has been earmarked for the implementation of EMP against each package W-01 and W-02 of CEIP-1. These provisions have been kept in the contractor's contract agreement under BoQ item as specified provisional sum. Under the provision of EMP budget the contractors for Packages 01 & 02 of CEIP-1 shall take all precautions for safeguarding environment during the course of the construction of the works. The contractors shall fully comply with the environmental protection mitigation measures specified in the related EIA guidelines and agreed in EAP/C-ESMP & EHS risk Assessment Reports. A provisional has been kept in the BOQ for Packages 01 & 02 for implementation of the of the mitigation works as illustrated herewith:

- Crop compensation to the direct loser, land owner/share croppers of construction site/ damaged due to dredge spoils;
- Monitoring of environmental & mitigation works;
- Surface & ground water quality monitoring;
- Air and noise quality monitoring analysis;
- Water quality monitoring cost;
- Waste disposal arrangement;
- Soil & water salinity monitoring cost;
- Waste disposal arrangement at construction site;
- Updating of EMP (EAP/C-ESMP and EHS risk assessment reports);
- Management of soil health by replacing back in agricultural land;
- Reducing erosion through proper compaction, turfing etc.;
- Afforestation along the dyke side to reduce erosion and threat of climatic events.
- Awareness campaigning on plant and wild life conservation;
- Habitat observation (biotic information);
- Conservation and stocking of threatened fish species;
- Movement of aquatic mammal/fishes;
- Catch assessment survey in polder areas;
- Farm survey in polder areas;
- Training to the farmers on eco-friend pest management practices;
- Awareness building among locality for conservation of threatened/red listed species,
- WMOs (Water Management Organizations) monitoring cost;
- Training on improved technology and
- Emergency works for closing breach points of embankment and repairing the damaged structures;

For Package 01, the total expenditure for EMP cost so far paid is Tk. 55,791,359 out of a maximum budget of Tk. 60,200,000 meaning 92.7% of total budget has been disbursed, unchanged from the last reporting period. This included cost of works consisting of emergency breach closing, minor earthworks, compaction and positioning of geo-bags (175 kg) and other items of EMP components in various stages of utilization. For Package 02, the total paid cost for EMP implementation stands at Tk. 57,055,478.92 as of June 2023 (about 90% of total budget) which has improved the environment for EHS compliance in the work sites of Package No. CEIP-1/W-02.

6. Status of works progress as of June 2023

In order to provide context for understanding the status of the project activities as of end of June 2023 and the intensity of activity during the reporting period, a brief description of the works undertaken is presented in this section.

- The physical progress of Package W/01 in June2023 is 0.00% and cumulative physical progress up to June 2023 is 97.61% against revised program of 100%. Hence, the progress is lagging by 2.39%. In respect to the lagging of progress, it can be mentioned here that the actual physical works of all the Works under Contract No. CEIP-1/W-01 have been completed butinterms of progress, it is noted that the weightages for different items of works and CC Blocks production were assigned based on the contract quantities, which will vary from that actually accomplished as per Field Reports. After confirmation of the actual quantity, the weightage for different items of works and CC Block will be updated, which will result in an increase in the overall progress of the Works when compared with the aforementioned progress calculations.
- The Contract had been extended up to 31st December 2022 by the Competent Authority. Hence, the completion date of the Contract was on 31st December 2022.
- The Contractor completed 38 nos. Drainage Sluices and 29 nos. Flushing Sluices as per target of the Results Framework and those have been handed over to the Employer and are now being used by the beneficiaries. Taking-Over Certificates for Polders 33 and 35/3 were issued as per GCC Sub-Clause 10.1 (a) and 11.1on 28thMarch 2021 with the Sectional Taking-Over Date 28th February 2021 with terms and conditions of issuing. There are still some Contractual items which have to be fulfilled.
- It was decided to develop the slopes of the Embankment in the paved road areas of both Packages in September 2021and accordingly, the design drawings of Package-1 were prepared and provided to the Contractor end of December 2021.Later, Contractor started to develop the slopes of the Embankments of Polder33,35/1 and 35/3. As the preparation of the design drawings for the development of the Slope of Embankment were delayed and due to obstacles in the working areas, the said works of Polder 33 could not be completed within the extended time. However, the slope development works of all the above-mentioned Polders have been completed by this time.
- The Defect Liability Period of Polder 33 was extended by the Competent Authority up to 31st December 2022 based on the application of the Contractor as they failed to rectify all the identified defects and remaining works of Polder 33 within the Defect Liability Period.
- As per claim of the Contractor to issue Taking-Over Certificate for Polders 32 and 35/1 and Engineer assessed the status of works of the Polders and after a meeting held on 18th September 2022 between the Employer, Contractor, and Engineer on the issue of Taking-Over Certificates and as per decision of the meeting Taking-Over Certificates for Polders 32 and 35/1 were issued on 25th September 2022 with the Sectional Taking-Over Date 30th June 2022 with the conditions that if Works would not be satisfactorily implemented, said Taking-Over-Certificates would be annulled.

New Emergency/ Precautionary works in Package-1

New emergency/precautionary bank protection work of Polder 32 has been carried out to total 1,030 meters length by dumping 54,735 nos. geo-bags. Moreover, protection work has been carried out in Polder 33 by dumping of 16,614 nos. geo-bags at a total length 115 m. The sand filled bags were dumped to help safeguarding the completed embankment against river erosion.

Table 6: Information of emergency/precautionary river bank protection works of different locations of Package 1 during the reporting period

Sl.No.	Polder	Location			Geo bag quantity	
		From km	To km	Total Length (km)	Total dumped	Size
1.	32	7.660	7.820	0.160	2,425	250 kg
2.		42.900	43.150	0.250	9,128	250 kg
3.		44.300	44.500	0.200	12,472	250 kg
4.		47.010	47.110	0.100	883	175 kg
5.		7.540	7.860	0.320	29827	250 kg
Sub-total				**1.030**	**54,735**	
1.	33	30.749	30.864	0.115	16,614	250 kg
Sub-total				**0.115**	**16,614**	
Total				**1.145**	**71,349**	

Progress in construction/ Re-sectioning of embankment has taken place in Package-1 during the period from January-June, 2023 and its status by June, 2023 is given in the following Table:

Table 7: Progress of construction/ re-sectioning of embankment (permanent sites) in Package-1

Sl. No.	Location	Total Number of work sites	Total length (km)	Type of Works	Progress as on June, 2023
1	Polder 32	42	49.666	Embankment re-sectioning and retired embankment; some turfing of slopes	49.666 km completed
2	Polder 33	28	49.154	Embankment re-sectioning and retired embankment; some turfing of slopes	46.719 km completed and 0.100 km in progress
3	Polder 35/1	37	61.972	Embankment re-sectioning and retired embankment; some turfing of slopes	61.672 km completed and 0.300 km in progress.
4	Polder 35/3	30	39.825	Embankment re-sectioning and retired embankment; some turfing of slopes	39.825 km completed
	Total	**137**	**200.617**		197.882 kms completed & 0.400 km is in progress

Source: MPR DDCS Consultants, June, 2023

Progress of production of CC block manufacturing in Package-1

No CC blocks were manufactured during the period from January to June, 2023 and the total number of CC blocks manufactured till the reporting period is presented in the following table:

Table 8: Nos. of CC block manufactured upto end of June, 2023

Sl. no.	Polder no.	No of total cc blocks manufactured by end of December, 2022	No of total cc blocks manufactured by end of June, 2023	Comments
1.	32	1,943,312	1,943,312	
2.	33	1,293,736	1,293,736	
3.	35/1	2,778,317	2,778,317	
4.	35/3	228,122	228,122	
Total		**6,243,487**	**6,243,487**	

Source: MPR DDCS Consultants, June, 2023

Polder-wise Progress of other construction activities of package-1 upto June 2023 are provided as follows:

Table 9: Polder-wise progress of various work components of Package 01 up to June, 2023

Polder 32	Unit	Target	Completed	Ongoing	Progress
Construction/ Re-sectioning of Embankment	Km	49.666	49.66	0.00	100%
Excavation/ Re-excavation of Drainage Channel	Km	17.003	17.003	0.000	100.00%
Construction of Drainage Sluices	No	8	8	0	100.00%
Repairing of Drainage Sluices	No	0	0	0	NA
Construction of flushing sluice	No	1	1	0	100.00%
Repairing of Flushing Inlets	No	6	6	0	100.00%
Embankment Slope Protection Work	Km	3.300	3.300	0.000	100.00%
River Bank Protection Work	Km	2.000	2.000	0.000	100.00%
Construction of Closure Dam	No	1	100.00%	0.000	100.00%
Polder 33					
Construction/ Re-sectioning of Embankment	Km	49.154	47.469	0.00	96.47%
Excavation/ Re-excavation of Drainage Channel	Km	62.830	62.830	0.000	100.00%
Construction of Drainage Sluices	No	12	12	0	100.00%
Repairing of Drainage Sluices	No	0	0	0	NA
Construction of flushing sluices	No	6	6	0	100.00%
Repairing of Flushing sluices	No	3	3	0	100.00%
Embankment Slope Protection Work	Km	4.016	4.016	0.000	100.00%
River Bank Protection Work	Km	1.300	1.300	0.000	100.00%
Polder 35/1					
Construction/ Re-sectioning of Embankment	Km	61.972	61.972	0.300	100%
Excavation/ Re-excavation of Drainage Channel	Km	70.466	70.466	0.000	100%
Construction of Drainage Sluices	No	14	14	0	100.00%
Repairing of Drainage Sluices	No	2	2	0	100%

Polder 32	Unit	Target	Completed	Ongoing	Progress
Construction of flushing Sluices	No	12	12	0	100.00%
Repairing of Flushing sluices	No	3	3	0	100.00%
Embankment Slope Protection Work	Km	11.750	11.513	0.000	97.88%
River Bank Protection Work	Km	0.800	0.800	0.000	100.00%
Polder 35/3					
Construction/ Re-sectioning of Embankment	Km	39.825	39.825	0.000	100%
Excavation/ Re-excavation of Drainage Channel	Km	0.000	0.000	0.000	NA
Construction of Drainage Sluices	No	4	4	0	100.00%
Repairing of Drainage Sluices	No	0	0	0	NA
Construction of flushing Sluices	No	10	10	0	100.00%
Repairing of Flushing Sluices	No	2	2	0	100.00%
Embankment Slope Protection Work	Km	0.700	0.700	0.000	100.00%
River Bank Protection Work	Km	0.150	0.150	0.000	100.00%

Source: MPR DDCS Consultants, June, 2023

Package-2

The physical progress in June 2023 is 1.58% and cumulative physical progress up to June 2023 is 92.98%. As per revised Work Program it should be 100%. So, there is 7.02% lagging in progress. The progress of work in this month is more or less satisfactory considering the unfavorable working conditions due to start of rainy season. The completion date of this Contract has been expired on 30thJune 2023 and as some works of this contract are yet to be completed, the Contractor has applied for extension of time of this contract up to 30th September 2023 which is under process of approval by the Competent Authority.

The Contractor of Package-2 is continuing to execute the Embankment Works in paved area of Polder-39/2C, 40/2, 41/1 and 48. The Embankment Works are executing by developing the slope and re-sectioning based on the present status of the sections of Polders.

No emergency work was carried out during the reporting period in Package-2 areas. The Polder-wise and item-wise progress status of emergency works of Package-2 upto December, 2022 has been furnished in the following Table:

Table 10: Length of emergency work in Package-02

Locations	Length (km) of Emergency work upto December, 2022	Length (km) of emergency work upto June, 2023	Length (km) of Emergency work during January-June, 2023
39/2C	0.556	0.556	0.000
40/2	0. 350	0.350	0.000
41/1	0.151	0.151	0.000
43/2C	0.365	0.365	0.000
47/2	1.556	1.556	0.000
48	0.508	0.508	0.000
Total	**3.486**	**3.486**	**0.000**

Source: MPR DDCS Consultants, June, 2023

The Polder-wise and item-wise progress status of Package-2 upto June, 2023 has been furnished in the following Tables:

Table 11: Progress in production of CC block manufacturing in Package-2 Polders

Sl. No.	Polder no.	Nos. of total CC block manufactured by December, 2022	No. of total CC block manufactured by June, 2023	Number of CC block manufactured during January-June, 2023
1	39/2C	5,016,626	5225053	208,427
2	40/2	401,914	407151	5,237
3	41/1	572,306	572,306	0
4	43/2C	428,189	428,189	0
5	47/2	436,327	436,327	0
6	48	556,201	598246	42,045
Total		**7411563**	**7667272**	**255709**

Source: MPR DDCS Consultants, June, 2023

Table 12: Polder-wise progress of various work in Package 02 up to June 2023

Polder 39/2C	Unit	Target	Completed	Progress
Construction/ Re-sectioning of Embankment	Km	59.250	44.650	75.36%
Excavation/ Re-excavation of Drainage Channel	Km	57.230	48.08	84.01%
Construction of Drainage Sluices	No	13	8	82.65%
Repairing of Drainage Sluices	No	0	0	NA
Construction of flushing Sluice	No	21	2	38.00%
Repairing of Flushing Inlets	No	0	0	NA
Embankment Slope Protection Work	Km	4.000	1.069	26.72%
River Bank Protection Work	Km	3.787	3.500	92.42%
Construction of Closure Dam	No	8	6	80.63%
Polder 40/2				
Construction/ Re-sectioning of Embankment	Km	34.200	26.650	77.92%
Excavation/ Re-excavation of Drainage Channel	Km	4.229	2.23	52.73%
Construction of Drainage Sluices	No	10	7	87.60%
Repairing of Drainage Sluices	No	3	0	29.92%
Construction of flushing Inlets	No	7	3	90.72%
Repairing of Flushing Inlets	No	11	0	89.43%
Embankment Slope Protection Work	Km	1.137	1.008	88.65%
River Bank Protection Work	Km	0.000	0.000	NA
Polder 41/1				
Construction/ Re-sectioning of Embankment	Km	33.571	33.571	100%
Excavation/ Re-excavation of Drainage Channel	Km	23.133	23.133	100%
Construction of Drainage Sluices	No	10	9	91.00%
Repairing of Drainage Sluices	No	0	0	NA
Construction of flushing Inlets	No	10	9	99.63%
Repairing of Flushing Inlets	No	12	1	76.98%
Embankment Slope Protection Work	Km	0.000	0.000	NA
River Bank Protection Work	Km	0.674	0.674	100%
Polder 43/2C	**Unit**	**Target**	**Completed**	**Progress**
Construction/ Re-sectioning of Embankment	Km	25.505	21.944	86.04%
Excavation/ Re-excavation of Drainage Channel	Km	28.261	28.261	100%

Construction of Drainage Sluices	No	8	6	99.34%
Repairing of Drainage Sluices	No	0	0	NA
Construction of flushing Inlets	No	7	6	85.71%
Repairing of Flushing Inlets	No	7	0	78.21%
Embankment Slope Protection Work	Km	0.261	0.000	0.00%
River Bank Protection Work	Km	0.540	0.540	100%
Polder 47/2				
Construction/ Re-sectioning of Embankment	Km	17.567	17.567	100%
Excavation/ Re-excavation of Drainage Channel	Km	9.167	9.167	100%
Construction of Drainage Sluices	No	4	2	99.63%
Repairing of Drainage Sluices	No	0	0	NA
Construction of flushing Inlets	No	3	2	99.50%
Repairing of Flushing Inlets	No	2	0	92.50%
Embankment Slope Protection Work	Km	0.000	0.000	NA
River Bank Protection Work	Km	0.690	0.560	81.16%
Polder 48				
Construction/ Re-sectioning of Embankment	Km	38.000	32.479	85.47%
Excavation/ Re-excavation of Drainage Channel	Km	32.911	32.911	100%
Construction of Drainage Sluices	No	6	5	99.95%
Repairing of Drainage Sluices	No	3	0	30.83%
Construction of flushing Inlets	No	3	2	99.50%
Repairing of Flushing Inlets	No	0	0	NA
Embankment Slope Protection Work	Km	4.078	3.420	83.86%
River Bank Protection Work	Km	0.000	0.000	NA

Source: MPR DDCS Consultants, June, 2023

Package-3

5 Polders (Polders 16, 17/1, 17/2, 23 and 34/3) of Package-3 have been included in CEIP-2, where in total 20 Polders are under study prior to their implementation. The rest 2 Polders (Polders 14/1 and 15) of Package-3 have been considered to be implemented by BWDB with GOB finance.

7. Improvement in management of Environment, Health & Safety (EHS)

The major issues of maintaining and improving the EHS management in Packages W-01 and W-02 of CEIP-1 till June, 2023 are as follows:

- There is improved supply and use of Personal Protective Equipment (PPE).
- Recording of noise level at CC block plant sites and other susceptible noisy sites are carried out and submitted on monthly basis. Workers follow the noise management procedures, when reuired.
- Establishing noise barriers to reduce the noise of high noisy work sites and rotational facility for workers of high noise areas is in practice.
- Signboard erected at high noise work site to adopt measure against health hazard issue.
- Proper code of waste management followed and records of waste disposal are maintained along with proper management of organic waste.
- Covering of conveyer belts to protect dust emission and improved mask use of workers are done.
- Frequent spraying of water for dust management at work sites.
- Tool box talks are held regularly before the start of works.
- Proper materials storage at designated site during and after work.
- Maintain height of the construction materials stacks to avoid potential accidental falling.
- Erection of 'No entry' signboards for improved safety of the CC plant sites and other required locations.
- Established increased numbers of grievance collection boxes for workers at suitable (invisible) sites for submission of workers' grievance.
- Establishment of separate lane for forklift movement and for the pedestrians in CC block manufacturing plant site.
- Maintaining register for workers' personal information along with history of workers' health problems and name and address of next of kin in case of emergency uses.
- Fencing of materials mixing hopper site for controlled entry for maintaining safety.
- Continued erection of signboards and signage with procedures for turning off the switch of electricity and the CC block casting machine along with alerting against potential mistakes.
- Established increased numbers of improve/hygienic toilet facilities for workers' use along with improved management practices.
- Provision of adequate fire extinguishers at camp sites and work sites along with the provision of their protection facilities from rain and sunshine.
- Continued training of workers on operation of fire extinguishers and demonstration of firefighting practices by them (workers).
- Paving of the base of secondary fuel containers to check soil and ground water pollution through fuel spillage/leakage.
- Proper management of residual cement sludge pool at susceptible locations.
- Construction of waste collection and disposal facilities of CC block manufacturing plants and other working locations.
- Provision of life jacket to Barge workers and cautionary marking near edge for workers' safety measure.
- Appointment of suitable EHS Managers (local and expatriate) at Polder level.

- Appointing flagman at required location for traffic management and avoiding accident.
- Erection of electrical cable on overhead instead of placing on the ground to avoid potential accidents.
- Continuation of provision of safe drinking water to workers (laboratory tests of water done periodically).
- Fuel delivery site has impervious surface with collection ditch and absorbent facility to check pollution of soil and ground water through seepage.
- The welding work sites have been installed on impervious surface with proper shed on them.
- Periodic training of the Contractor's Environment Officers along with regular training of workers continued for improved EHS.
- Established temporary storage facility for industrial wastes in all automated CC block manufacturing plant sites and erected 'No entry' signboards to avoid potential accident.
- Established alternative road for community transportation (at sluices sites) with suitable bamboo/fencing of work site along with erection of required signboard.
- Erection of Material Safety Data Sheet (MSDS) at hazardous (fuel and chemical) location along with Bangla translation.
- Provision of proper drainage systems in worksites to avoid pollution to surrounding water bodies and land by direct disposal of waste water.
- Erection of safety signboards and implementation of safety procedure at work sites.
- Introduced incident reporting in Accident register following the World Bank's Environment & Social Incident Response Tool-kit (ESIRT).
- Maintaining register at worksites for documentation of EHS compliance/non-compliance by the site visitors, specially by the project Environmental Specialists.

8. Positive impacts from CEIP-1 interventions

The physical work of polder 32, 33, 35/1 and 35/3 under Package-1 has been completed (97.52%). It is now observed that a remarkable positive Environmental changes have taken place in the polder areas due to CEIP-1 interventions.

We know Bangladesh is one of the most disasters prone and climate vulnerable countries in the world and especially the package-1 area is located beside 2 mighty rivers namely Boleshwar and Shibsha and in the vicinity of the Bay of Bengal. The area was often subjected to natural disaster which caused cyclones along with loss of lives, properties and suffered from severe deterioration of agricultural crops due to saline water intrusion. There are also experienced in river bank erosion which resulted loss of agricultural lands, lives and other hazards along with. The successful implementation of the project through its intervention such as sustainable flood embankment, proper drainage structure and adequate river bank protection work created opportunity of environmental friendly atmosphere all around the area.The areas have enormous improvement of agriculture production by reducing saline water intrusion and drain out excess water.

Figure 3: Polution free area has developed through the intervention of CEIP-1 (P-40/2)

Figure 4: Civics benefit from the intervention of CEIP-1 (P-35/1)

Figure 5: Potable water facilities for communities in P-35/3

Figure 6: Road development due to intervention of CEIP-1 (P-35/3)

The river bank protection work confirmed protection of lives and properties of the local communities. Indeed CEIP-1 interventions facilitate the production of sweet water crops, which has increased the cropping intensity in the polder areas. The land is ready for growing intensive as well as various crops.

Figure 7: Secured agricultural areas has build up in P-33 through CEIP-1 interventions

Figure 8: Good rice cultivation in Polder 35/1

Figure 9: Crop diversification has been confirmed in Polder areas

The recruited NGOs (five NGOs for ten Polders) motivated the community towards the profitable crops. The CEIP-1 interventions also confirmed the facilities of grazing, resulting the animals rearing are very frequent in polder areas. It will be enriched the protein availability for community and also ensure the sound human health. From the animal rearing they will be also capable for improving their livelihoods. Moreover, several trainings to the community for improved agricultural and fishery activities along with environmental awareness programs through the project intervention have many positive effects of the project population. Now the Polders are the hot spot for essential as well as profitable sunflower & legume cultivation. If any body visits during sunflower cultivation period, s/he will reserve the charming feelings.

The projects also enhanced the work opportunity for female communities facilitating their stay in home. The forestation was done on the embankment toe for increasing the strength of embankment against tidal surge. This immense activity also offered the easy job both for male and females. They get handsome salary/return from their job. They also earn the ownership through their duties. The forshore plantations is another eye-catching scenario in the polders of CEIP-1.

The adjacent drainage channels /sweet water reserves also created the scope for fishing, which met the demand for good and fresh quality protein. The drainage channels/flowing khals constructed/rehabilitated under CEIP-1 are the supreme and major sources for sweet water in the coastal zones of Bangladesh. The villagers also performed their home needs using that fresh water. Thus, the communities are now getting directly benefit from the CEIP-1 interventions.

9. Environmental mitigation works performed in CEIP-1 during the reporting period (January to June, 2023)

9.1 Environment mitigation works performed in Pkg. 01 areas

The Contractor, Package-1 commenced their works on 26.1.2016 and completed the assignment by 31.12.2022. So, in the reporting period only decommissioning activities were going on and PMU as well as BWDB representatives made effective communication with WMA regard to smart functioning of sluices and avoid water logging crisis within the Polder areas.

Demobilization activities: As activities of the Package 01 Contractor are at the ending stage, they have prepared a decommissioning plan which has been reviewed by the PMU and DDCS&PMS Consultants for finalization, and currently this is being implemented. The implementation of the decommissioning plan is being monitored by PMU, DDCS&PMS Consultants and Third Party M&E Consultants. Proper decommissioning/demobilization are one of the important contractual obligations of the Contractors in CEIP-1. There were five CC block yards and various office compounds under Package: W-01 as follows.

Polder no.	Name of CC block yard	Name site	Updated status
Polder 32	Rupsha&Pankhali CC block yards	Dacope	1. Rupsha CC block yard demobilized during the year 2021. 2. Dacope camp demobilized in reported period. 3. The decommissioning activity in Pankhai CC block yard yet to be completed
Polder 33	Mongla CC block yard	Bajua	Done in 2021
Polder 35/1	Tafalbari CC block yard	Tafalbari	On-going
Polder 35/3	Daratana CC block yard	Khegraghat	1. Khegraghat camp demobilized during the year 2021. 2. The decommissioning activity in Daratana CC block yard yet to be started

Two automated CC plants (established earlier for manufacturing of CC blocks) have been demobilized from Pankhali CC block manufacturing worksite of Polder 32 along with all equipment and most of the housing structures. But some concrete and brick works, toilets and an office building are yet to be cleared as required and converted back to farmland (the pre-project status), as the adjacent areas of Pankhali CC block manufacturing yard are being intensively used for agricultural purposes. During decommissioning health safety issues were maintained but community benefits are not getting in full swing due to remaining of activities. The dredged concretes may used for improving road access, which is another benefits of decommissioning/demobilization activities.

There is no pending decommissioning issue in Polder 33. The yard is being used for industrial purposes. The demolished materials of structure are stored in safe place and covered the materials to be stopped the dust spreading. All demolished materials are handed over to the employers through DDCS&PMS consultant.

In Polder 35/1, Tafalbari automated CC block manufacturing yard, a major area of the worksite has been converted to farmland with a high quality of demobilization/decommissioning. Out of a total 3,000 square meters, 2,000 square meters have been cleared. The remaining 1,000 sq. meters is occupied for maintaining the office, workshop area and some equipment and toilet facilities. The Contractor is in the process of shifting various equipments to the Daratana site (in Polder 35/3) from where the materials are being disposed. This is one of the best examples, where rice crop is being cultivated in a good manner. There is no risk in the communities rather they are now secured from CEIP-1 intervention.

There is no sign of demobilization of the worksite in the Daratana automated CC block manufacturing worksite of Polder 35/3, rather all equipment and vehicles have been stored in the worksite. The automated CC block manufacturing plant stopped production from December, 2021 and vehicles, equipment and construction materials from Pankhali (Polder 32) and Tafalbari (Polder 35/1) automated CC manufacturing plants have been dumped in site and they are being sold from this location.

Figure 10: Demolished CC block yard of P-35/1 is being used for agriculture

Figure 11: Pankhali yard no. 1, needs to be demolished (P-32)

Figure 12: Remaining part of Tafalbari yard needs to be demolished (P-35/1)

Figure 13: Daratana yard needs to be demolished (P-35/3)

Figure 14: Discussion with WMA regarding sluice operation in Polder 35/1

Figure 15: Mou between concerned WMA & Executive Engineer of Bagerhat O&M Division

Figure 16: Mou between concerned WMA & Executive Engineer of Khulna O&M Division-2

Figure 17: Hading over the responsibilities of polder operation to WMA

Figure 18: Meeting regarding polder operation (P-35/3)

Figure 19: Meeting regarding polder operation (P-35/1)

9.2 Environment mitigation works performed in Pkg. 02 areas

Contractor, Package-2, CEIP-1 has carried out wide varieties of environment mitigation activities in the light of BoQ requirements during the reporting period (January to June, 2023) as they were suggested to be carried out. The related various environmental issues are described as follows:

9.2.1 Submission of Monitoring report of Environmental testing parameters for 2023: The Contractor Package-2, CEIP-1 has carried out testing of environmental parameters like air quality, drinking water quality, noise quality, soil quality and surface water quality of various locations as instructed and mentioned by the engineer under concurrence of Environmental Specialists. As usual the samples were collected under the supervision of DDCS&PMS consultants and the required samples were tested by Consultancy Research and Testing Services (CRTS) under Civil Engineering Department of Khulna University of Engineering and Technology (KUET), Khulna. The air quality and noise quality of the specified locations were determined directly measured by the KUET experienced teachers. It needs to be mentioned, these parameters of same locations were measured during 2019 and 2020 and 2022.

Figure 20: Environmental monitoring in Pkg. 2 area

9.2.2 Training to the farmers with field demonstration regarding IPM and ICM (according to BoQ sl.09 under Environmental Mitigation Works): The project area is in the coastal belt. Here most of the households depend upon agriculture and allied activities such as livestock rearing and fishing. In the coastal belt the salinity is caused mainly due to inundation by saline water. Salinity is the main constraint of crop production here. Experimental evidences revealed that along with rice, potato, sweet potato, pumpkin, water melon, brinjal, okra, coconut, betel nut, guava and ber could be grown under different salinity levels. Insect pest and disease attack for these crops is another constraint in reaping a good harvest. Unless effective crop management is adopted it may be difficult to ensure food supply for ever growing population of the area. Integrated Pest Management (IPM) is a holistic approach to sustainable agriculture that focuses on

managing insects, diseases and weeds through a combination of cultural, physical, biological, mechanical, legal and chemical methods that are cost effective, environmentally sound and socially acceptable. If the Water management group (WMG) members of the project command area could be trained on IPM then they will not undergo indiscriminate use of pesticides. As a result the environment will be free from pollution and the cost of cultivation of the farmers will be less.

Figure 21: IPM/ICM training conducted by upazila agricultural personnel in P-41/1

9.2.3 Submission of report for capacity building and training to the WMOs regarding gate operation and post project monitoring under Environmental Mitigation works (Package-2): The Contractor Package-2, CEIP-1 has conducted three round training activities on Capacity Building and Training of WMOs regarding Gate Operation and Post Project Monitoring, according to item no. 17 of BOQ under Environmental Mitigation Works. The training program covered twenty batches in respect of Capacity build up of WMO regarding gate cooperation for sustainable water management in Polder areas. The training also covered the Post Project monitoring techniques for WMA Executive bodies and two representatives from each WMG under Polder nos. 39/2C, 40/2, 41/1, 43/2C, 47/2 & 48. The training was organized by the Package-2, CEIP-1 Contractor (CICO) during December 2022 to April 2023, where experienced trainers/resource persons (BWDB, PMU, DDCS&PMS consultant) were involved for conducting the training programs. Through the training program WMO became capable and ready to operate the sluices & monitor the project activities during the Post project situations. For smoothly running the water management activities in Polder areas, the contractor of Package W-02 has a plan to provide some logistic (furniture, cabinet, register book & accessories) to WMO as per approved methodology of BOQ. No. 17 under Environmental Mitigation Works of contract Package: CEIP-1/W-02.

Figure 22: Gate operation training in P-41/1

Figure 23: Gate operation training in P-47/2

Figure 24: Post-project monitoring training in P-39/2C

Figure 25: Post-project monitoring training in P-40/2

9.2.4 Fish sanctuary: The present activities were conducted during March to April 2023 in the southern coastal region of Bangladesh viz. the polder 39/2C, 41/1 and 43/2C, were located Bhandaria of Pirojpur district, Barguna Sadar Upazila and Galachipa of Patuakhali district, respectively in connection of Environmental Mitigation Works under "Coastal Embankment Improvement Project, Phase-1 (CEIP-1). Fish sanctuaries were setup in different lake such as Nirokhali-Dhanisapha border Khal (DS-6) in 39/2C, Amajhuri Khal (DS-1) in 41/1) and Golkhali Mosir Khal (DS-8) in 43/2C.

For the establishment of fish sanctuary, a brush shelter was prepared in the selected khal by using two types of materials; materials for shed and materials for shelter of fishes. Floating aquatic weeds such as water hyacinth (*Eichhornia crassipes*) was used for shed of fishes. Branches and roots of different trees like Bamboo and hijal, were used for the shelter of fishes. To build sanctuary 200 bamboos were brought from the local market for the sanctuary of each spot. Besides 50 branches of trees and 10 tree roots was brought from the nearby villages.Two large iron made signboard were permanently setup in each sanctuary. Size of each signboard 4 ft x 3ft and height 7ft. Signboard were fixup in the ground using RCC block. Fishing was strictly prohibited within 500 m of the fish sanctuary. Brood fish protection fences were constructed with 50 bamboo poles and net. Protection fence were used to protect the brood fish. As a result, threatened brood fish cannot escape sanctuary area and able to protect them from illegal fishing. After breeding threatened fish larvae and fry will be easily able to pass through the net and spread out among adjacent khal, river and flood plain area.

Threatened fishes were collected from Jassore and local market. Chital (*Chitalachitala*), Pabda (*Ompokpabda*), Golsa (*Mystusbleekeri*), Shing (*Heteropneustesfossilis*) and Tara baim (*Macrognathusarmatus*) were collected from Jassore. Brood fish of Shol (*Channa striatas*) and Magor (*Clarias batrachus*) were collected from local fisherman. Fishes were transported from Jashore using 10 ton truck and plastic drum. Finally threatened fishes- Chital, Pabda (*Ompokpabda*), Golsa (*Mystusbleekeri*), Shing (*Heteropneustesfossilis*), Tara baim (*Macrognathusarmatus*), Shol (*Channa striatas*) and Magor (*Clarias batrachus*) were stocked in three different sanctuaries- Nirokhali-Dhanisapha border Khal (DS-6, Polder- 39/2C), Amajhuri Khal (DS-1, Polder-41/1), Golkhali Mosir Khal (DS -8, Polder 43/2C). All brood fishes will be confining in the sanctuary area due to construction of protection fence and brood fishes will be protected by WMA from any type of illegal fishing. After breeding fish larvae and fry will be able to migrate different khal, river and floodplain area due to large mesh size of protection net.

As a results abundance of Chital, Pabda, Golsa, Shing Tara baim, Shol and Magor will be increase in the polder area and it also noted that the availability of SIS (Small Indigenous Species) such Taki *(Channa punctatus*), Chang *(Channagachua*), Koi (*Anabas testudineus),*Veda *(Nandus nandus),* Bale *(Glosogobius giurius*), Foli *(Notopterus nototerus*), Chanda *(Ambassisranga),* Chela *(Chela laubuca)*, Mola *(Amblypharyngodon mola),* Puti *(Puntus sarana),*Chapiala *(Gudusia capra)*and Kakila *(Xenentodon cancila)* will be increased because they can take shelter in the sanctuary and able protect them fishing. So, small indigenous fish species will naturally returned when their habitat was restored and protected. Sanctuary helps to protect breeding and nursery ground of fishes and enhance fish diversity. As results nutritional status of polder people will be increase.

Fig. 26: Threatened Fish stocked in the sanctuary of Polder 39/2C

Fig.27: Threatened Fish stocked in the sanctuary of Polder 41/1

9.2.5 Submission of Report on Riverbank Erosion under Environmental Mitigation Works: The Contractor CICO of Package-2, CEIP-1 had submitted final report on monitoring of Riverbank erosion according to BOQ item no 18. The report was reviewed by DDCS&PMS Consultants for its finalization. The reviewed report was shared with the Contractor for its finalization along with responses of the comments, which was finalized and submitted by CICO. The report will be useful to minitor the sustainability of river bank protection as well as slope protection works in different Polder areas under contract of Package CEIP-1/W-02.

9.2.6 Maintaining normal water follows during construction of sluices: Submission of report regarding BoQ item no 21 Under Environmental Mitigation works -Construction of alternative or by-pass channel at each construction site. Construction of earthen embankment is not the sustainable solution within the

Polder area. So there is need for construction of water controlling structure/sluice gate (DS/FS) with a view to confirming the required drainage and allowing flushing in Polder area. During construction of sluice gates eco-friend alternatives were applied for the welfare of coastal environment as well as communities. A short detail on eco-friend alternatives are illustrated herewith.

Approach- 1: Installation of UPVC pipe in riverside to bailout water and in country side to ensure water flow in crisis.

Approach- 2: Dewatering or bailing out of water from construction area through pumping

Approach- 3: Not obstructing the canal/ river flow during construction

Approach- 4: Ensuring flow through adjacent channel by connecting it to the another adjacent canal

Approach- 5: Construction/ epair of sluice gates in dry season

Approach- 6: Special arrangements when sluice gates were constructed on the running khals:

- Completion of sluice gate construction within dry period.
- Provided special type submersible drainage pump to tackle emergency crisis

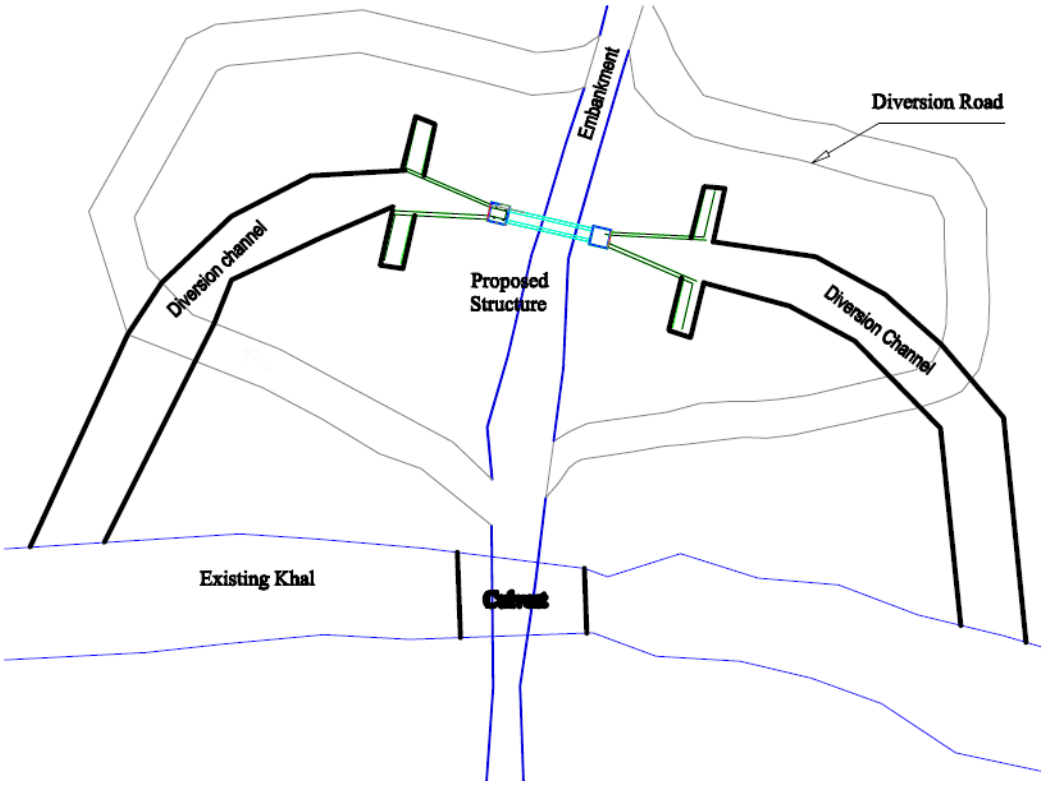

Fig. 28: Sample figure for not obstructing the khal

9.2.7 Report regarding Fish stocking in the khals areas: Submission of report regarding BoQ item no 12 under Environmental Mitigation works -Release of fish fry in the khals inside the Polders after completion of construction works.

Figure 29: Fish fry releasing in P-48

9.2.8 Demobilization activities: The Contractor of Pkg. 2 has also developed a decommissioning plan and has commenced decommissioning activities. The worksite of Charkhali automated CC block manufacturing plant in Polder 39/2C has been cleared of the existing plant and all other establishments and the area has been converted to farmland. This site serves as an ideal example of decommissioning/demobilizing. In the worksite of Telikhali, where there was another automated CC block manufacturing plant under Polder 39/2C, the CC plant has been removed but the area is occupied for production of CC block manually by mixer machine and all other establishment have not yet been cleared. Decommission activities in Polder 41/1 & 47/2 have been started under the guidance of the Environmental Specialist of CEIP-1 maintaining health and safety issues along with communities needs.

Figure 30: Demobilized site in P-39/2C

Figure 31: Demobilization has started in P-41/1

9.2.9 Safety manual for vehicles, machines and hot works: The contractor of Package 2 has developed different safety manuals for hot works. The manual is being discussed in Tool-box/EHS training for smoothly implementation and confirmation of greatest safeties in the work sites.

9.2.10 Installation of Grievance collection boxes (GCB) for resolving environmental complaints: The authority of CEIP-1 is so much committed regarding environmental grievances. In Package-2, Polder-wise GCBs are, in Polder 39/2C there are 3 nos. of GCBs, in Polder 40/2 there are 2 nos. of GCBs. (1 at camp site and 1 at mechanical room), in Polder 43/2C has 2 nos. (1 at camp site and another placed in mechanical workshop site), Polder 48 has 3 nos. (1 at outside store room, 1 at outside generator room and 1 at outside mechanical room). The Camp site and work site of Polder 41/1 have been closed on 31. 07. 2023 since the work has been completed. It has also to be remembered that the works of Polder 47/2 is already completed. All boxes are opened by the representative of DDCS&PMS consultant as well as contractor. As they contractor has been paid great intention regarding environmental right. So no complain were received during the reporting period.

9.2.11 Follow up the indication of the agreed actions of WB, bi-annual environmental monitoring report as well as third party annual Environmental audit report: The Implementation Support Mission of the World Bank publish a pubic document indicating some agreed actions. Amongst them Environmental safeguard actions are smoothly implemented by the contractors under close monitoring of the Environmentalist of CEIP-1. Furthermore there are some safeguard indications in each bi-annual monitoring as well as annual audit reports. That are also implemented in the work sites of CEIP-1. As a whole Environmental Safeguards are in good tract in CEIP-1.

10. EIA/EMP preparation and reporting

10.1 Overview

The major environment-related activities undertaken during the period January-June, 2023 are as followes:

- Decommissioning activities in Package-1.
- The Package-2 Contractor has conducted a robust program of environmental training exclusively including combating Covid-19 pandemic during the period of January to June, 2023, where enough participants (staff and workers) were trained on different topics.
- Conducted Consultation Meeting with project affected persons/beneficiaries on Environmental & Social Safeguard Management in Package-01 and Package-02 areas.
- Monitoring forest activities
- Meeting with the Officials of BFD (Bangladesh Forest Division) in Patuakhali
- Attend in the WB ISRM virtual meeting regarding:
    - Social mobilization and forestation
    - Environmental safeguard meeting for the following phase of CEIP-1 (CEIP-2)
    - For cropping intensity
- Make presentation (Environmental Safeguard) in Kick Off meeting of WB ISRM (virtual mission)
- Visit the polder with the Environment Safeguard team for the following phase of CEIP-1 (Feasibility team) for checking EMP issues
- Monitored & facilitated the training program of the WMOs regarding Capacity Building on Gate operation & Post Project Monitoring under BOQ item No. 17 of Environmental Mitigation Works for Pkg. W-02
- Performing Environmental monitoring activities (air quality & noise level monitoring) with CRTS team of KUET
- Conducted effective discussion with the management of CICO regarding starting & setting mechanisms for conservation and stocking threatened fish species under BOQ item No. 23 of Environmental Mitigation Works for Package-2, CEIP-1
- Assisted the contractor for updating the EHS reports
- Attend in the Workshop on the Draft Final Report of Feasibility Studies and Preparation of Detailed Design for the following Phase of Coastal Embankment Improvement Project (CEIP) called Coastal Livelihood Improvement and Adaptation Enhancement (CLIMATE) project on 25th June 2023 at Radisson Blu Dhaka Water Garden, Dhaka-1206.
- Reviewed ESIA report for Polder no. 14/1 and comments provided regarding on-ward submission to the World bank (WB)
- Updated C-ESMP report for different Polders under Contract Package: CEIP-1/W-02 for on-ward submission to the World bank (WB)
- Prepared Environment & Safety plan (E&S plan) for on-ward submission to the World Bank (WB)
- Finalized the 7th Annual Environment report and sharing with third party M&E team regarding updating as per WB requirements
- Reviewed and provided comments on the deliverables for finalization of the reports under Feasibility Studies and Detailed Design for next Phase of CEIP
- Grievance redress system (GRS): The contractors provided enough Grievance collection boxes at different locations of the work sites and maintained properly.
- Worker histories are maintaining in respect of age, gender, medical history, contact details and next of kin to notify in case of accidents/emergency.

10.2 Status of EIA/EMP preparation

According to Environmental Conservation Rules (ECR) 2023 of GoB, the project is categorized as "Red", requiring that EIA and RAP have to be submitted for obtaining and Environmental Clearance Certificate (ECC). ECC is updated until the project completion period. According to The World Bank (WB) safeguard policy, the Project is classified as Category "A" involving significant environmental adverse impact. To satisfy compliance of GoB and WB, CEIP-1 has already prepared EIAs for each of the four polders of Package 01 and six polders of Package 02 and these contain polder-specific EMPs. These EIAs have been approved by WB and DoE. After incorporating comments from the World Bank and obtaining clearance from IPoE, the EIAs for the 7 Polders of Package 03 (for polders 14/1, 15, 16, 17/1, 17/2, 23 and 34/3) have been finalized which have shared with the World Bank. The World Bank cleared all the EIAs with a observation of updating the EIAs when the next phase will start.

10.3 Afforestation (upto June, 2023)

Afforestation is important to the security of embankments and the lives and livelihoods of communities by providing green belts of protection from tidal flooding and storm surge. Pilot planting of selected mangrove and other salt tolerant species are planned on BWDB owned land to demonstrate the critical role of a protective belt on the tidal inundation zone on the riverside of the embankment as well as in the embankment slopes. The afforestation component will engage community participation in pro-poor approaches to encourage ownership and benefit sharing in an attempt to achieve social, environmental and economic sustainability.

It was originally planned that NGOs will implement the afforestation work under CEIP-1 along with WMO formation, but considering the sustainability of the afforestation the authority decided that afforestation part will be cut from the NGOs scope and will be implemented by Bangladesh Forest Department (BFD). Accordingly a proposal was sent to World Bank with the concurrence of BFD and World Bank agreed the proposal. After observing other formalities a MOU has been signed between BFD and BWDB.

In accordance with the MOU, all contract agreements have been signed between the respective Executive Engineer, BWDB and Divisional Forest Officer, BFD as follows:

- Polder 47/2 & 48 under Package-2 signed on August 12, 2018
- Polder 35/1 & 35/3 under Package-1 signed on October 8, 2018
- Polder 32 & 33, under Package-1 signed on 10 October 2018
- Polder 39/2C under Package-2 signed on 04 February 2019
- Polder 40/2 & 41/1 under Package-2 signed on 25 February 2019
- Polder 43/2C under Package-2 signed on 18 April 2019

The afforestation so far achieved till June 2023 is shown in Table 13.

Table 13: Afforestaion status till June 2023

Sl no.	Polder	Revised targeted area (ha)	Planted area (ha)	Targeted seedling	Planted seedlings
1	32	91.424	91.424	229060	229060
2	33	77.48	77.48	188200	188200
3	35/1	110.028	110.028	267800	267800
4	35/3	69.488	69.488	173700	173700
Sub-total		**348.42**	**348.42**	**858800**	**858800**
1	39/2C	60.5	60.5	140000	140000
2	40/2	62.00	62.00	150000	150000
3	41/1	63.36	63.36	150900	150900
4	43/2C	36.20	36.20	88000	88000
5	47/2	66.60	66.60	166500	166500
6	48	64.00	64.00	151000	151000
Sub-total		**351.66**	**351.66**	**846400**	**846400**
CEIP-1 Total		**700.08**	**700.08**	**1705200**	**1705200**
Achievement		**-**	**100%**	**-**	**100%**

Plan of further afforestation: There is no further plan for any more plantation due to achieved the target under CEIP-1program.

The Divisional Forest officers followed the time schedule for maintenance as well as raising of nurseries and plantation as follows:

Item of works/activities	Time Schedule for the given task			
	Nypa plantation	**Kewra/Baen plantation in seed bed**	**Gewa/Passur/ Sundri/Kankra in polybags**	**Embankment slope plantation-non-mangrove in polybags**
a) Nursery raising				
Site selection	February	June-July	June	November
Site preparation & bed preparation	Mid February	Mid June-July	Mid June-mid July	November
Seed collection	Mid February-April	August-September	August	November-February
Polybag collection	Not applicable	Not applicable	Before June	Before December
Soil collection	Not applicable	Not applicable	Before April	November-mid December
Cowdung/compost and Fertilizer collection	Not applicable	Not applicable	Before April	November-mid December
Mixing of cowdung and fertilizer with soil and filling of bags	Not applicable	Not applicable	Before April. Atleast 15 days before filling the bags	Till mid January
Seed sowing	Mid February - April	Mid August-September	Mid June- July	December-February
Seedling maintenance	Mid February-May	Mid August-next June	Up to May-June next year	February-May
b) Planting				

Item of works/activities	Time Schedule for the given task			
	Nypa plantation	**Kewra/Baen plantation in seed bed**	**Gewa/Passur/ Sundri/Kankra in polybags**	**Embankment slope plantation-non-mangrove in polybags**
Selection of site, survey the site and prepare plantation site map.	March	November-February	May – June	January-February
Preparation of mounds/dykes	Not applicable	Not applicable	Not applicable	Not applicable
Cleaning of unwanted growths by cutting them off.	Within May	7-10 days before the plantation	Mid May. 7-10 days before the plantation	End of April. 7-10 days before the plantation
Pit making	Not applicable	Not applicable	May	2nd-3rd week of April.
Application of cowdung/composts	Not applicable	Not applicable	7-10 days before planting of seedlings	7-10 days before planting of seedlings (May-June)
Staking	2-3 days before the planting	Not applicable	2-3 days before the planting	2-3 days before the planting
Transportation of seedlings to the planting sites	May-June	Next mid November-February	4th week April-June	May-June
Planting of seedlings with subsequent vacancy fillings	Just immediate after transportation of seedlings to the sites	Just immediate after transportation to the sites	Just immediate after transportation to the sites	Just immediate after transportation to the sites (May-June)
Fixing of red flags indicating planting sites to avoid fishing.	One week before the plantation	Not applicable	Not applicable	Not applicable
Application of fertilizer	Not applicable	Not applicable	Minimum 2 weeks after planting	Mid May-June
Weeding 1st year means planting of the following year	3 weedings in 1st year, 2 weedings in 2nd year	3 weedings in 1st year, 2 weedings in 2nd year	3 weedings in 1st year, 2 weedings in 2nd year	3 weedings in 1st year, 2 weedings in 2nd year
Vacancy fillings with staking	1st year 20%	1st year 30% and 2nd year required number	1st year 20% and 2nd year required number	1st year 20% and 2nd year required number
Pruning	Not applicable	Not applicable	Not applicable	By Watchers
Watching	2.0 years i.e., 24 months after planting the seedlings.	2.0 years i.e., 24 months after planting the seedlings by the same watcher of embankment slope plantation.	2.0 years i.e., 24 months after planting the seedlings.	2.0 years i.e., 24 months after planting the seedlings.

Figure 32: Excellent green belt in P-35/3

Figure 33: Positive impacts of fore shore plantation in P-35/3

Figure 34: Embankment slope forestation in P-41/1

10.4 Efforts for Conservation and Stocking of Threatened Fish Species

Fisheries related activities in Package 1

According to the Contract agreement there is provisions for stocking of threatened fish species in Polders of Package-1. Accordingly, the Contractor, Package-1 has conducted various efforts in this regard.

For the purpose, the Contractor employed a Fishery Specialist since June, 2019. He has started working in Polders 32, 33, 35/1 and 35/3 and followings are the progress for his activities for conservation and stocking of threatened fish species.

According to Fishery expert, fisheries resources of the Polder areas are diversified with different fresh and brackish water fish habitats. Open water/ capture fish habitats of Polder 32 include various rivers and khals such as Nalian River, Kamargolakhal, Golbuniakhal, Jaliakhal, Pacherdoanikhal, Katakhalikhal, Uluruarkhal, Nadakenkhal, Golerkhal, Thakurbarikhal, Kahsiarkhal, Pararkhal, Chotkatolakhal, Hatkholakhal etc. which also act as major arteries for open water fishery migration; whereas for Polder 35/1 such Rivers and khals include Bhola and Baleshwar Rivers, KumarkhaliKhal, MaddaBarishalkhal, Rajorkhal, Khontakatakhal, Koyerkhal, Rayendakhal, Tafalbarikhal, Gabtolakhal, Bogikhal, Chalitagoniakhal, Rasulpurkhal, Uttar Rajapurkhal, Bandakatakhal etc. The aquaculture fishery resources are mainly developing in suitable ponds located in highland areas within the Polder, which are classified in 4 categories, e.g. prawn ponds (Galdagher), shrimp pond (Bagdagher), homestead ponds and commercial ponds.

At present fish biodiversity has a decreasing trend because of:

- Morphological change of fish habitats
- Obstruction to spawning migration
- Natural and anthropogenic drying up of wild fish habitats
- Indiscriminate fishing
- Loss of river-khal connectivity
- Construction of water regulatory structures on khals/rivers

In CEIP-1 Polders, formation of Water Management Organization (WMO) have been completed among the project stakeholders for participatory sustainable water management, who will be made aware of conservation of threatened fish species through training and motivation. For this purpose, several meetings with the WMGs and NGOs (who responsible for formation of WMGs) and village elites were consulted for collection of primary information/data on threatened fish species along with means of their development. The findings are as follows:

According to the discussions, the threatened fish species include, Mola (molacarplet), Shol (snakehead mural), Koi (climbing perch), Shing (stinging catfish), Magur (Walking catfish), Royna mainly. According to the WMO/NGO personnel the reasons of threatening of capture fishery are (in addition to causes cited above):

- Intrusion of saline water
- Occurrence of cyclone and flooding
- Siltation of water bodies

- Application of poison for catching fish
- Lack of knowledge/awareness of the community for fish production.

According to the findings, various suggestions have been forwarded for Conservation and stocking of threatened fish species as cited below:

- Enhance people's awareness to stop damage/destruction of captive fishery and adoption of measures for increased production
- Development/dissemination of technical knowledge for improvement of productivity of threatened fish species
- Establishing sanctuary in suitable canal/ beel/pond sites
- Abide by Government's step to restrict use of narrow meshed net during catching fish in beel/khal areas
- WMG members to make aware of the threatened fish species and empower them to stop damage of threatened fish species.

The Contractor is taking various steps to improve the status of conserving and stocking of threatened fisheries. They include

- Conduct of field based meeting with WMO members for identifying the existing status of threatened fishery resources
- Survey of water bodies including khals and ponds in the Polders
- Survey of threatened fish and its conservation mechanism
- Working out means of development of the threatened fishery in the Polder areas
- Training and awareness of the WMO (WMG and WMA) members and non-members (who are interested for fishery development) for awareness and improving the status of indigenous fish species due to polderization and other reasons

Figure 35: Fish richness in Polder 35/1

Fisheries related activities in Package 2

In Package-2, CEIP-1 the Contractor has carried out various fishery developments related activities as per requirements of environmental mitigation works outlined in the Contract agreement. The important fishery related activities include,

- Conduct of catch assessment survey
- Conservation and stocking of threatened fish species
- Awareness building of up of local community for conservation of threatened fish species
- Construction of fish sanctuary
- Net pen culture within the Polder areas.
- Campaigning and providing training on improved culture practices and rice cum Golda farming
- Training to the fishermen/pond owners with demonstration regarding pond culture
- Release fish fry in the khals inside the Polder areas after completion of construction work

Figure 36: Fish richness in package 2 area

The university Fishery specialist's team has continued to provide all sorts of technical cooperation/assistance related to successful fishery activities in all the 6 Polders under Package-2, CEIP-1. All the related activities have been completed by November, 2022. The final report was shared with the World Bank (WB) and now the report is cleared by the WB.

11. EMP implementation status

The basic objectives of the EMP implementation in CEIP-1 are the management, prevention and mitigation of possible adverse risks of project interventions in the polder areas according to approved EIA reports, Emergency Prepared Plan (EPP) for Covid-19, Environment and Social Incident Response Toolkit (ESIRT), recommendations of Annual environmental Audit Report, program suggested from Bi-Annual Environmental Monitoring report, EHS risk assessment, EAP and C-ESMP documents for CEIP-1. The environmental and social team of PMU, DDCS & PMS consultants, third party M&E consultants and contractors are responsible for the sound implementation of EMP in CC yards, sluice area, embankment re-sectioning and other work locations under contract packages W-01 & W-02 of CEIP-1. In CEIP-1 the EMP implementation level is being monitored under the following line items, illustrated in the below Table No. 14.

Table 14: Elements for EMP monitoring in CEIP-1 work sites

Sl No.	Elements	Sub-elements
1	**Follow-up Covid-19 in work places**	Theapproved Emergency Preparedness Plan (EPP) for Covid-19, translated into Bangla & Chinese, kept in site and being followed to combat with Covid-19 pandemic. The Environmental Specialists of PMU, DDCS&PMSC and third party M&E consultant verify the compliance level regard to Covid-19 management strategyduring their field visit at work sites and virtually as well.
2	**Construction camps**	Obtaining approval
		Erection of signboard in Bangla and English with project details
		Install accommodation facilities for workers
		Drainage channels installation
		Supply of safe drinking water
		Supply of adequate sanitation
		Fire-fighting arrangement
		Solid and visible fencing
3	**Precast CC block yard**	Implementaion of Covid-19 OHS mannual
		Safe pedestrian
		Solid and visible fencing
		Establish and practice the safe operation procedure
		Established separate storage
		Established Industrial Waste storage area
		Confined chemical storage area
		Installation of proper drainage system
		Confined the CC block production area
		Regular checking of automatic/mixture machine
		Pleasant environment for operator
		Regular checking of noise level
		Provided noise control devices and barrier
		Provide cautionary signboard
		Regular check the switch board and weir system
		Workers retiring room
		All stacks will be covered or wetted
		Dust suppression
		Deployed signal man to control vehicle movement
		Fire-fighting arrangement
		Manufacturing will not take place at night
4	**Access road construction**	Obtaining approval
		Construction of culverts if needed
		Construction of temporary road/by pass road
		Install speed limit signs

Sl No.	Elements	Sub-elements
		Entry & Exit signs
5	**Temporary facilities decommissioning**	Agreeing with local authorities on demolition
		Review of Environmental liabilities
		Waste removal
6	**Fuel storage area**	Install hardstand and secondary containment
		Firefighting equipment installation
		Sand and shovel close-by
		Keep Spill kit/absorbent mat to catch any spilled fuels at the location where potential spillage may occur
		Sufficient hydrants to address potential fire
		Fire fighting arrangement
		The Material Safety Data Sheet (MSDS) from supplier to be placed besides containers/storage
		Regular checks on physical condition
7	**Welding area**	Paved welding area,
		Enough safety procedure for different type of works,
		Fire fighting arrangement
		Provide the gas mask properly during welding
		Provide special cloth for welding
		Provide the eye protective welding glass
		Maintain a minimum distance (6.1 m) from the fuel gas cylinder
		Check the hose pipe system regularly
8	**Construction/repairing of drainage sluices (DS) and flushing sluices (FS)**	Demolishing debris will be disposed of at a site approved by the Engineer.
		Drainage sluices ring bundh and diversion channel will be installed in order to work in dry conditions.
		No waste water from concrete mixing will be disposed of directly to the surface water.
		Steel sheet pile driving will not be done at night.
		The work area will be demarcated clearly.
		Periodic cleaning the water pathway
9	**Embankment construction and re-sectioning**	Pavement(if present)will be removed and disposed of at the premises of BWDB
		All works will be demarcated clearly.
		Signals will be installed to indicate the entry and exits of vehicles and movement of construction
		The contractor shall manage the top soil(15)cm during earth work activities
10	**Borrow material**	Agreeing on borrow area
		Document borrow area
		Perform soil analyses on borrow materials when contamination is expected
		Prevention of erosion/dust forming
		Borrow area excavation complying with distance from the embankment as per the technical specification
		No-Tress pass line fixed with bamboo poles
11	**Khal excavation**	Spoil plan will be developed for approval by Engineer.
		Unnecessary re-suspension will be avoided
		Temporarily deposition of excavated material will be away from the channel edge
		Return water will be conveyed through siltation chambers to avoid high loads of water.
		Geo textile may be used to help stabilize the material.
		Smothering of important flora and habitats will be avoided.
12	**The bank and slope**	Implementaion of Covid-19 OHS mannual

Sl No.	Elements	Sub-elements
	protection works	Spilling of earth material in surface water will be avoided.
		Turfing will be applied to prevent erosion
		Proper drainage provision will be kept to avoid formation of rain cuts due to surface run off.
13	**River closure work**	The area will be separated by demarcation.
		Erection of proper cautionary signboard & signage.
		Provide and uses of required PPE,
		Especially use of life-jacket on barge.
		Provide safe drinking water for staff & workers
		Assure FAF in site
		Installed hygienic toilet facilities in site.
		Make available the required Fire extinguisher
		Assure proper signal to control community access
		Development of smart waste management system
		EHS training & Tool-box talk before work start
14	**Safety on barge**	Using mask and maintaining social distance
		Proper anchorage
		Balanced loading
		Use of PPE especially life jacket
		Maintain speed limit of forklift
		Regular toolbox talk
		Separate lane for pedestrian and forklift
		Make a forklift safety procedure
		Regular check and maintenance of the scraper
		Developed waste management system
		Provided the facilities for potable water & FAB
15	**Occupational health and safety**	Implementaion of Covid-19 OHS measures
		Development of Health and Safety plan including emergency procedures
		Train all staff in health and safety
		Provision of PPE and ensuring their use
		Provision and use of life jacket during visiting campsite/worksite by boat
		Installation of first aid facilities with adequate stock
		Provide sanitation facilities where needed
		Provision of safe drinking water to work force (tube-well water, bottled water or pond water)
		Proper signaling of work areas
16	**Public health and safety**	Notification of the public adjacent at construction areas
		Installation of secured pathways for pedestrians
		Proper signaling of work areas
		Limited vehicles at public roads during peak hours.
		The temporary traffic detours in settlement areas will be kept free of dust by frequent application of water
17	**Water supply**	Providing potable water or supplying safe bottled water.
		Maintaining the distance of a tube well / surface water resource from a soak pit at minimum 15m.
		Providing separate tube wells for the use of women.
18	**FAB facilities**	The contractor will ensure the periodic health check-up and provided required medicine facilities
		Hearing test for workers engaged in high noise area
		Assuring the life insurance for staff and workers
19	**Sanitation**	Providing suitable sanitation facilities for the workforce
		Ensuring the location plan of the latrine at least 50 m away from the accommodation facility

Sl No.	Elements	Sub-elements
		Providing separate latrines for the use of women
		Installing treatment for the sewerage
		Arranging disposal of wastewater from washrooms, kitchens, s, etc. via the camp area's drainage system
20	**Solid waste management**	Ensuring collection and disposal of solid wastes within the construction camps and work areas
		Collect and store inorganic wastes in a safe place
		Establish measures for Waste collection, transportation and disposal systems at approved disposal sites.
		Disposal of construction and demolition waste.
21	**Industrial waste management**	Make temporary Industrial Waste storage area
		The area should be paved, defined with shade
		Categorized the waste
		Proper disposal
		Record keeping
22	**Dedicated chemical storage area**	Make temporary Chemical storage area
		The area should be paved, defined with shade
		Install the required Sign-board
		Kept in closed condition
		Provide floor to protect from rain
		Tray as well as spill kit/absorbent mat should be provided in chemical storage area.
		Material Safety data sheet (MSDS) should be provided
		Necessary numbers of fire extinguisher
23	**Waste water**	Installation of decanter boxes for cement mixers
		Installation of proper filtering elements.
		Periodic checks and clean-ups for the decanter box.
		Prioritize reuse of aggregates and water
		Ensure safe disposal of liquid wastes generated
24	**Environmental monitoring**	
	Monitoring of air quality	Performance of air quality tests (SPM 2.5/10, SOx, NOx and CO during working hours)
	Monitoring of noise quality	Monitoring of noise level (dB) at selected sensitive sites during working hours
	Monitoring of soil quality	Performance of soil quality tests (organic matter, N, P, K, pH, Salinity, S and Zn).
	Monitoring of surface water quality	Performance of analyses on surface water for: pH, TDS, COD, BOD, EC/Salinity and Turbidity.
	Monitoring of drinking water quality	Performance of analyses on drinking water for: arsenic, iron, chloride and total faecal coliform bacteria.
25	**Noise management**	Notify prior to any typical noise events
		Ensure construction activities do not generate unacceptably high level of noise
		Restrict working to daylight hours
		Provide noise barriers, if required
		Provide ear plugs and muffs at high noise area
26	**Water and hydrology**	Preventing of water system by waste collection; re-vegetation and dust suppression etc.
		Ensure proper drainage in working areas
27	**Flora and fauna**	Agreeing with local authorities on tree felling.
		Document trees / area of trees.
		Avoid un necessary vegetation cutting and clearing.
		Re-vegetate
		Prevent disturbance of animals
		Ensuring sufficient free flow in the construction work for fish

Sl No.	Elements	Sub-elements
		migration
28	**Deployment of EHS supervisor**	Employ Environment and Safety Supervisor for compliance monitoring of EMP
29	**Reporting and documentation**	The following records will be kept at site: • Covid-19 EPP/manual; • EIA report; • Updated C-ESMP/EAP; EHS risk assessment Report; • EHS registers (Compliance and Non-Compliance registers); • Accident register; • Waste management/disposal register; • Noise level measurement register; • Toolbox/training register; • Complaints Register; • Monitoring Checklist and • Monitoring of environmental quality (Air/Soil/Water)
30	**Public disclosure and consultation**	• Discussion meetings amongst stakeholders shall be organized by the contractor before commencement of major physical works of the project • Conduct public consultation as necessary during project implementation • Disclose the relevant project documents to local community • Establish rapport with community to liaise with community • Avoid religious conflict
31	**Tool-box talk/safety training**	Environmental training on EMP will be arranged for Construction Field supervisors and Environment & Safety Supervisors.
32	**Complaints on health safety, environmental hazards and grm**	Provide **COMPLAIN BOX** in CC block casting yard
		Grievance Redress Mechanism will be established.
		Complaints received from the public
		All environmental incidents will be recorded and be brought to the attention of the Site Engineeraccordingly ESIRT
		Action will be taken within 7 working days.
33	**Keeping worker history**	Record keeping on various information of the individual workers which will be useful to face emergency situation during any accident. Workers' history including name and address, gender, age, medical history and name of next of kin are recorded by the Contractors to face emergent situations, which is supervised by the Environmental Specialists during field visits found that the contractor is keeping the records of worker's information fairly as instructed.
34	**Conservation and stocking of fish species**	• Provide training on fisheries • Engagement of WMO in fisheries activities • Release fish fingerlings • Nourishment • Make fish sanctuary
35	**Decomissioning practices**	• Approved decommissioning plan •Contractor to follow the plan

11.1 Package-1 polders

In Package-1 areas all types of interventions were completed by December 2022 except decommissioning activities. The decommissioning conditions are stated in section **9.1.**

11.2 Package-2 Polders

The EHS qualities in package 2 have been improved through regular site visits by the environmental specialist (PMU/Field) and DDCS & PMS environmental specialist during the reporting period. The staff of the contractor is motivated to provide support in achieving improved quality in EHS issues. The PMU environmental Specialist conducts the EHS refresher training in Package W-02. He also identifies the weaknesses of environmental compliance and discusses with contractor management for complying, also raised the issue in the different EHS meeting. In general, the contractor has improved the implementation of the EMP and Covid-19 measures in all sites following OHS protocols. Now the communities are getting directly benefits from the project interventions. It was our pleasure that now the EHS qualities are in good shape due to boarding the contractor management and procuring enough new PPE directly from China. Moreover, during the reporting period, the contractor was very alert to take measures like providing PPE, face mask, hand gloves, hand sanitizer, checking of worker's body temperature, disinfecting camp and work sites and imposing restrictions including social/personal distancing and preparation of isolation area. The contractor tests the Covid-19 status to all the engaged persons on a routine basis. The erection of warning signs/signs at crucial locations, first aid kits with required medicine and contract information from doctors are guaranteed in work sites and CC block yards. The living room, clean wash room, kitchen and dining are installed. Safety issues for fuel storage, arranging fire extinguishing, supply and use of life jackets during boat movement, maintain speed limit for vehicle movements in the workplace etc. have also been established. There is enough supply of good quality drinking water for all project staff. They are very alert to follow the safety manual for different types of hot/sophisticated works. The general housekeeping of camps has improved during the reporting period, as evidenced by waste separation, cleanliness of the workplace and construction camps, storage of goods, etc in all Polders. Establish household waste management system by digging a ditch to dispose of household waste on daily basis which is fenced and provided with signboard and a roof over the disposed location. A second ditch is dug for the purpose, when a ditch gets filled up. There are regular discussions with Toolbox. Now the contractor has started the uses of organic wastes for making compost, which is being used for vegetables cultivation within the yard. Temporary storage sites for industrial waste and hazardous substances have been installed and maintained at CC yards and also at other important work locations. They are maintaining the designated parking areas within the camp sites. Noise levels are monitored monthly and results are reported in the consultants monthly progress report (MPR). Noise levels in few locations exceeds 60 dBa (permissible for mixed area); where the Contractor has established noise barrier and shifting facility of workers which have been checked by the Environmental Specialist of PMU, DDCS&PMS Consultants and Third Party M&E Consultants during their field visits.

The contractor has also set up enough complaints collection box to submit workers' complaints. They also call the WMA personnel for getting their valuable comments regarding effective interventions in Pkg. 02 areas. It was found that contractors are fairly keeping the records of workers information as suggested by Environmental Specialist during his visit. The EMP compliance for Package-2 during reporting period has been summarized in Table 15.

Table 15: General level of EAP compliance in the package 02 polders

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
Polder 39/2C, Package 2, Bhandaria, Pirojpur				
1	Follow-up Covid-19 OHS measures	The contractor has followed the guidelines of **Covid-19** manual strictly	• Very Good compliance • Steady	Continuation is required for defect liability period
2	Erection of Signboards/ signage	Required signboard/signage are erected in right locations	• Good compliance; • improving	-
3	First aid facility	There are enough collections & storage	• Very Good compliance • Steady	Continuation is required for defect liability period
4	Regular use of PPE	Staff and workers are practicing regularly	• Good compliance; • Improving	Continuation is required for defect liability period
5	Toilet and water supply	Cleanliness of toilet maintained through training and motivation of workers	• Good compliance; • Improving	Continuation is required for defect liability period
6	Fire extinguishers	Training provided on handling of Fire extinguishers	• Good compliance; • Improving	Continuation is required for defect liability period
7	Traffic management	It has been improved by ensuring traffic personnel in work site with proper signaling and demarcated roads in the work site	• Very good compliance; • Steady	Continuation is required for defect liability period
8	Waste collection and disposal	The practice of waste disposal has been improved through number of good practices	• Good compliance; • Improving	Continuation is required for defect liability period
9	Safe pedestrian	Contractor complied where necessary	• Very good compliance; • Steady	Continuation is required for defect liability period
10	Conduct of tool box talk	Conducts in every morning before work start	• Very good compliance; • steady	Continuation is required for defect liability period
11	Establishing temporary storage for industrial waste	This practice has been improving	• Very good compliance; • Steady	-
12	Safety manual	Followed	• Very good compliance; • Steady	Continuation is required for defect liability period
13	Accommodation	Good accommodation facilities	• Very good	Continuation is required for defect

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
	facility	at camp site	compliance; • Steady	liability period
14	Environmental monitoring	Done for the year 2023	• Very good compliance	Target is achieved
15	Noise level	Monitored fortnightly and reported in MPR	• Good compliance; • Improving	Continuation is required for defect liability period
16	Chinese EHS manager	EHS manager is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
17	Deployment of EHS officer	EHS officer is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
18	Farm survey	Done	• Very good compliance	-
19	Habitat observation	Done	• Very good compliance	-
20	Catch assessment survey	Done	• Very good compliance	-
21	Training on improved fish culture	Done	• Very good compliance	-
22	Net pen culture	Done	• Very good compliance	-
23	Construction of fish sanctuaries	Done	• Very good compliance	-
24	Public disclosure and consultation	Now it is the general practices in CEIP-1 and communities felt great satiisfaction for this actions	• Good compliance; • Improving	-
25	Provided Grievances collection box	Paying attention to GRM and people are being inspired about GRM and report MPR	• Good compliance; • Improving	Continuation is required for defect liability period
26	Keeping worker history	Regular practice in package W-02	• Very good compliance; • Steady	Need to be updated
27	Incident reporting as per ESIRT	The new reporting system has been adopted and reported to MPR	• Very good compliance; • Steady	Continuation is required for defect liability period
28	Training on capcity build – up of WMA	Done	• Very good compliance	Logistics is to be provided
29	Follow up the	Being followed	• Good	Implementatio is to be

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
	recommendations of river bank erosion monitoring		compliance; • Improving	confirmed
30	Decommissioning activities	Started	• Good compliance; • Improving	Needs to be completed
31	Reporting and documentation	Required EHS documents are available in site and being followed accordingly	• Very good compliance; • Steady	Document of Environmental safeguard practices are pending
Polder 40/2, Package 2, Patharghata, Barguna				
1	Follow-up Covid-19 OHS measures	The contractor has followed the guidelines of **Covid-19** manual strictly	• Very good compliance • Steady	Continuation is required for defect liability period
2	Erection of Signboards/ signage	Required signboard/signage are erected in right locations	• Good compliance; • improving	Continuation is required for defect liability period
3	First aid facility	There are enough collections & storage	• Very Good compliance • Steady	Continuation is required for defect liability period
4	Regular use of PPE	Staff and workers are practicing regularly	• Good compliance; • Improving	Continuation is required for defect liability period
5	Toilet and water supply	Cleanliness of toilet maintained through training and motivation of workers	• Good compliance; • Improving	Continuation is required for defect liability period
6	Fire extinguishers	Training provided on handling of Fire extinguishers	• Good compliance; • Improving	Continuation is required for defect liability period
7	Traffic management	It has been improved by ensuring traffic personnel in work site with proper signaling and demarcated roads in the work site	• Very good compliance; • Steady	Continuation is required for defect liability period
8	Waste collection and disposal	The practice of waste disposal has been improved through number of good practices	• Good compliance; • Improving	Continuation is required for defect liability period
9	Safe pedestrian	Contractor complied where necessary	• Very good compliance; • Steady	Continuation is required for defect liability period
10	Conduct of tool box talk	Conducts in every morning before work start	• Very good compliance;	Continuation is required for defect liability period

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
			• steady	
11	Establishing temporary storage for industrial waste	This practice has been improving	• Good compliance; • Improving	-
12	Safety manual	Followed	• Very good compliance; • Steady	Continuation is required for defect liability period
13	Accommodation facility	Good accommodation facilities at camp site	• Very good compliance; • Steady	Continuation is required for defect liability period
14	Environmental monitoring	Done for the year 2023	• Very good compliance; • Steady	Target is achieved
15	Noise level	Monitored fortnightly and reported in MPR	• Good compliance; • Improving	Need continuation
16	Chinese EHS manager	EHS manager is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
17	Deployment of EHS officer	EHS officer is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
18	Farm survey	Done	• Very good compliance	-
19	Habitat observation	Done	• Very good compliance	-
20	Catch assessment survey	Done	• Very good compliance	-
21	Training on improved fish culture	Done	• Very good compliance	-
22	Net pen culture	Done	• Very good compliance	-
23	Construction of fish sanctuaries	Done	• Very good compliance	-
24	Public disclosure and consultation	Now it is the general practices in CEIP-1 and communities felt great satiisfaction for this actions	• Good compliance; • Improving	-
25	Provided Grievances	Paying attention to GRM and people are being inspired about	• Good compliance;	Continuation is required for defect

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
	collection box	GRM and report MPR	• Improving	liability period
26	Keeping worker history	Regular practice in package W-02	• Very good compliance; • Steady	Need to be updated
27	Incident reporting as per ESIRT	The new reporting system has been adopted and reported to MPR	• Very good compliance; • Steady	Continuation is required for defect liability period
28	Training on capcity build – up of WMA	Done	• Very good compliance	Logistics is to be provided
29	Follow up the recommendations of river bank erosion monitoring	Being followed	• Good compliance; • Improving	Implementatio is to be confirmed
30	Decommissioning activities	Works were on-going	-	-
31	Reporting and documentation	Required EHS documents are available in site and being followed accordingly	• Very good compliance; • Steady	Document of Environmental safeguard practices are pending
Polder 41/1, Package 2, Sadar, Barguna				
1	Follow-up Covid-19 OHS measures	The contractor has followed the guidelines of **Covid-19** manual strictly	• Very good compliance • Steady	Continuation is required for defect liability period
2	Erection of Signboards/ signage	Required signboard/signage are erected in right locations	• Good compliance; • improving	-
3	First aid facility	There are enough collections & storage	• Very Good compliance • Steady	Continuation is required for defect liability period
4	Regular use of PPE	Staff and workers are practicing regularly	• Good compliance; • Improving	Continuation is required for defect liability period
5	Toilet and water supply	Cleanliness of toilet maintained through training and motivation of workers	• Good compliance; • Improving	Continuation is required for defect liability period
6	Fire extinguishers	Training provided on handling of Fire extinguishers	• Good compliance; • Improving	Continuation is required for defect liability period
7	Traffic management	It has been improved throughproper signaling and demarcated roads in the work site	• Very good compliance; • Steady	Continuation is required for defect liability period

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
8	Waste collection and disposal	The practice of waste disposal has been improved through number of good practices	• Good compliance; • Improving	Continuation is required for defect liability period
9	Safe pedestrian	Contractor complied where necessary	• Very good compliance; • Steady	Continuation is required for defect liability period
10	Conduct of tool box talk	Conducts in every morning before work start	• Very good compliance; • steady	Continuation is required for defect liability period
11	Establishing temporary storage for industrial waste	This practice has been improving	• Good compliance; • Improving	-
12	Safety manual	Followed	• Very good compliance; • Steady	Continuation is required for defect liability period
13	Accommodation facility	Good accommodation facilities at camp site	• Very good compliance; • Steady	Continuation is required for defect liability period
14	Environmental monitoring	Done for the year 2023	• Very good compliance; • Steady	Target is achieved
15	Noise level	Monitored fortnightly and reported in MPR	• Good compliance; • Improving	Continuation is required for defect liability period
16	Chinese EHS manager	EHS manager is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
17	Deployment of EHS officer	EHS officer is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
18	Farm survey	Done	• Very good compliance	-
19	Habitat observation	Done	• Very good compliance	-
20	Catch assessment survey	Done	• Very good compliance	-
21	Training on improved fish culture	Done	• Very good compliance	-
22	Net pen culture	Done	• Very good	-

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
			compliance	
23	Construction of fish sanctuaries	Done	• Very good compliance	-
24	Public disclosure and consultation	Now it is the general practices in CEIP-1 and communities felt great satiisfaction for this actions	• Good compliance; • Improving	-
25	Provided Grievances collection box	Paying attention to GRM and people are being inspired about GRM and report MPR	• Good compliance; • Improving	Continuation is required for defect liability period
26	Keeping worker history	Regular practice in package W-02	• Very good compliance; • Steady	Need to be updated
27	Incident reporting as per ESIRT	The new reporting system has been adopted and reported to MPR	• Very good compliance; • Steady	Continuation is required for defect liability period
28	Training on capcity build – up of WMA	Done	• Very good compliance	Logistics is to be provided
29	Follow up the recommendations of river bank erosion monitoring	Being followed	• Good compliance; • Improving	Implementatio is to be confirmed
30	Decommissioning activities	Started	• Good compliance; • Improving	Needs to be completed
31	Reporting and documentation	Required EHS documents are available in site and being followed accordingly	• Very good compliance; • Steady	Document of Environmental safeguard practices are pending
Polder 43/2C, Package 2, Galachipa, Patuakhali				
1	Follow-up Covid-19 OHS measures	The contractor has followed the guidelines of **Covid-19** manual strictly	• Good compliance • Steady	Continuation is required for defect liability period
2	Erection of Signboards/ signage	Required signboard/signage are erected in right locations	• Good compliance; • improving	-
3	First aid facility	There are enough collections & storage	• Very Good compliance • Steady	Continuation is required for defect liability period
4	Regular use of PPE	Staff and workers are practicing regularly	• Good compliance;	Continuation is required for defect liability period

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
			• Improving	
5	Toilet and water supply	Cleanliness of toilet maintained through training and motivation of workers	• Good compliance; • Improving	Continuation is required for defect liability period
6	Fire extinguishers	Training provided on handling of Fire extinguishers	• Good compliance; • Improving	Continuation is required for defect liability period
7	Traffic management	It has been improved by ensuring traffic personnel in work site with proper signaling and demarcated roads in the work site	• Very good compliance; • Steady	Continuation is required for defect liability period
8	Waste collection and disposal	The practice of waste disposal has been improved through number of good practices	• Good compliance; • Improving	Continuation is required for defect liability period
9	Safe pedestrian	Contractor complied where necessary	• Very good compliance; • Steady	Continuation is required for defect liability period
10	Conduct of tool box talk	Conducts in every morning before work start	• Very good compliance; • steady	Continuation is required for defect liability period
11	Establishing temporary storage for industrial waste	This practice has been improving	• Good compliance; • Improving	-
12	Safety manual	Followed	• Very good compliance; • Steady	Continuation is required
13	Accommodation facility	Good accommodation facilities at camp site	• Very good compliance; • Steady	Continuation is required for defect liability period
14	Environmental monitoring	Done for the year 2023	• Very good compliance; • Steady	Target is achieved
15	Noise level	Monitored fortnightly and reported in MPR	• Good compliance; • Improving	Need continuation
16	Chinese EHS manager	EHS manager is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
17	Deployment of EHS	EHS officer is working with skill	• Good	Continuation is required for defect

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
	officer		compliance; • Improving	liability period
18	Farm survey	Done	• Very good compliance	-
19	Habitat observation	Done	• Very good compliance	-
20	Catch assessment survey	Done	• Very good compliance	-
21	Training on improved fish culture	Done	• Very good compliance	-
22	Net pen culture	Done	• Very good compliance	-
23	Construction of fish sanctuaries	Done	• Very good compliance	-
24	Public disclosure and consultation	Now it is the general practices in CEIP-1 and communities felt great satiisfaction for this actions	• Good compliance; • Improving	-
25	Provided Grievances collection box	Paying attention to GRM and people are being inspired about GRM and report MPR	• Good compliance; • Improving	Continuation is required for defect liability period
26	Keeping worker history	Regular practice in package W-02	• Very good compliance; • Steady	Need to be updated
27	Incident reporting as per ESIRT	The new reporting system has been adopted and reported to MPR	• Very good compliance; • Steady	Continuation is required for defect liability period
28	Training on capcity build – up of WMA	Done	• Very good compliance	Logistics is to be provided
29	Follow up the recommendations of river bank erosion monitoring	Being followed	• Good compliance; • Improving	Implementatio is to be confirmed
30	Decommissioning activities	Works were on-going	-	-
31	Reporting and documentation	Required EHS documents are available in site and being followed accordingly	• Very good compliance; • Steady	Document of Environmental safeguard practices are pending
Polder 48, Package 2, Kalapara, Patuakhali				
1	Follow-up Covid-19 OHS measures	The contractor has followed the guidelines of **Covid-19** manual strictly	• Good compliance	Continuation is required for defect liability period

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
			• Steady	
2	Erection of Signboards/ signage	Required signboard/signage are erected in right locations	• Good compliance; • improving	Continuation is required for defect liability period
3	First aid facility	There are enough collections & storage	• Very Good compliance • Steady	Continuation is required for defect liability period
4	Regular use of PPE	Staff and workers are practicing regularly	• Good compliance; • Improving	Continuation is required for defect liability period
5	Toilet and water supply	Cleanliness of toilet maintained through training and motivation of workers	• Good compliance; • Improving	Continuation is required for defect liability period
6	Fire extinguishers	Training provided on handling of Fire extinguishers	• Good compliance; • Improving	Continuation is required for defect liability period
7	Traffic management	It has been improved by ensuring traffic personnel in work site with proper signaling and demarcated roads in the work site	• Very good compliance; • Steady	Continuation is required for defect liability period
8	Waste collection and disposal	The practice of waste disposal has been improved through number of good practices	• Good compliance; • Improving	Continuation is required for defect liability period
9	Safe pedestrian	Contractor complied where necessary	• Very good compliance; • Steady	Continuation is required for defect liability period
10	Conduct of tool box talk	Conducts in every morning before work start	• Very good compliance; • steady	Continuation is required for defect liability period
11	Establishing temporary storage for industrial waste	This practice has been improving	• Good compliance; • Improving	-
12	Safety manual	Followed	• Very good compliance; • Steady	Continuation is required for defect liability period
13	Accommodation facility	Good accommodation facilities at camp site	• Very good compliance; • Steady	Need to maintain
14	Environmental	Done for the year 2023	• Very good	Target is achieved

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
	monitoring		compliance; • Steady	
15	Noise level	Monitored fortnightly and reported in MPR	• Good compliance; • Improving	Need continuation
16	Chinese EHS manager	EHS manager is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
17	Deployment of EHS officer	EHS officer is working with skill	• Good compliance; • Improving	Continuation is required for defect liability period
18	Farm survey	Done	• Very good compliance	-
19	Habitat observation	Done	• Very good compliance	-
20	Catch assessment survey	Done	• Very good compliance	-
21	Training on improved fish culture	Done	• Very good compliance	-
22	Net pen culture	Done	• Very good compliance	-
23	Construction of fish sanctuaries	Done	• Very good compliance	-
24	Public disclosure and consultation	Now it is the general practices in CEIP-1 and communities felt great satiisfaction for this actions	• Good compliance; • Improving	-
25	Provided Grievances collection box	Paying attention to GRM and people are being inspired about GRM and report MPR	• Good compliance; • Improving	Continuation is required for defect liability period
26	Keeping worker history	Regular practice in package W-02	• Very good compliance; • Steady	Need to be updated
27	Incident reporting as per ESIRT	The new reporting system has been adopted and reported to MPR	• Very good compliance; • Steady	Continuation is required for defect liability period
28	Training on capcity build – up of WMA	Done	• Very good compliance	Logistics is to be provided
29	Follow up the recommendations of river bank erosion monitoring	Being followed	• Good compliance; • Improving	Implementatio is to be confirmed

Sl. No.	EMP Parameters	EMP status as of 30 June, 2023	Compliance rating and trend	Follow up actions by 31 December, 2023
30	Decommissioning activities	Works were on-going	-	-
31	Reporting and documentation	Required EHS documents are available in site and being followed accordingly	• Very good compliance; • Steady	Document of Environmental safeguard practices are pending

Legend:

Compliance ratings:

Very good	**:**	The term used here means that the level of compliance is significant - that is, the item in question is in compliance an estimated 90-100% of the time (or locations).
Good	**:**	This describes that the level of compliance is satisfactory, but there is room for improvement - that is, the item in question is in compliance an estimate 75-90% of the time (or locations).
Fair		This means the level of compliance is satisfactory in many instances, but there is a need to improve the level of compliance - that is, compliance estimated at 50-75% of the time (or locations.)
Poor	**:**	This means the level of compliance is not satisfactory, and has not reached to a minimum level - 49%
Fully Non-compliant	**:**	This means that level of compliance is zero
Trend ratings	**:**	Improving, steady, deteriorating.

Figure 37: Available FAF in Polder 39/2C

Figure 38: Wearing PPE is very frequent in CEIP-1 work

Figure 39: Demarcation in work site of Polder 39/2C

Figure 40: Waste collection in Polder 39/2C

Figure 41: Use of Ear muff by CC block operator in Polder 39/2C

12. Quarantine facilities in Package 2 areas

Contractor, Package-2, CEIP-1 has made arrangement for provision of quarantine facilities in all the Polders of their working areas for conduct of quarantine practice of the suspected/confirmed COVID-19 cases. They have ensured the required facilities as per the specification of "COVID-19 OHS Protocols for Project Construction Sites" for the objective. Following are some of the images of the quarantine facilities of the Polder areas under Package-2 of CEIP-1:

Images of Quarantine facilities in Polders of Package-2, CEIP-1

Figure 42: Quarantine room of Polder 39/2C

Figure 43: Toilet facility of Quarantine room of Polder 39/2C

Figure 44: Quarantine room of Polder 40/2

Figure 45: Quarantine room of Polder 41/1

Figure 46: Quarantine room of Polder 43/2C

Figure 47: Quarantine room of Polder 48

Figure 48: Toilet facility of Quarantine room of Polder 48

13. Field visits and consultations with polder communities

Field visits were carried out in the project areas during the reporting time from the end of the World Bank (WB), secretariate level (IMED team), the Project Director (PD), the Engineer of the Project (Team leader/TL), Deputy team leader (DTL), Design team, technical team as well as the designated Environmental Specialist of CEIP-1 (PMU, DDCS&PMS consultant and third party M&E team). Every field visit added values in CEIP-1. Now CEIP-1 is one of the most successful projects in respect of polder security, physical works interventions and compliances of Environmental safeguard policies. The communities acknowledged the CEIP-1 interventions and the visiting team alos felt their great satisfication on the response of the communities. Some images of the visits are included herewith.

The visits covered the following issues:

- Aspects of Environmental safeguard policies
- Evaluation the performances of CEIP-1 interventions
- Public consultation with community
- Sustainable Polder interventions
- Lesson learnt from CEIP-1

Figure 49: Senior Environmental Specialist of the WB monitoring fisheries activity in P-39/2C

Figure 50: Senior Environmental Specialist of the WB monitoring construction activity in P-39/2C

Figure 51: Regional team of the WB visiting Polder 32

Figure 52: Public consultation of Hon. PD & WB team in Polder 33

Figure 53: Senior Environmental Specialist of the WB checking EHS documents in P-39/2C

Figure 54: Public consultation in P-35/1

Figure 55: Field level consultation for CEIP-1 work by IMED team

14. Conducting monthly EHS as well as environmental safeguard meeting

As the project completion period is ending so the Project Director calls the regular monthly progress meeting (MPM). In those meeting persons from PMU, DDCS&PMSC, third party M&E consultant, Contractor and the World Bank usually attend and discuss all issues such as Physical work, land issues, Environmental Safeguard, Social Safeguard, Forestation & Fiduciary aspects. This is more effective and helpful for complying the EHS issues due to presence of high profile managements. The MPM are very frequent and regular in CEIP-1. But if further required the monthly EHS meeting are called. The EHS committee, which has been established previously, sits in meetings to monitor the implementation qualities of EHS issues. The EHS committee holds the monthly EHS meeting virtually and/or physically due to outbreak of COVID-19. The meeting is often presided over by the CEIP-1 Project Director and the participants include Executive Engineers from the Project area, the environmental members of PMU, DDCS&PMS Consultants, and Third Party M&E Consultants, representatives of the Contractors of both packages and representatives of the World Bank. The meetings have been useful in the past and assuming they are still of value to CEIP-1, PMU may take the lead in re-starting them, especially with the decommissioning to be done in both packages and intensive works underway in Package 2. It should be noted that the DDCS&PMS Consultants have conducted EHS meetings with the Contractors having taken place in May, 2023. Image of the meetings is included herewith.

Figure 56: EHS Meeting held in the consultant office at Dhaka during May 2023

Figure 57: EHS Meeting held in Package 2 area

15. Testing

The environmental protection practices adopted in CEIP-1 are so beneficial for environmental protection in the coastal areas and also over Bangladesh. Both the contractors of CEIP-1 carried out the environmental monitoring in several polders where polder rehabilitation activities were carried out. The contractor of packages 1 and 2 hired CRTS team of KUET team to carry out the environmental tests. The hired consultant arrives on site and examines the environmental parameters himself. Before the monitoring work began, the project's Engineers shared a plan that required CRTS to conduct the environmental testing. The environmental parameters (air, surface water, drinking water and soil) are measured once a year. The noise levels were measured biweekly and included in the monthly progress report (MPR) of the DDCS and PMS consultants. The specific locations where the CRTS team conducted their activities are described here.

15.1 Package 1 area:

Sl. No.	Environmental Issues	Action to be taken/Inspection items	Testing period	Nos. of samples	Remarks
1.	Monitoring of Air Quality	Performance of Air quality tests for parameters SPM 2.5/10, SOx, NOx, and CO during working hours	May, 2029 & January, 2021	At 4 different locations each of Polder-32, 33, 35/3 and 6 locations of Polder-35/1	For air quality locations may be near school, near road site, CC block plant site, Construction site, bazar, residential area, Bus station and camp site areas to be selected.
2.	Monitoring of Noise Quality	Monitoring of Noise level (dB) at selected sensitive sites during working hours	Every month	At 4 different locations each of Polders- 32, 33, 35/3 and 6 locations of Polder-35/1	For noise quality location like school, hospital, camp site, CC plant site, construction site, Bus station and residential area, to be selected.
3.	Monitoring of Soil Quality	Performance of analysis of Top soil quality tests at selected sites (borrow areas, spill sites) for Parameters Organic matter, Nitrogen, Phosphorous, Potassium, pH, Salinity, Zinc and Sulphur contents.	May, 2029 & January, 2021	At 6 different locations each of Polders 32,33, 35/3 and -35/1	For soil quality lands located at high, medium and low levels tobe selected
4.	Monitoring of Surface Water Quality	Performance of analysis for Surface water (river, khal and pond) for pH, DO, BOD, TDS, Turbidity, Salinity and EC.	May, 2029 & January, 2021	At 6 different locations each of Polders 32,33 and 35/3 and 8 locations of Polder-35/1	For surface water the locations are as per the locations of EIA report as given below**.
5.	Monitoring of Drinking Water Quality	Performance of analysis for drinking water for Arsenic, Iron, Chloride and total faecal bacteria contents	May, 2029 & January, 2021	At 6 camp locations in each of Polders 32,33 and 35/3 (3 tests for bottle water of work sites, 2 tests	**(For all locations GPS Coordinates to be used)**

Sl. No.	Environmental Issues	Action to be taken/Inspection items	Testing period	Nos. of samples	Remarks
				for Deep T.W. water 1 tests for PSF water/shallow tube well preferably at/near work site) and at 8 camp locations in Polder-35/1 (4 tests for bottle water, 3 tests for Deep T.W. water 1 tests for PSF water/shallow tube well, preferably at/near work site)	

Location for surface water samples are:

For polder 32:

1. Pond water of Rupsha CC manufacturing plant
2. Junction of Berakhal and Khamargoda river at Ch.11km +500
3. Kalinagarkhal at Joynagar at Ch. km 25+000
4. Sara badh (downstream of Nalian river) Ch. km 26+500
5. Kayratoli Khal (near Sutarkhali Madhyamik Biddaylaya), Ch. Km.35+000
6. Closer khal (Closer-13) at Ch. km. 47+500

For Polder 33:

1. Bojan khal at Ch. km 3+500
2. Borobagkhal at Ch. km 11+050
3. Dhoparkhal at Ch km. 20+330
4. Dacopekhal at Ch. 25+330
5. Borobakerkhal at Ch. Km. 44+030
6. Dacopekhal at Ch. km 27+350

For Polder 35/1:

1. Sanyasi khal at Ch. km 0+000
2. Biddyasagorkhal at Ch. Km 6+326
3. Amragchhiakhal at Ch. km 12+100
4. Rajapur Khal at Ch.km 14+850
5. Sonatala Sluice at Ch Km 35+750
6. Rayenda site office
7. Baleshwar river at Ch km 19+000
8. Pond water, Tafalbari Casting yard

For Polder-35/3:

1. Botobuniakhal at ch. km 35+750
2. Araibarikhal at Ch. km 5+500
3. Banshbariakhal at Ch.Km 5+000
4. khal at RastharMathar bazar, at Ch km 21+500
5. Mollikerber, at Ch Km 36+500
6. Khal, Kashempur Bazar atKm 26+500

Important: Sampling of soil, water and soil to be done as per stated locations following the approved procedure.

The overall findings of Environmental conditions in Polder nos. 32, 33, 35/1 and 35/3 are summarized under following sub-heads.

15.1.1 Air qualities in Package 1 area: Five air quality parameters (SPM_{10}, $SPM_{2.5}$, SO_2, NO_2 and CO) were measured at various locations in Polder no. 32, 33, 35/1 and 35/3. The obtained results have been compared with the basic values and the national standard (ECR, 2023). In general, air quality was in good condition and was not affected by the construction activities carried out for polder rehabilitation in Package 1 areas. In some cases, $SPM_{2.5}$ and NO_2 exceeded national values due to excessive traffic loads and development activities resulting from the successful implementation of the project interventions.

Polder 32 (Dacope, Khulna):

Parameters	2019	2021	Baseline values*	National standard (APCR, 2022)	Remarks
SPM_{10} ($\mu g/m^3$)	71	100	109	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ ($\mu g/m^3$)	51	89		65 (24-hr-avg)	Health concern in 2021
SO_2 ($\mu g/m^3$)	90	12	25	250 (1-hr-avg)	Good quality
NO_2 ($\mu g/m^3$)	109	74	20	80 (24-hr-avg)	Health concern in 2019
CO (mg/m^3)	1	0.1	-	20 (1-hr-avg)	Good quality

*Calculation time is not mentioned

Polder 33 (Dacope, Khulna):

Parameters	2019	2021	Baseline values*	National standard (APCR, 2022)	Remarks
SPM_{10} ($\mu g/m^3$)	87	126	120	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ ($\mu g/m^3$)	51	71		65 (24-hr-avg)	Health concern in 2021
SO_2 ($\mu g/m^3$)	104	17	25	250 (1-hr-avg)	Good quality
NO_2 ($\mu g/m^3$)	76	108	24	80 (24-hr-avg)	Health concern in 2021
CO (mg/m^3)	1	0.3	-	20 (1-hr-avg)	Good quality

*Calculation time is not mentioned

Polder 35/1 (Morelganj and Sharankhola, Bagerhat):

Parameters	2019	2021	Baseline values*	National standard (APCR, 2022)	Remarks
SPM_{10} ($\mu g/m^3$)	42	65	155	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ ($\mu g/m^3$)	25	47		65 (24-hr-avg)	Good quality
SO_2 ($\mu g/m^3$)	20	10	11	250 (1-hr-avg)	Good quality
NO_2 ($\mu g/m^3$)	15	40	21	80 (24-hr-avg)	Good quality
CO (mg/m^3)	1	0.3	-	20 (1-hr-avg)	Good quality

*Calculation time is not mentioned

Polder 35/3 (Bagerhat Sadar & Rampal Upazila of Bagerhat):

Parameters	2019	2021	Baseline values*	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	48	33	125	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	34	38		65 (24-hr-avg)	Good quality
SO_2 (µg/m^3)	46	7	25	250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	48	36	22	80 (24-hr-avg)	Good quality
CO (mg/m^3)	2	0.6	-	20 (1-hr-avg)	Good quality

*Calculation time is not mentioned

15.1.2 Surface water qualities in Package 1 area: Surface water is both the crucial and important freshwater source in the coastal areas of Bangladesh. The CEIP-1 authorities are therefore very attentive to maintaining the quality of surface water. The qualities checked in respect of pH, turbidity, TDS, chloride, DO and BOD. The study showed that surface water qualities were not affected by the CEIP-1 interventions. It was confirmed that surface water qualities remained in good condition due to implementation of CEIP-1 interventions.

Polder 32 (Dacope, Khulna):

Parameters	2019	2021	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.7	7.6	7.2	7.5-8.5	Safe for uses
Turbidity	51	291	-	-	Safe for uses
TDS (mg/L)	2134	460	1850	-	Safe for uses
Cl^- (mg/L)	1534	127	-	-	Safe for uses
DO (mg/L)	6	4	9.1	≥5	Safe for uses
BOD_5 (mg/L)	10	3	-	≤6 (for fisheries) ≤12 (for irrigation)	Suitable for irrigation

Polder 33 (Dacope, Khulna):

Parameters	2019	2021	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.7	8	7.1	7.5-8.5	Safe for uses
Turbidity	97	26	-	-	Safe for uses
TDS (mg/L)	2830	454	1383	-	Safe for uses
Cl^- (mg/L)	2202	128	-	-	Safe for uses
DO (mg/L)	6	7	6.9	≥5	Safe for uses
BOD_5 (mg/L)	17	1	-	≤6 (for fisheries) ≤12 (for irrigation)	Was not suitable for irrigation and fisheries during 2019

Polder 35/1 (Morelganj and Sharankhola, Bagerhat):

Parameters	2019	2021	Baseline values	National standard (ECR, 2023)	Remarks
pH	8	7.8	7.1	7.5-8.5	Safe for uses
Turbidity	37	32	-	-	Safe for uses
TDS (mg/L)	2315	213	1654	-	Safe for uses
Cl^- (mg/L)	676	23	-	-	Safe for uses
DO (mg/L)	4	6	6	≥5	Safe for uses
BOD_5 (mg/L)	115	2	-	≤6 (for fisheries) ≤12 (for irrigation)	Was not suitable for irrigation and fisheries during 2019

Polder 35/3 (Bagerhat Sadar & Rampal Upazila of Bagerhat):

Parameters	2019	2021	Baseline values	National standard (ECR, 2023)	Remarks
pH	8	7.7	7.2	7.5-8.5	Safe for uses
Turbidity	31	29	-	-	Safe for uses
TDS (mg/L)	4830	442	1688	-	Safe for uses
Cl^- (mg/L)	2189	151	-	-	Safe for uses
DO (mg/L)	5	5	7.2	≥5	Safe for uses
BOD_5 (mg/L)	59	2	-	≤6 (for fisheries) ≤12 (for irrigation)	Was not suitable for irrigation and fisheries during 2019

15.1.3 Qualities of supplied drinking water in Package 1 area: The Contractor supplies bottled water (usually 20 litre) to the workers mainly. The supplied drinking water was tested for measuring the contents of Arsenic, Iron, Chloride, Total Coliform and Faecal Coliform. According to the test results all the supplied samples have been found acceptable to reference on Bangladesh Standard for Drinking Water (ECR, 2023) having the contents of all the parameters within permissible limit and all have zero contents of Arsenic, Total Coliform and Faecal Coliform.

Parameters	Values	National standard (ECR, 2023)	Remarks
Arsenic- As (mg/L)	0	0.05	Safe for uses
Iron- Fe (mg/L)	0.02-0.70	0.3-1.0	Safe for uses
Chloride- Cl^- (mg/L)	<350	1000	Safe for uses
Total Coliform (CFU/100ml)	0	0	Safe for uses
Fecal Coliform (CFU/100ml)	0	0	Safe for uses

15.1.4 Noise level status in Package 1 area: In Polder 32, 35/1 and 35/3 noise level are within permissible limit (60 dBA) of mixed area. In Polder 33, one site has noise level of 61 dBA. Hence the Contractor has arranged various safety measures for the workers in locations having higher noise values. In addition, workers have been made aware to be careful of working in high noise level areas.

Polder	Values (dbA)*	National standard (NPCR, 2006)	Remarks
Polder 32	35-57	60 db for mixed area at day time	The working environment was quite safe in respect of noise levels measured at work sites of CEIP-1
Polder 33	35-61		
Polder 35/1	28-58		
Polder 35/3	30-55		

* Measured by Environment meter CED DT 8820

15.1.5 Analysis of soil quality in Package 1 area

Twenty four soil samples were tested for analyzing soil pH, Chloride, Organic Matter, Nitrogen, Phosphorous, Potassium, Zinc and Sulphur in Polder area. According to the test results, all have high contents of organic matter and 5 nos. have very low contents of Nitrogen, 19 nos. have very low contents of Phosphorous and 3 nos. have very low contents of Zinc on the basis of requirement for growing wetland rice crops. Contents of other soil nutrients have higher status for growing wetland rice crops of Bangladesh accordingly FRG (2005).

15.2 Package 2 area:

Sl. No.	Environmental Issues	Action to be taken/Inspection items	Testing period	Nos. of samples	Remarks
1.	Monitoring of Air Quality	Performance of Air quality tests for parameters SPM 2.5/10, SOx, NOx, and CO during working hours	May, 2019; January, 2021 &May, 2023	At 4 different locations each of Polders-39/2C, 40/2, 41/1, 43/2C, 47/2 and 48.	For air quality locations will include CC plant site, other Construction site, road site, bazar, residential area, Busstation and camp site areas etc.
2.	Monitoring of Noise Quality	Monitoring of Noise level (dB) at selected sensitive sites during working hours	Every month	At 4 different locations each of Polders- 39/2C, 40/2, 41/1, 43/2C, 47/2 and 48.	For noise quality location like CC plant, hospital, camp site,construction site, Bus station and residential area, to be selected.
3.	Monitoring of Soil Quality	Performance of analysis of Top Soil quality tests at selected sites for parameters Organic matter, Nitrogen, Phosphorous, Potassium, pH, Salinity, Zinc and Sulphur contents.	May, 2019; January, 2021 &May, 2023	At 4 different locations each of Polders- 39/2C, 40/2, 41/1, 43/2C, 47/2 and 48.	For soil quality lands located at high, medium and low levels to be selected

Sl. No.	Environmental Issues	Action to be taken/Inspection items	Testing period	Nos. of samples	Remarks
4.	Monitoring of Water Quality	Performance of analysis for Surface water (river, khal, beel and pond) for pH, DO, BOD, TDS, Turbidity, Salinity and EC.	May, 2019; January, 2021 &May, 2023	At 6 different locations each of Polders 39/2C, and 48; at 7 different locations in each of Polders 40/2,41/1, 47/2 and 5 locations of Polder- 43/2C.	For surface water the locations are as per the locations of EIA report as given below*.
5.	Monitoring of Drinking water quality	Performance of analysis for drinking water for Arsenic, Iron, Chloride and total faecal bacteria contents	May, 2019; January, 2021 &May, 2023	At 5 locations in each of Polders 39/2C, 40/2, 41/1, 43/2C, 47/2 and 48 (3 tests for bottle water different worksites, 1 test for Deep T.W. and water 1 test for PSF water/shallow tube well)	**(For all locations GPS Co-ordinates to be mentioned)**

Locations for Surface Water samples are:

Sl. No.	Sources of water	Locations
Polder 39/2C		
1.	Pona River	NodmullahKheya ghat
2.	Nadmullahkhal,	Purba Dhawa
3.	Podderkhal	Nadmulla
4.	Baleshwar River	Charkhalifery ghat
5.	Hetalia Khal	Hetalia
6.	Bamunerkhal	Madrasi Bazaar
For Polder 40/2		
1.	Kazibarikhal	Patharghata
2.	Maser khal	Maser Khal bazar
3.	Hoglapasha Khal	Hoglapasha
4.	Charduanikhal	Charduani bazar
5.	Baleswar River	Madhya Charduani
6.	Bishkhali River	Patharghata
7.	Gyanpara Khal	Gyanpara
For Polder 41/1		
1.	BoroLobongolakhal	BoroLobongola
2.	Katakhali/Manirkhal	ChotoLobongola
3.	ChotoLobongolakhal	ChotoLobongola
4.	Burir char khal	Burir char bazar
5.	Payra River	AmtoliFery ghat
6.	Charnaliakhal	PurbaKewrabunia
7.	Charakgachiakhal	Charakgachia
For Polder 43/2C		
1.	Lohalia River	Horidevpur ferry ghat
2.	Musirkhal	PurbaGolkhali
3.	Pollerkhal	Alir Bazar
4.	Dangakhal	ChhotoGabua
5.	Tubewell	Horidevpur ferry ghat
For Polder 47/2		
1.	Sonatola River	Fultola bazar
2.	Kachikatakhal	Kachikata, Jamalpur (U/S of DS-2)
3.	Charparakhal	Kachikata, Jamalpur (D/S of DS-2)
4.	Eidkholakhal	Kathalpara (U/S of DS-1)

Sl. No.	Sources of water	Locations
5.	Baraitala River	Kathalpara (D/S of DS-1)
6.	Thankholakhal	Mirpur at DS-3
7.	Tubewell	51 no. Mohipur Govt. Primary school
For Polder 48		
1.	Matirangakhal near D.S. 2A	Maitbhanga
2.	Laxmiparakhal	Laxmipara
3.	Nayaparakhal near D.S. 3/2	Laxmirhat
4.	Char Chaplikhal near D.S. 3/4	Char Chapli village
5.	Khaprabhanga Don/Mohipurkhal near D.S. 5	Kolipara village
6.	Tubewell at Rakhaine market	Rakhaine village

Important: Sampling of Air, Noise, water and soil to be done as per stated locations following the approved sampling procedures.

15.2.1 Air qualities in Package 2 area: Five air quality parameters (SPM_{10}, $SPM_{2.5}$, SO_2, NO_2 and CO) were measured at various locations in Polder no. 39/2C, 40/2, 41/1, 43/2C, 47/2 and 48. The obtained results have been compared with the basic values and the national standard (ECR, 2023). In general, air quality was in good condition and was not affected by the construction activities carried out for polder rehabilitation in Package 1 areas. In some cases, $SPM_{2.5}$ and NO_2 exceeded national values due to excessive traffic loads and development activities resulting from the successful implementation of the project interventions.

Polder 39/2C (Bhandaria, Pirojpur):

Parameters	2019	2021	2023	Baseline values	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	46	131	26	82	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	32	94	14	87.2	65 (24-hr-avg)	Health concern in 2021
SO_2 (µg/m^3)	83	10	76	67.4*	250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	21	59	33	0.069*	80 (24-hr-avg)	Good quality
CO (mg/m^3)	2	2	0.5	-	20 (1-hr-avg)	Good quality

*SO_2 estimated as 24-hr-avg (national std. 80 µg/m^3) & NO_2 estimated as 1-hr-avg (national std. ND)

Polder 40/2 (Pathorghata, Barguna):

Parameters	2019	2021	2023	Baseline values	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	82	116	30	101	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	47	83	15	76.1	65 (24-hr-avg)	Health concern in 2021
SO_2 (µg/m^3)	18	10	173	2.0*	250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	122	54	27	0.043*	80 (24-hr-avg)	Health concern in 2019
CO (mg/m^3)	1	0.4	1.0	-	20 (1-hr-avg)	Good quality

*SO_2 estimated as 24-hr-avg (national std. 80 µg/m^3) & NO_2 estimated as 1-hr-avg (national std. ND)

Polder 41/1 (Barguna Sadar, Barguna):

Parameters	2019	2021	2023	Baseline values	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	63	69	38	71.5	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	29	58	20	57.5	65 (24-hr-avg)	Good quality
SO_2 (µg/m^3)	105	10	70	24*	250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	94	84	20	0.070*	80 (24-hr-avg)	Health concern in 2021
CO (mg/m^3)	1	1.0	0.01	-	20 (1-hr-avg)	Good quality

*SO_2 estimated as 24-hr-avg (national std. 80 µg/m^3) & NO_2 estimated as 1-hr-avg (national std. ND)

Polder 43/2C (Galachipa, Patuakhali):

Parameters	2019	2021	2023	Baseline values	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	-	122	27	92	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	-	93	12	67.5	65 (24-hr-avg)	Health concern in 2021
SO_2 (µg/m^3)	-	10	154	91.7*	250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	-	73	44	0.266*	80 (24-hr-avg)	Good quality
CO (mg/m^3)	-	2.4	1.8	-	20 (1-hr-avg)	Good quality

*SO_2 estimated as 24-hr-avg (national std. 80 µg/m^3) & NO_2 estimated as 1-hr-avg (national std. ND)

Polder 47/2 (Kalapara, Patuakhali):

Parameters	2019	2021	2023	Baseline values	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	54	48	20	*ND	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	36	38	8		65 (24-hr-avg)	Good quality
SO_2 (µg/m^3)	102	10	113		250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	50	66	22		80 (24-hr-avg)	Good quality
CO (mg/m^3)	1	1.0	0.4		20 (1-hr-avg)	Good quality

*ND= Not dectected

Polder 48 (Kalapara, Patuakhali):

Parameters	2019	2021	2023	Baseline values	National standard (APCR, 2022)	Remarks
SPM_{10} (µg/m^3)	57	60	20	84.2	150 (24-hr-avg)	Good quality
$SPM_{2.5}$ (µg/m^3)	30	47	7	65.2	65 (24-hr-avg)	Good quality
SO_2 (µg/m^3)	28	10	78	146*	250 (1-hr-avg)	Good quality
NO_2 (µg/m^3)	65	90	41	0.184*	80 (24-hr-avg)	Health concern in 2021
CO (mg/m^3)	3	0.2	1.0	-	20 (1-hr-avg)	Good quality

*SO_2 estimated as 24-hr-avg (national std. 80 µg/m^3) & NO_2 estimated as 1-hr-avg (national std. ND)

15.2.2 Surface water qualities in Package 2 area: Surface water is the crucial as well as important sweet water sources in the coastal zones of Bangladesh. So the CEIP-1 authorities are so much alert to maintain the surface water qualities. The qualities checked in respect of pH, turbidity, TDS, chloride, DO, BOD and COD. The study noted that the surface water qualities were not impacted by the CEIP-1 interventions. Rather it was affirmed that the surface water qualities were remain in good condition due to implement of CEIP-1 interventions. Just we have a concern in Polder 43/2C and 48 in respect of COD. This was due to frequent movement of heavy load bigger vessel for transportation of various goods within the countries. Indeed, community safe the surface water due considering other parameters tested under CEIP-1 program. Surface water is both the crucial and important freshwater source in the coastal areas of Bangladesh. The CEIP-1 authorities are therefore very attentive to maintaining the quality of surface water. The qualities checked in respect of pH, turbidity, TDS, chloride, DO, BOD and COD. The study showed that surface water qualities were not affected by the CEIP-1 interventions. It was confirmed that surface water qualities remained in good condition due tp implementation of CEIP-1 interventions. We only have a concern regarding COD in Polder 43/2C and 48. This was due to the frequent movement of larger ships cargo transport various goods within the countries. Indeed, the community safely use surface water by taking into account other parameters tested under the CEIP-1 program.

Polder 39/2C (Bhandaria, Pirojpur):

Parameters	2019	2021	2023	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.25	6.61	7.53	8	7.5-8.5	Safe for uses
Turbidity (NTU)	2	6	255	-	-	Safe for uses
TDS (mg/L)	653	67	20	402	-	Safe for uses
Cl^- (mg/L)	-	14	-	-	-	Safe for uses
DO (mg/L)	5	7	-	4.9	≥5	Safe for uses
BOD_5 (mg/L)	111	1	1	-	≤6 (for fisheries) ≤12 (for irrigation)	Not safe in 2019
COD (mg/L)	-	-	49	-	50 (for fisheries) 100 (for irrigation)	Safe for uses

Polder 40/2 (Pathorghata, Barguna):

Parameters	2019	2021	2023	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.52	6.64	7.67	8.2	7.5-8.5	Safe for uses
Turbidity (NTU)	11	3	272	-	-	Safe for uses
TDS (mg/L)	287	63	27	1267	-	Safe for uses
Cl^- (mg/L)	-	11	-	-	-	Safe for uses
DO (mg/L)	5	6	-	7.4	≥5	Safe for uses
BOD_5 (mg/L)	10	1	1	-	≤6 (for fisheries) ≤12 (for irrigation)	Not safe in 2019
COD (mg/L)	-	-	65	-	50 (for fisheries) 100 (for irrigation)	Safe for irrigation purposes

Polder 41/1 (Barguna Sadar, Barguna):

Parameters	2019	2021	2023	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.47	6.72	7.67	8.1	7.5-8.5	Safe for uses
Turbidity (NTU)	6	2	277	-	-	Safe for uses
TDS (mg/L)	240	70	27	258	-	Safe for uses
Cl^- (mg/L)	-	13	-	-	-	Safe for uses
DO (mg/L)	5	7	-	5.8	≥5	Safe for uses
BOD_5 (mg/L)	30	1	2	-	≤6 (for fisheries) ≤12 (for irrigation)	Not safe in 2019
COD (mg/L)	-	-	53	-	50 (for fisheries) 100 (for irrigation)	Safe for irrigation purposes

Polder 43/2C (Galachipa, Patuakhali):

Parameters	2019	2021	2023	Baseline values	National standard (ECR, 2023)	Remarks
pH	-	6.57	7.64	8.2	7.5-8.5	Safe for uses
Turbidity (NTU)	-	3	33	-	-	Safe for uses
TDS (mg/L)	-	66	264	600	-	Safe for uses
Cl^- (mg/L)	-	14	-	-	-	Safe for uses
DO (mg/L)	-	6	-	2.2	≥5	Safe for uses
BOD_5 (mg/L)	-	1	2	-	≤6 (for fisheries) ≤12 (for irrigation)	Safe for uses
COD (mg/L)	-	-	150	-	50 (for fisheries) 100 (for irrigation)	Not safe for uses

Polder 47/2 (Kalapara, Patuakhali):

Parameters	2019	2021	2023	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.52	6.59	7.45	8.5	7.5-8.5	Safe for uses
Turbidity (NTU)	6	3	263	-	-	Safe for uses
TDS (mg/L)	377	62	17	1137	-	Safe for uses
Cl^- (mg/L)	-	13	-	-	-	Safe for uses
DO (mg/L)	6	7	-	2.7	≥5	Safe for uses
BOD_5 (mg/L)	22	1	1	-	≤6 (for fisheries) ≤12 (for irrigation)	Not safe in 2019
COD (mg/L)	-	-	83	-	50 (for fisheries) 100 (for irrigation)	Safe for irrigation purposes

Polder 48 (Kalapara, Patuakhali):

Parameters	2019	2021	2023	Baseline values	National standard (ECR, 2023)	Remarks
pH	7.73	6.58	7.52	8.7	7.5-8.5	Safe for uses
Turbidity (NTU)	12	2	253	-	-	Safe for uses
TDS (mg/L)	292	58	15	258	-	Safe for uses
Cl^- (mg/L)	-	17	-	-	-	Safe for uses
DO (mg/L)	6	7	-	2.0	≥5	Safe for uses
BOD_5 (mg/L)	13	2	1	-	≤6 (for fisheries) ≤12 (for irrigation)	Not safe in 2019
COD (mg/L)	-	-	115	-	50 (for fisheries) 100 (for irrigation)	Not safe for uses

15.2.3 Qualities of supplied drinking water in Package 2 area: The Contractor supplies bottled water (usually 20 litre) to the workers mainly. The supplied drinking water was tested for measuring the contents of Arsenic, Iron, Chloride, Total Coliform and Faecal Coliform. According to the test results all the supplied samples have been found acceptable to reference on Bangladesh Standard for Drinking Water (ECR, 2023) having the contents of all the parameters within permissible limit and all have zero contents of Arsenic, Total Coliform and Faecal Coliform.

Parameters	Values	National standard (ECR, 2023)	Remarks
Arsenic- As (mg/L)	0	0.05	Safe for uses
Iron- Fe (mg/L)	0.01-0.14	0.3-1.0	Safe for uses
Chloride- Cl^- (mg/L)	<50	1000	Safe for uses
Total Coliform (CFU/100ml)	0	0	Safe for uses
Fecal Coliform (CFU/100ml)	0	0	Safe for uses

15.2.4 Noise level status in Package 2 area: In Polder 32, 35/1 and 35/3 noise level are within permissible limit (60 dBA) of mixed area. In Polder 33, one site has noise level of 61 dBA. Hence the Contractor has arranged various safety measures for the workers in locations having higher noise values. In addition, workers have been made aware to be careful of working in high noise level areas. Noise levels of different working locations of 6 Polders have been measured against approved noise value for mixed areas which is 60 dB.

For Polder 39/2C, noise testing has been carried out main camp, 2 locations of Nadmula CC casting yard and Telikhali CC block manufacturing yards, when CC yards were kept closed. The noise levels of the 4 locations range between 41 and 59 dBA, which are within permissible limit for the mixed areas.

For Polder 40/2, noise measurements were carried out in 4 locations namely, main camp, stack yard, and locations of 2 sluices. The noise levels ranges between 46 to 75 dBA, which are within permissible limit for industrial as well protected areas.

Polder	Values (dbA)*	National standard (NPCR, 2006)	Remarks
Polder 39/2C	41-59	60 db for mixed area at day time	The Contractor has arranged various safety measures for the workers in locations having higher noise values, e.g. use of noise plug, rotation of workers during working hours etc. In addition, workers have been made aware to be careful of working in high noise level areas.
Polder 40/2	46-75		
Polder 41/1	41-73		
Polder 43/2C	46-83		
Polder 47/2	39-84		
Polder 48	46-96		

* Measured by Environment meter CED DT 8820

For Polder 41/1, noise levels have been measured for the main camp, river side, FS-6 and DS-8 and their noise levels range from 41 to 73 dBA, which are within permissible limit for the industrial and confined areas.

For Polder 43/2C, noise level has been measured for the main camp, manually CC block manufacturing area, DS-3 and DS-8, their values range between 46 to 83 dBA, which has exceeded the limits, hence protection is required.

For Polder 47/2, noise level has been measured for the main camp, manually CC block manufacturing area, embankment area and the working yard, where th noise level range from 39 to 84 dBA, which has exceeded the limits, hence protection is required.

For Polder 48, noise levels have been measured at the main camp area, manually manufactured CC block yard, DS-1 and FS-1 locations. Their Noise levels range from 46 to 96 dBA, all of which has also exceeded the limits, hence protection is required.

15.2.5 Analysis of soil quality in Package 2 area

Twenty four soil samples were tested for analyzing soil pH, Chloride, Organic Matter, Nitrogen, Phosphorous, Potassium, Zinc and Sulphur in Polder area. According to the test results, pH and soil salinity were within the permissible limit. Nitrogen contents in the tested soils were very high due to high level of OC. All the 24 soil samples have very low contents of available Phosphorous. The Potassium contents of the soil samples are between low to high. The Zinc contents of the soil samples are between low to optimum. Sulphur contents were nil and 4 ppm were in one sample.

The soils will require less nitrogenous fertilizers for crop growth. For availability of Phosphorous, the farmers have to be dependent on application of chemical fertilizers. However, application of organic sources of Phosphorous should be practiced by the farmers, according to recommendations of DAE. The requirement of supply of potassium fertilizers will be lesser comparatively for crop growth. Mild to medium dose of zinc fertilizers will be required for growing agricultural crops in the area (FRG 2005).

16. Grievance redress mechanism

16.1 Overview

Several social and environmental issues may arise during implementation stages of the Project. Followings are some of the environmental issues that could be subjected to grievances from the affected people, concerned public, construction workers and civil society members:

- Soil, water, dust, noise and air pollution from construction related activities;
- Traffic movement and congestion;
- Lack of adequate safety at the construction areas and approach roads;
- Lack of water and sanitation facilities at the construction sites/camps;
- Waste disposal;
- Conflicts among construction workers and with local community;
- Disturbances to flora and fauna;
- Failure to comply with standards or contractual obligations.

Of course, the GRM will also entertain concerns about matters of resettlement and land acquisition including livelihood restoration.

In order to facilitate the resolution of affected people's concerns, complaints, and grievances about the social and environmental performance of the project, a Grievance Redress Mechanism (GRM) has been established which aims to provide a time bound and transparent mechanism to voice and resolve social and environmental concerns. The CEIP-1 has designed the GRM and the PMU with assistance of the DDSC&PMSC's team has been putting it in place. The grievance mechanism has been scaled to the risks and adverse impacts of the project. It has addressed affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no cost and without retribution. The mechanism does not impede access to the country's judicial or administrative remedies. The affected people were appropriately informed about the detailed mechanism by a Bengali-language brochure. The GRM Process is depicted in Figure 58.

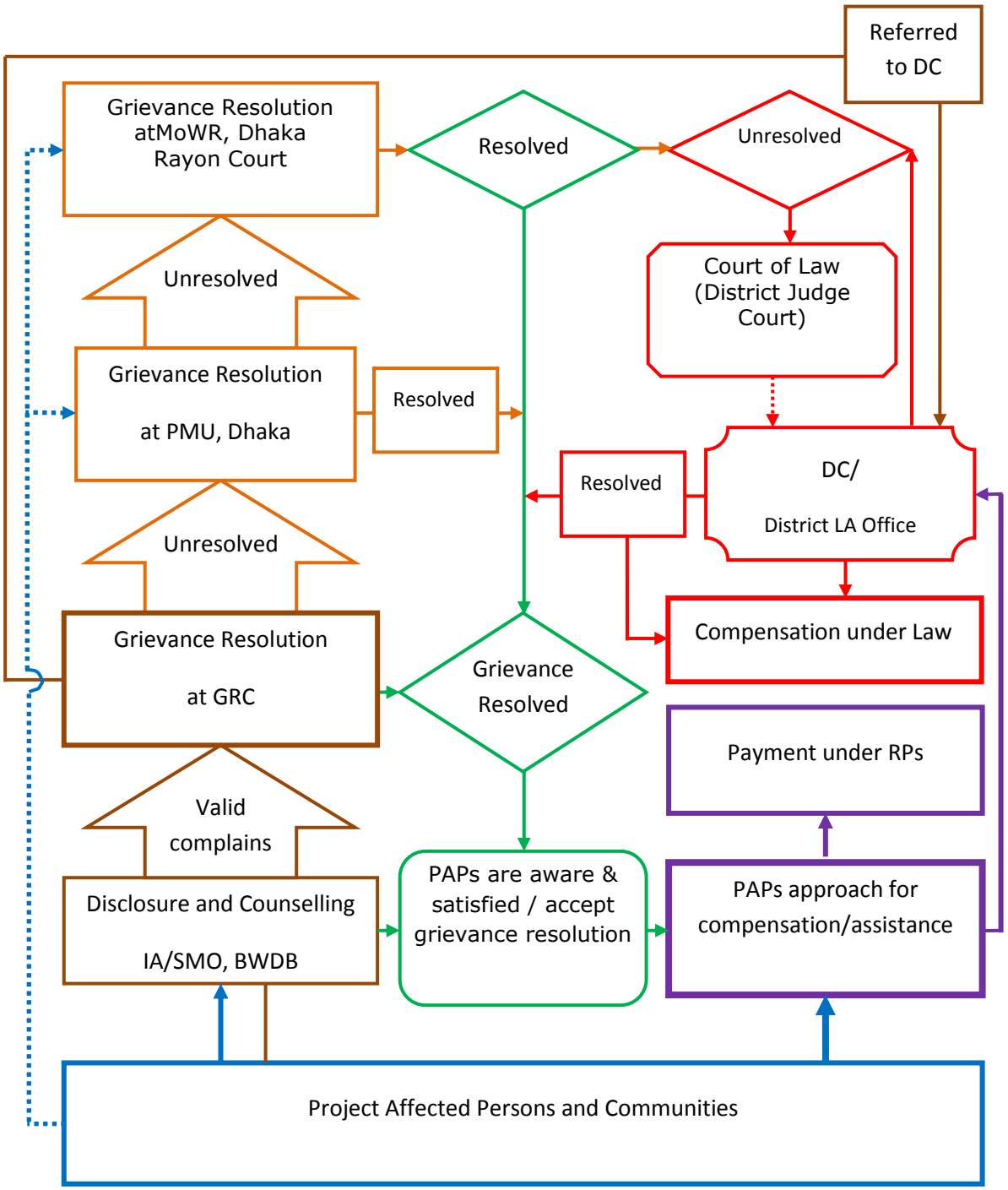

Figure 58: GRM Process Flow Chart

The Project Management Unit (PMU) and Project Implementing Offices (PIOs) are making the public aware of the GRM through public awareness campaigns by its Resettlement Action Plan (RAP) implementing Team. The contact phone number of the respective PIOs and the PMU is serving as a hotline for complaints and has been publicized through the media and placed on notice boards outside their offices and at construction sites. The project information brochure included information on the GRM is being widely disseminated throughout the embankment by the RAP implementing team and PIOs. Grievances can be filed in writing to any member of the Committee.

One GRC has been formed for each Union with union level representation to ensure easy accessibility by the project affected persons and communities as comprised below:

Membership of GRC

1. Executive Engineer (BWDB Division Office) : Convener
2. Representative of the RAP Implementing NGO : Member -Secretary
3. Local UP Member / Ward Councilor : Member
4. Teacher from Local Educational Institution (Nominated by Upazila Administration) : Member
5. Representative from Local Women's Group : Member
6. Representative from the PAP Group : Member

16.2 Grievance redress mechanism (GRM) for Package-1

There are 15 Grievance Redress Committees (GRC) at local level for Package 01 out of 15 GRCs required. These GRCs have been formed earlier at each Union of all Polders under Package 01 with the representatives of BWDB, Union Parishad, educational institute, PAPs and DDCS&PMS Consultants. The Project's stated target is to try to resolve all cases within four weeks from the date of GRC receiving the complaint and trying to resolve the cases locally. Eleven numbers of complaints/grievances have been received during the reporting period. Table 16 shows the types of complaints received up to June, 2023 period in Package 01. Among the 198 complaints, 51 cases have been resolved at the entry level and 147 cases have been resolved through investigation and formal hearing by GRC. So no pending cases is found by June 30, 2023. Table-17 shows the status of complaints/cases received and resolved so far by GRC. Though awareness raising of the GRM covers both social and environmental concerns, no grievance has been registered specific to environmental issues till now. The environmental hazards caused during construction are being minimized and are localized which local people generally tolerate as they consider that the project will provide many benefits to them. Consultant has instructed the Contractor to avoid and/or mitigate even the minor and localized pollution.

Table 16: Type of complaints received in Package 01 up to June, 2023

SL	Nature of Grievances	Polder Number				Total
		P-32	P-33	P-35/1	P-35/3	
1	Application for shifting the Proposed Alignment	-	3	1	3	7
2	Application for Crops Compensation	-	1	-	-	1
3	Application for Fish Gher Compensation	1	1	-	41	43
4	Application for Land Compensation	-	1	1	-	2
5	Application for replacement of EP ID Name	5	1	3	-	9
6	Application for the land acquisition	-	-	-	2	2
7	Application for Re-Compensation for dissatisfaction	20	3	-	1	24
8	Request for Proper Solution for damaging the land for soil collection by the contractor	1	1	-	-	2
9	Application for compensation for dismantling the brick soling road	-	-	-	1	1
10	Application for Structure Compensation	31	5	22	24	82
11	Application for Trees Compensation	-	1	14	1	16
12	Application for structure compensation on own land	-	-	7	2	9
Grand Total		**58**	**17**	**48**	**75**	**198**

Table 17: Summary of disposition of grievances in Package 01

Sl. No.	District	Polder no	Total complaints/ cases	Resolved by field level investigation	Resolved by GRC	Pending with GRC
1	Khulna	32	58	19	39	0
2	Khulna	33	17	8	9	0
3	Bagerhat	35/1	48	14	34	0
4	Bagerhat	35/3	75	10	65	0
Total			**198**	**51**	**147**	**0**

16.3 Grievance redress mechanism (GRM) for Package-2

There are 21 Grievance Redress Committees (GRC) at local level for Package-2 since this package covers 21 unions. A Grievance Redress Committees (GRC) have been formed earlier at each Union of all Polders under Package-2 with the representatives of BWDB, Union Parishad, educational institute, PAPs and DDCSPMS Consultants. All cases have been tried to reach resolution within the four-week time from the dates of receiving the complaints and trying to resolve locally. Eleven numbers of complaints/grievances have been received during the reporting period. Table 18 shows the types of complaints received up to June 30, 2023 in Package 02. Among 71 complaints received, all cases have been resolved at the entry level and no issues had to plance on GRC. Table-19 shows the status of complaints/cases received and resolved by different levels up to GRC.

Table 18: Types of complaints received in Package 02 up to June 2023

SL	Nature of Grievances	Polder Number				Total
		P-39/2C	P-40/2	P-41/1	P-43/2C	
1	Application for Re-Compensation for dissatisfaction	1	32	12	17	62
2	Application for Structure Compensation	1	-	8	-	9
Grand Total		**2**	**32**	**20**	**17**	**71**

Table 15: Summary of disposition of grievances in Package 02

Sl. No.	District	Polder no	Total Complaints/ cases	Resolved by field level investigation	Resolved by GRC	Pending with GRC
1	Pirojpur	39/2C	2	2	0	0
2	Barguna	40/2	32	32	0	0
3	Barguna	41/1	20	20	0	0
4	Patuakhali	43/2C	17	17	0	0
5	Patuakhali	47/2	0	0	0	0
6	Patuakhali	48	0	0	0	0
Total			**71**	**71**	**0**	**0**

No grievance has been registered specific to environmental issues till now. The environmental hazards caused during construction are being minimized and are localized which local people generally tolerate as they consider that the project will provide many benefits to them. Consultant has instructed the Contractor to avoid and/or mitigate even the minor and localized pollution. Moreover, CEIP-1 has introduced grievance collection boxes for the workers in all active sites of Package 01 and Package 02 areas. No grievances in respect to environment have been yet to receive. To enhance the system, CEIP-1 is motivating the workers aware about the grievance system and it is being implemented in good shape.

17. Training

CEIP-1 always wants to ensure the protection of the environment and the health of staff at workplaces with special attention paid on management of Covid-19 pandemic, where the contribution of EHS training is of great importance. There was no activity of Package W-01 contractor in work site. The Contractor of Package 02 conducted a robust training program. About 3157 participants (Staff and workers) were trained during January to June, 2023 period. The contractor of Package W-02 also maintained the Covid-19 protocol while conducting the training program in worksites. Among the six polders the civil construction works are almost completed in Polder no. 47/2 during FY: 2019-2020. Hence constructions works are on-going in five polders and training was provided as instructed & recommended by the Environmental Specialists team of PMU and DDCS&PMS consultant. The summary of the training of Package-2 is provided in table below.

Table 16: Number of Package 02 Participants (staff and workers) those received Environmental training during January-June, 2023

Polder	Jan	Feb	Mar	Apr	May	Jun	6-month Total
39/2C	220	230	300	289	280	251	**1570**
40/2	76	80	98	95	90	85	**524**
41/1	34	30	32	35	30	19	**180**
43/2C	28	30	38	48	56	60	**260**
48	63	74	95	148	140	103	**623**
Total	**421**	**444**	**563**	**615**	**596**	**518**	**3157**

The details of trainings including topics, trainers and trainees are shown in Table-21 on this page.

Table 21: List of Training including topics, trainers and trainees

Training topics	Trainers	Trainees	Remarks
The training of various EHS topics include education on environmental protection, safety knowledge and precaution against contagious diseases (like AIDS and STD) etc. In order to describe broadly, the major issues include • Training for use of PPE; • Training for procedure of equipment operation; • Training for electrical safety and traffic safety and working in high work places; • Training for driver's safety; • Training for use of first aid facilities and fire extinguishers; • Training for CC block dumping; • Lodge complain in GCB; • Training for embankment work and	Trainers include the Contractors' Environmental officer in Charge, Chinese and local EHS Officers of the concerned Polder. For training on equipment operation, Technician/Engineers were also engaged	The trainees include Local labours, Chinese staffs, Drivers, Equipment operators, Electricians, Mechanics, welders etc.	The Environmental Specialists of PMU, DDCS&PMSC and Third party M&E also provided training during their combined/together visits at work sites.

Training topics	Trainers	Trainees	Remarks
• Training on incident reporting. The above training are related to safety of working in automated CC plant, sluice construction/rehabilitation, embankment se-sectioning, re-excavation work and CC block dumping works			

18. Programme for the next term (July-December, 2023)

The tasks that will be carried from July-December, 2023 are as follows:

1. Obtaining renewal on ECC from the Department of Environment (DoE)
2. Preparing O&M manual accordingly EMP
3. Finalizing annual environmental audit report
4. Preparing 16th Bi-annual environmental report
5. Preparing documentation on Environmental Safeguard practices
6. Completing the decommissioning activities in Pkg. 01 & 02 areas
7. Monitoring the function of WMOs

19. Recommendations for upcoming projects

The following recommendations are made in view of fruitful implementation for all upcoming projects:

1. The post of EHS/Safety Officers is to be reserved in manpower lists for all upcoming projects.
2. Provision for payment on crop compensation that likely to be damaged during construction has to be made in the BOQ of civil works and should be paid to the affected/loser person accordingly.
3. Sufficient budgets for EHS training, uses of PPE and management of pandemic situations are to be included in Environmental mitigation items for all upcoming projects.
4. Dedicated EHS corner is to be installed for wider accessibility to the documents and resources.

20. Conclusion and Recommendations

The quality of compliance with the environmental conditions are gradually improving with the improvement of the perception of its importance through regular monitoring and awareness of the contractor and the employees concerned by PMU, DDSC & PMSC, Field Offices and third party M&E Consultants. A compliance matrix of the recommendations suggested in the last report against the actions that was targeted between July - December 2022 is also included as Annexure-6. Fisheries related activates would be impacted the bio-diversity and improved the socio-economic status of the Polder community and has been implement by 2022. Decommissioning work as per Environmental code of practice is also being practiced in Pkg. 01. However, there is further scope for improvement of environmental management practices by imposing frequent and effective practices learned from over past six years. Regular monitoring and on-the-job training by PMU, DDSC & PMSC, Field Office of Khulna & Patuakhali would be helpful asis expected. The following recommendations are made to address by both Contractors to improve the EHS quality:

1. Assure the use of PPE by the workers while implementing defect work
2. Documentation on Environmental Safeguard practices
3. Completing the decommissioning activities in Pkg. 01 & 02 areas
4. Finalizing as well as implementing annual environmental audit report

Annexure-1: Environmental Clearance Certificate of CEIP-1

শেখ হাসিনার নির্দেশ
জলবায়ু সহিষ্ণু বাংলাদেশ

Government of the People's Republic of Bangladesh
Department of Environment
Head Office, Paribesh Bhaban
E-16 Agargaon, Sher-e-Bangla Nagar, Dhaka-1207
www.doe.gov.bd

Memo No. DoE/Clearance/5196/2013/ 150 Date: 08 November, 2023

Subject: Renewal of Environmental Clearance for ten Polders (Polder no. 32, 33, 35/1 & 35/3 of contract package 1 and Polder no. 39/2C, 40/2, 41/1, 43/2C, 47/2 & 48 of contract Package-2) under "Coastal Embankment Improvement Project, Phase-1 (CEIP 1)", Bangladesh Water Development Board.

Ref: Your Letter dated: 10.10.2023

With reference to your above application, the Department of Environment hereby renews the Environmental Clearance in favor of ten Polders (Polder no. 32, 33, 35/1 & 35/3 of contract package 1 and Polder no. 39/2C, 40/2, 41/1, 43/2C, 47/2 & 48 of contract Package-2) under Coastal Embankment Improvement Project, Phase-1 (CEIP 1). The terms and conditions stated in the Environmental Clearance of the above project issued on 05.11.2018 vide memo number DoE/Clearance/5196/2013/1035 shall remain valid for the renewed period.

02. This renewal is valid until 04.11.2024. For further renewal an application along with the renewal fee as per the ECR, 2023 and VAT on renewal fee (in separate Treasury/VAT Chalan) and all associated documents shall be submitted to the Head Office of DoE with a copy to the concerned Divisional Offices of Department of Environment at least 30 days ahead of expiry.

07.11.2023
(Masud Iqbal Md. Shameem)
Director (Environmental Clearance)
Phone: 222218342

Project Director & Chief Engineer
Coastal Embankment Improvement Project, Phase-1 (CEIP 1)
Bangladesh Water Development Board
Pani Bhaban, Block-B, Level-10
72 Green Road, Dhaka.

Copy Forwarded to:

1. Director, Department of Environment, Khulna/ Barishal Divisional Office, Khulna/ Barishal.
2. Assistant Director, Office of the Director General, Department of Environment, Head Office, Dhaka.

Annexure-2: Labour Influx Report, Package-2

	1. PROJECT DATA	
1.1	Name of Project	Coastal Embankment Improvement Project - Phase I (CEIP-1)
1.2	Contract Package	Package-2
1.3	Date of Commencement	12th July, 2017
1.4	Date of Completion	30th June, 2022
1.5	Location	Polder-39/2C, Polder-40/2, Polder-41/1, Polder-43/2C, Polder-47/2 & Polder-48
1.6	Name and Contact Information (email/phone) of Contractor	Chongqing International Construction Corporation cicobangladesh@gmail.com/+8801917264485
1.7	Name and Contact Information (email/phone) of all sub-Contractors	None
1.8	Type of Works (single site, linear, clustered and construction duration)	1. Upgrading via new construction and re-sectioning of embankments with a length of about 209 km; 2. Excavation and re-excavation of drainage channels in the Polders with a total length of about 188 km; 3. Construction of 50 drainage sluices; 4. Repairing of 6 drainage sluices; 5. Construction of 73 flushing sluices; 6. Repairing of 8 flushing sluices; 7. Construction of embankment slope protection works with a total length of some 9.5km; 8. Construction of river bank protection works with a total length of 5.40 km; 9. Construction of 8 Khal Closing Closures with varying widths between 35m to 60m; 10. Dismantling of 36 drainage sluices, 70 flushing sluices and road pavement for about 50 km; 11. Construction of RCC Flood wall with a length of about 17km; 12. Construction of Road Pavement with a length of about 51km. Construction duration: 59 months

	2. INITIAL SCREENING LABOR INFLUX REQUIREMENTS AND IMPLICATIONS	
2.1	Will the project potentially involves an influx of migrant workers? If yes, are there also foreign laborers mobilized on site?	Yes, scattering all over the construction sites. There are no foreign labours mobilized onsite.
2.2	Is the influx of non-local workforce significant for the local community?	Yes, these benefits are typically related to economic opportunities through employment and/or training by the project, or through selling goods and services. Other benefits include the provision of local infrastructure (e.g., access roads, power or water connection) which is developed for the project, and which serves the community beyond the project duration.
2.3	What are the opportunities for local laborers?	It will bring more employment opportunities to the local labours. It will improve the education status because of workers' training.
2.4	Frequency of outsider's visit	Normal
2.5	Environmental sensitivity of the project	Fuel supply for cooking and heating, fuel storage area, by-pass road construction, sanitation, water supply and construction work.

	site	
2.6	Community experience with similar projects?	Embankment construction, Bridge construction and road pavement construction

3. SOCIO-ECONOMIC CONSIDERATIONS		
3.1	How similar are local and migrant labour backgrounds? (cultural, religious and demographic considerations)	The labour no matter where they from are Bangladesh citizen. They almost have the same cultural and religious background. The demographics are shifted just from one region to another and there is no change on total demographics of Bangladesh.
3.2	Are there increased competitions for resources (e.g. accommodation, water, food, fuel) with the local community?	More water, electricity, medical services, transport, education and social services will be required with the execution of works.
3.3	Given local community characteristics any specific adverse impacts anticipated?	It will bring more influx of additional population and Increased pressure on accommodations and rents, Increase in traffic and related accidents

4. LOCAL COMMUNITY (Please provide Polder wise description of Facilities)				
4.1	Size of Local Population	Polder-39/2C: 84853, Polder-40/2: 41317, Polder 41/1: 41051, Polder-43/2C: 14851, Polder-47/2: 5411, Polder-48: 26260		
4.2	Working age population and capacity (education, skills, experience)	No information		
4.3	Working age population capacity	*Education*	*Skill*	*Experience*
		No information	No information	No information
4.4	Local capacity for infrastructure, services, utilities, health (please provide a short brief)	The health centre and hospital are available in local place.		
4.5	Availability of accommodation, food, water (please provide a short brief)	Accommodation, water and food is available to the local community.		
4.6	Are there any security considerations?	Yes		
4.7	Are there any marginalized, vulnerable, ethnic, indigenous- communities?	No		

	5. MAINTENANCE OF OTHER LABOR RECORDS	
5.1	Is a copy of photo ID of each labourer kept with the Contractor/ Sub-contractor?	Yes
5.2	Is contact information of labour's next-of-kin kept for each labourer?	No

6. LABOR PROFILE (Please provide Polder wise information)

This data is to be collected for each Polder where civil works has commenced, and cover the regular labour, temporary labour, labour hired through sub-contractors or labour contractors / groups.

6.1	Number of laborers by sex	*Male*		*Female*	*Total*
		910		5	915
6.2	Number of laborers by skill	*Skilled*	*Semi-skilled*	*Unskilled*	*Total*

		435	220	260	915
6.3	Number of laborers by origin	*Local (same or adjoining district)*	*Other districts*	*Other Country*	*Total*
		781	121	0	915
6.4	Number of laborers by age	*18-25*	*25-50*	*Above 50*	*Total*
		445	460	10	915
6.5	Source of labour	*Contractor*	*Subcontractor*	*Independent*	*Other*	*Total*
		915			0	915

	7. FACILITIES (Please provide Polder wise description of Facilities)				
7.1	Details of labour camps	Number	Permanent/Temp.	Location	Distance from nearest village/habitation
		6	*Temporary*	Near the project site	Within 1 km
7.2	Type of housing in labour camp on leased land (temporary shelters / kuchha /pukka)	Temporary shelter			
7.3	Is there any housing on public land like roadsides, open fields and other spaces?	Yes, there are housings on open field.			
7.4	Is there any housing in rented accommodation in residential areas? If so, who is it rented by?	Yes, it is rented by the Chinese Contractor as temporary shelter.			
7.5	How many laborers have families on/near worksite?	No information			
7.6	Likelihood of family members accompanying (visiting)	Not allowed			
7.7	Is drinking water available on site and at the campsite?	Yes			
7.8	Are latrines and urinals provided on site and at the campsite?	Yes			
7.9	Are First Aid facilities provided on site?	Yes			
7.10	Does a doctor visit the worksite / campsite regularly?	No, sometimes.			
7.11	Is there a tie-up with a hospital or dispensary near the worksite / campsite	Yes			
7.12	Is there a facility for cooking / canteen facility for all labour?	No			
7.13	Are leisure activities / facilities available for all labour	Yes			
7.14	Is transport to and from the worksite provided to labour?	Yes			

	8. SUPERVISION BY LABOR OFFICIALS	
8.1	Has the worksite / campsite been inspected by a labour official?	No
8.2	How many times has the worksite / campsite been inspected by a labour official since commencement of work?	None
8.3	What documents were inspected by labour officials?	None

8.4	What documents were maintained and which ones were not?	None
8.5	What directions were given by labour officials?	None
8.6	What is the mode of compliance with such directions?	None
8.7	Are you facing any legal proceedings on labour issues in Labour Court/ Other?	No

	9. ACCIDENTS, EMERGENCIES AND INCIDENTS (Please provide Polder wise description of Facilities)	
9.1	What is the nature of accidents / emergencies usually occurring at a worksite like yours?	Drowning, Injury from machine
9.2	Is a functioning First Aid available at the campsite / worksite?	Yes
9.3	Is functioning fire-fighting equipment available at the campsite / worksite?	Yes
9.4	Which is the nearest doctor / clinic / dispensary?	Polder-39/2C: Digital X-ray Clinic, 5 minutes by car away from the campsite, 01717-997-914, Kamrunnasar Polder-41/1: DR.Abudussalam M.B.B.S Ex-medical officer of Barguna general hospital, clinic-sharif x-ray clinic, Dispensary mouir medical hall. Polder-47/2: 1 km from our working site to the nearest dispensary Polder-48: 100 m from our temporary camps to the nearest dispensary but the doctor and clinic are 1 km away.
9.5	Which is the nearest hospital?	Polder-39/2C: Upazila Health Complex, 5 minutes by car away from the campsite, 01735-950-462, Fakrel Islam. Polder-41/1: Bargunasader hospital Polder-47/2: 10 km from our working site to the nearest hospital. Polder-48: the nearest hospital is 3 km towards the seaside.
9.6	Which is the nearest Police Station?	Polder-39/2C: Bhandaria Police station, 5 minutes by car away from the campsite, 01713-374-337, Kamruzzaman. Polder-41/1: Bargunasader police station. Polder-47/2: 8 km from our working site to the nearest police station. Polder-48: the nearest police station is 3 km approximately around the third bridge.
9.7	Are details of nearest doctor / clinic / dispensary / hospital / Police station available and prominently displayed at worksite / campsite?	Polder-39/2C: Yes, such information shall be printed on paper and displayed at the site office. Polder-41/1: DR.Abudussalam M.B.B.S Ex-medical officer of Barguna general hospital, clinic-sharif x-ray clinic, Disppensarymouir medical hall, Bargunasader hospital, Bargunasader police station, above mentioned details information is true and they are able to respond within short period and mentioned location is very nearest to our worksite. Polder-47/2: Yes. Such, information shall be printed on paper and displayed at the site office. Polder-48: Yes, such information shall be printed on paper and displayed at the site office.
9.8	What is the system of informing next of kin?	A phone number chat including all the Chinese people has been distributed to all working site/ campsite, anything happening at site will be reported immediately to the person who is in charge of corresponding issue.
9.9	What is your familiarity with accident reporting procedures?	For any accident happened at site, the foreman shall report to the site office and site manager immediately, and site office shall write on the accident logbook for records. Then site office shall report to the corresponded local government office.
9.10	What is your familiarity with police reporting procedures?	So far, no such incident whereby Police is to be called upon. The Contractor camps are secured by police.

9.11	Is there any mechanism to address the work place Sexual Harassment of Women at the project sites?	No, because all male workers at the project working at sites and theworking place for female staff are limited in the camp and office.

Annexure-3: Data Collection Protocols, Formats and Checklists

FORM-R1

TEMPORARY ACQUISITION OF LAND

(Reporting by Contractor to Environmental Management OfficerofDDSC&PMSC, XEN (Environmental), PMU)

Construction Stage: Monthly/Quarterly Report: Date ……. Month …….. Year……

(Site Layout Plan of all locations to be attached with format)

(Attach Photograph of the Site)

Sl. No	Item	Target Date for Establishment	Date of Establishment	Location		Present Landuse	Size (mxm)	Existing Trees	Distance from Nearest Settlement	Distance from Nearest Riverbank	Remarks by Environmental Management Officer,XEN (Environ-mental), PMO, if any
1		Work force Camps (WC)									
	WC 1										
2		Stock Yard Cement for fine and coarse aggregate (SY)									
	SY 1										
3		Site Store (SS)									
	SS 1										
4		Site Office (SO)									

Certified that the furnished information is correct and the quality of work is as per good practice

Environmental Management Officer, DDCD&PMSC	Executive Engineer (Environmental), PMO	Contractor or his representative

FORM-R2

SITE IDENTIFICATION AND SETTING UP OF WORKFORCE CAMP

(Reporting by Contractor to Environmental Management OfficerofDDSC&PMSC, XEN (Environmental), PMU

Construction Stage Report: Date …….. Month …… Year……..

(Attach Photograph of the Camp Site)

Format to be submitted before target date of establishing camps as

Camp no.WC

Location of Camp: km_____ Package _____

Sl. No	Item	Unit	Details	Remarks by Environmental Management Officer,XEN (Environmental), PMO, if any
1	Detail of item camp	mxm		
a	Size of Camp	Mxm		
b	Area of Camp	Sqm		
c	Distance from Nearest Settlement	M		
d	Distance from Nearest Water Source/Riverbank	M		
e	Date of camp becoming operational	dd/mm/ yy		
f	Present land use			
g	No of trees with the Camp site			
2	Details of top soil stacking			
a	Quantity of top soil removed	Sq.m		
b	Detail of storage of topsoil	Cu.m		
3	Details of workforce	Nos.		
a	Total No of Labourers at work site	Nos		
b	Total no of Male Workers at work site	Nos		
c	No of Male Workers below 18 years of age	Nos		

Sl. No	Item	Unit	Details	Remarks by Environmental Management Officer,XEN (Environmental), PMO, if any
d	Total no of Female workers at work site	Nos		
e	No of Female workers below 18 years of age	Nos		
f	No of children	Nos		
4	*Details of dwelling units*			
a	No of dwellings	Nos		
b	Minimum size of dwelling	mxm		
c	Walls	Specifications		
d	Roofing	Specifications		
e	Flooring	Specifications		
f	Total no of Bathrooms	Nos		
5	Details of facilities			
a	Availability of security guard 24 hrs a day	Yes/ No		
b	First Aid Facility	Yes/ No		

Certified that the furnished information is correct and the quality of work is as per good practice

Environmental Management Officer, DDCD&PMSC	Executive Engineer (Environmental), PMO	Contractor or his representative

FORM-R3

RESTORATION OF CONSTRUCTION SITES

(Reporting by Contractor to Environmental Management OfficerofDDSC&PMSC, XEN (Environmental), PMU)

Construction stage: Monthly Report – Date …….. Month ……. Year……

Sl. No	Item	Location	Unit (cum)	Volume of Topsoil Restored (cum)	Remarks by Environmental Management Officer,XEN (Environ-mental), PMO, if any
3	Restoring of topsoil at Workers Camp				
A					
B					
C					
D					
4	Restoring of topsoil at Construction/ stock yard and disposal of spoil				
A					
B					
C					
D					

Certified that the mitigation/enhancement works have been completed as specified and as per prevalent good construction practices

Environmental Management Officer, DDCD&PMSC	Executive Engineer (Environmental), PMO	Contractor or his representative

FORM-R4

SUMMARY MITIGATION AND ENHANCEMENT

(Reporting by Contractor to Environmental Management OfficerofDDSC&PMSC, XEN (Environmental), PMU)

Construction Stage: Monthly Report – Date …… Month …… Year……..

S.No	Item	Physical Target				Completion Target		
		Target		Target Achieved	% of task completed	Target Date	Date of Completion if task completed	Reason for delay if any
1	Protection of Cultural Properties	Unit						
2	Water Bodies	Nos						
3	Barrier to prevent garbage dumping	Nos						
4	Spill of oil lubricant control	Nos						
5	Washing Platform	Nos						
6	Trees planted and cared	Nos						
7	Turf area	m^3						
8	Top soil covers	m^3						
9								
10								

Completed as specified and as per prevalent good construction practices

Environmental Management Officer, DDCD&PMSC	Executive Engineer (Environmental), PMO	Contractor or his representative

Monitoring of Water Quality

Water Quality

In order to provide a clear view of the existing water quality inside the polder area, a number of water quality parameters – including salinity, Dissolved Oxygen (DO), temperature, electrical conductivity (EC), pH, Total Dissolved Solids (TDS), chlorides (Cl), suspended solids (SS), and arsenic (As), among others - were selected for monitoring.

The surface water and ground water was analyzed during the field level survey conducted in two different periods of the year. The surface water quality was measured at a number of locations (monitoring sites) of a Polder (shown in the Map included in the EIA Report of Polder under CEIP-1) in the month of December and the ground water quality was tested in the month of May. The results obtained in the two field surveys provided an understanding of the water quality in the polder, and these constitute the base data and can be compared with for impact evaluation of successive water quality analysis.

Sample Collection of Surface Water for Aquaculture and Agriculture Uses

a) Establish sampling sites (Location) with GPS referencing
b) Collect water sample from sampling site: Place sufficient water in bottles (leaving no empty space in the bottle) for the monitoring parameters –
c) **Bottle 1**: For analysis of pH, Total suspended solids (TSS), Total dissolved solids (TDS), Dissolved oxygen (DO), Biological oxygen demand (BOD), Chemical oxygen demand (COD)
d) **Bottle 2**: For analysis of Nitrate-N (NO_3-N), Salinity
e) **Bottle 3:** For analysis of Total and Fecal Coliform bacteria (Note: Coliform bacteria must be analyzed within 24 hours of sampling)

Sample Collection of Tubewell Water and other Supply Water for Drinking Use

a) Establish sampling sites (Location) with GPS referencing
b) Collect water sample from sampling site: Place sufficient water in bottles (leaving no empty space in the bottle) for the monitoring parameters –
c) **Bottle 1**: For analysis of pH, Total suspended solids (TSS), Total dissolved solids (TDS), Dissolved oxygen (DO), Arsenic (As), Iron (Fe), Chloride (Cl)
d) **Bottle 2:** For analysis of Nitrate-N (NO3-N), Salinity
e) **Bottle 3:** For analysis of Total and Fecal Coliform bacteria (Note: Coliform bacteria must be analyzed within 24 hours of sampling)

Label bottles with location, sampling depth, date & time of samplingWater Quality Monitoring Plan (For Tubewell Water and other Supply Water for Drinking Use)	
Monitoring Parameters	*standard items:*pH, Temperature, Total suspended solids (TSS), Total dissolved solids (TDS), Dissolved oxygen (DO), Arsenic (As), Iron (Fe), Chloride (Cl), Conductivity, nitrate-N (NO_3-N, fecal and total coliform
Analysis Methods	Field measurements for pH, dissolved oxygen, conductivity, temperature; Standards Methods of Analysis for laboratory analysis.
Sampling Sites (Location) with GIS reference	Select monitoring sites of given Polder(with GIS referencing). At each site, 2 samples (Duplicate samples)
Monitoring frequency and periods	- Quarterly, during construction phase; - Half yearly, during operation phase
Responsible Agency	Contractor through a nationally recognized laboratory

	(BUET,KUET, Dhaka University, DPHE& DoE)
Supervised by	DDCS&PMS Consultant's Environmental Team, BWDB field staff

Water Quality Monitoring Plan (For Surface Water for Aquaculture and Agriculture Uses)	
Monitoring Parameters	*standard items:*pH, Total suspended solids (TSS), Total dissolved solids (TDS), Dissolved oxygen (DO), Biological oxygen demand (BOD), Chemical oxygen demand (COD), Nitrate-N (NO_3-N), Salinity, Electrical conductivity (EC),Total Coliform bacteria
Analysis Methods	Field measurements for pH, dissolved oxygen, conductivity, temperature; Standards Methods of Analysis for laboratory analysis.
Sampling Sites (Location) with GIS reference	Select monitoring sites of given Polder(with GIS referencing). At each site, 2 samples (Duplicate samples)
Monitoring frequency and periods	- Quarterly, during construction phase; - Half yearly, during operation phase
Responsible Agency	Contractor through a nationally recognized laboratory (BUET, KUET, Dhaka University, DPHE& DoE)
Supervised by	DDCS&PMS Consultant's Environmental Team, BWDB field staff

Noise Quality Monitoring Plan (Vehicular Traffic on the road is the key source of noise in the Polder)	
Monitoring Parameters	Noise Level (dB) in selected busy areas inside the Polder (under Normal Condition and with Traffic)
Analysis Methods	Field Noise Meter Calibrated to monitor dB for 40-90 dB
Sampling Sites (Location) with GIS reference	Select monitoring sites of given Polder(with GIS referencing). At each site, 2 samples (normal condition & with traffic)
Monitoring frequency and periods	- Noise level for 1 hour at 0700, 1200 & 2000 hrs on three consecutive days each week
Responsible Agency	Contractor through a nationally recognized laboratory (BUET, KUET, Dhaka University, DPHE & DoE)
Supervised by	DDCS&PMS Consultant's Environmental Team, BWDB field staff

Air Quality Monitoring Plan	
Monitoring Parameters	*standard items:*Suspended Particulate Matter (SPM 2.5/10), Sox, NOx, CO
Analysis Methods	Field standard Air Analyser
Sampling Sites (Location) with GIS reference	Select monitoring sites of given Polder (with GIS referencing).
Monitoring frequency and periods	- At selected sites, once in 6 months, or as required.
Responsible Agency	Contractor through a nationally recognized laboratory (BUET, KUET, Dhaka University, DPHE &DoE)
Supervised by	DDCS&PMS Consultant's Environmental Team, BWDB field staff

Soil Quality Monitoring Plan	
Monitoring Parameters	*standard items:* Organic matter, pH, N, P, K, Salinity, Fe, Mn, Mo, Pb
Analysis Methods	Field standard Soil Analyzer Kit
Sampling Sites (Location) with GIS reference	Select monitoring sites of given Polder (with GIS referencing).
Monitoring frequency and periods	- At selected sites, once in 3 months
Responsible Agency	Contractor through a nationally recognized laboratory (BUET, KUET, Dhaka University, DPHE &DoE)
Supervised by	DDCS&PMS Consultant's Environmental Team, BWDB field staff

Template for-A. Surface Water Quality in Project Area (Fishing and Irrigation uses)

Sample Location	GIS Reference	Water Quality Monitoring Parameters									
		Temp (°C)	pH	TSS mg/l	TDS mg/l	DO mg/l	Salinity ppt	NO_3-N mg/l	Cl Mg/l	EC µs/cm	Total Coliform
SL-1	GIS-1										
SL-2	GIS-2										
SL-3	GIS-3										
Bangladesh Standard Value	Irrigation	20 - 30	7.0-8.5			5.0				400-1000	
	Fishing	20 - 30	6.7-9.5			4.0-6.0					

Template for-B.Tubewell and supply Bottle Water Quality (Drinking Uses)

Sample Location	GIS Reference	Water Quality Monitoring Parameters										
		Temp (°C)	pH	TSS mg/l	TDS mg/l	DO mg/l	Salinity ppt	NO_3-N mg/l	Cl Mg/l	Fe Mg/l	EC µs/cm	Total Coliform
SL-1	GIS-1											
SL-2	GIS-2											
SL-3	GIS-3											
Bangladesh Standard Value			6.5-8.5						150-600	0.3-1.0	400-1000	

Annexure-4: Environmental management plan–Chapter 10 of EIA for typical polder (Polder no. 47/2)

10. Environmental Management Plan

673. This chapter presents the Environmental Management Plan (EMP) for the rehabilitation activities in the Polder- 47/2. The EMP essentially provides the implementation mechanism for the environmental and social mitigation measures discussed in Chapter .

6.10.1 Objectives of EMP

674. The basic objective of the EMP is to manage, prevent, and mitigate potentially adverse impacts of Project interventions. The specific objectives of the EMP are to:

- Facilitate the implementation of the environmental and social mitigation measures identified during the present EIA and discussed in Chapter 6.
- Indicate the responsibilities for project proponent, contractors, consultants, and other members of the Project team for the environmental and social management of the Project;
- Define a monitoring mechanism and identify monitoring parameters to ensure effective implementation of the mitigation measures; and
- Assess environmental training requirements for different stakeholders at various levels. Describe communication and documentation requirements.

10.2 EMP Components

675. The EMP components are listed below:

- Institutional Arrangement
- Mitigation Measures and Plan
- Monitoring Plan
- Documentation and reporting
- Contractual arrangements for EMP implementation
- EMP implementation cost
- Capacity building
- Grievance redress mechanism

676. These components are discussed in Sections below.

103 Institutional Arrangement

677. Clearly defined and functional institutional arrangements are essential for ensuring effective and sustainable implementation of the EMP, particularly the mitigation measures identified in the EIA. An Organogram showing the institutional setup of CEIP-1 including organisation for implementation and monitoring of the EMP is shown in Figure 10.1.

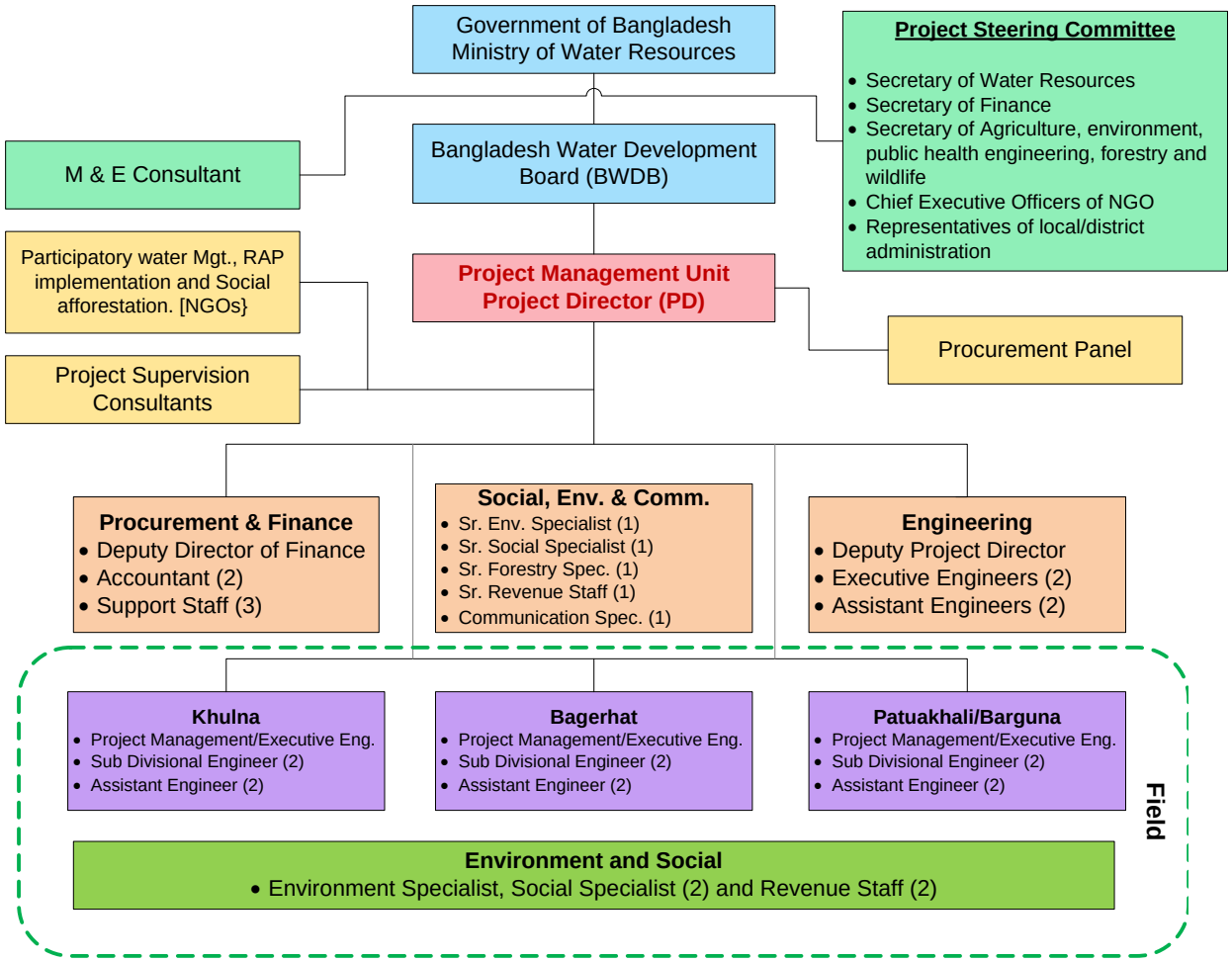

Figure 10.1: Organogram showing the institutional setup for CEIP-I

678. The institutional arrangements proposed to implement the EMP of Polder 48 are described in detail below.

10.3.1 Overall Responsibility

679. The overall responsibility of EMP implementation and fulfilling other environmental obligations during the Project rests with the Project Director (PD). For this purpose, the PD will be supported by Environmental and Social staff of the PMU, DCSC and Contractors.

10.3.2 Construction Phase

a. Environment and Social Staff in PMU

680. As described in Section 4.8, the BWDB will set up the PMU to manage the Project implementation. The PMU will be led by the Project Director (PD). To manage and oversee the environmental and social aspects of the Project, the PMU will have an Environment, Social, and Communication (ESCU). The Unit will supervise compliance with and implementation of the EMP. The Unit will include a Senior Environmental Specialist. One environment specialist will be posted at the field level to support all three divisions. The ESCU will maintain liaison with WB safeguards team, regulatory agencies and other stakeholders during the Project implementation. The ESCU will also coordinate with the environmental staff of the DCSC In order to manage the EA process and EMP implementation effectively; the ESCU will be

established and made operational before awarding the contract to Contractor. BWDB will update the EIA report, if necessary. The Mode of EMP implementation is shown in the Figure-10.2 as follows:

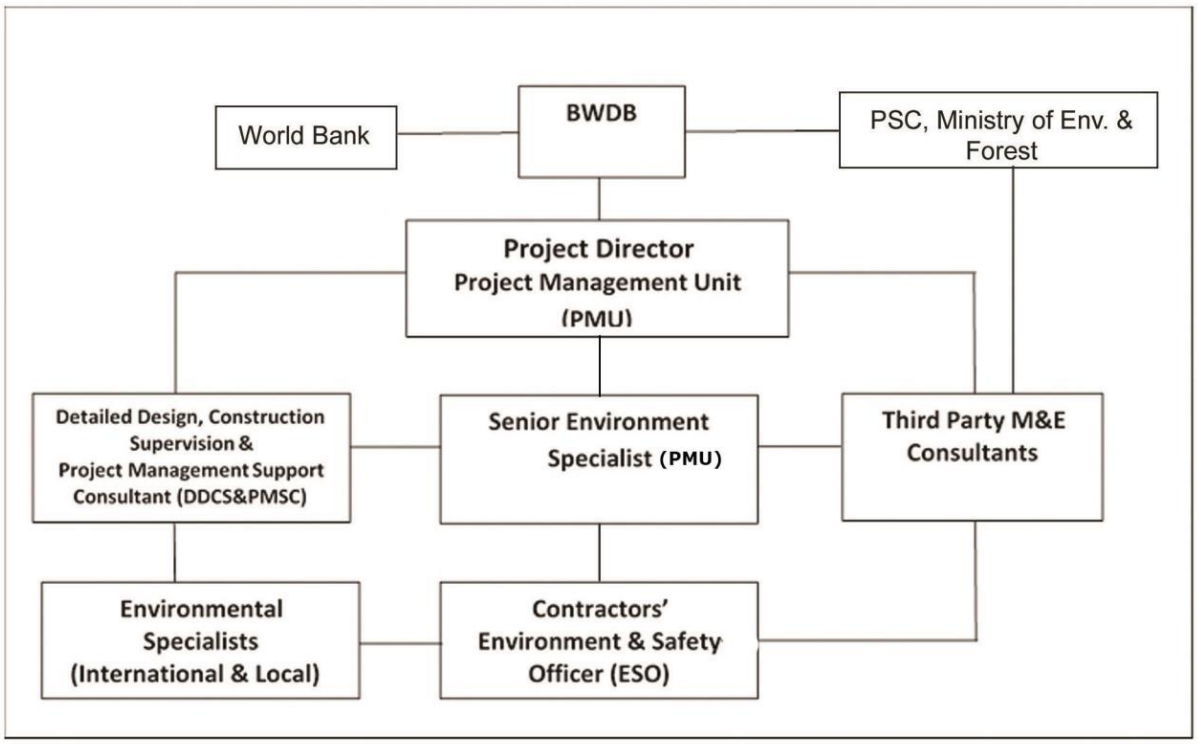

Figure 10.2: Organogram for Mode of EMP Implementation

b. **Environment and Social Staff with Detail Design, Construction Supervision and Project Management Support Consultants (DDCS&PMSC)**

681. The DDCS&PMSC will be responsible for overall supervision of polder rehabilitation related activities. The DDCSPMSC will ensure quality control and report to the PD. The DDCS&PMSC will also assist the ESCU for ensuring environmental compliance and monitoring of progress including EMP and/or ECoP implementation. The DDCS&PMSC will supervise the contractors, ensuring design compliance and quality of works. For supervising the EMP implementation, DDCS&PMSC will have dedicated and adequately qualified and experienced environmental staff including field-based environmental monitors (EMs). The DDCS&PMSC will supervise and monitor contractors to ensure compliance with the EMP. The DCSC consultants' environmental staff will maintain coordination with the ESCU for the effective implementation of EMP and other environmental commitments and obligations of the Project.

c. Contractor's Environment Supervisors

682. The construction contractors will have an adequate number of dedicated, properly qualified and experienced, site-based Environment Supervisors (ESs) at the construction sites. The ESs will be responsible to implement various aspects of the EMP particularly the mitigation measures to ensure that the environmental impacts of the construction works remain within acceptable limits. The EMs will maintain coordination with the DCSC at the site level. The ESs will also be responsible to conduct environmental trainings for the construction crew.

10.3.3 Post-Construction Phase

683. The BWDB monitoring unit has postings of 4 Assistant Chiefs and 2 Deputy Chiefs to oversee the overall environmental compliance of BWDB implemented projects. Under CEIP, the ESCU will provide training to the BWDB people responsible for monitoring of environmental compliance. Thus, a smooth transition to BWDB will happen to ensure environmental compliance during the O&M after the project completion. These staff will be responsible to manage the environmental aspects of the operation and maintenance of polder, its water control structures, and other relevant issues such as protection of key environmental resources of the older and maintain fish migration. Water Management Organizations (WMO) will be formed under the Bangladesh Guidelines for Participatory Water Management (Nov 2000) and involve the beneficiary communities. WMOs will be trained by BWDB to ensure environmental management during project operation. The Environmental Management Unit of BWDB will ensure and oversee the environmental management during project implementation and operation. The Water Management Organization will also be trained and involved in EMP implementation during the operation phase.

10.4 Mitigation Measures and Plan

684. Mitigation is an integral part of impact evaluation. Where mitigation is deemed appropriate, a proponent should strive to act upon effects, in the following order of priority, to:

- Eliminate or avoid adverse impacts, where reasonably achievable.
- Reduce adverse impacts to the lowest reasonably achievable level.
- Regulate adverse impacts to an acceptable level, or to an acceptable time period.
- Create other beneficial impacts to partially or fully substitute for, or counter-balance, adverse effects.

685. Project specific construction environmental management plans will be prepared by the Contractor and implemented upon approval by the DSC consultant and the PMU. These plans will specify precautions and mitigation measures for construction activities. Good Environmental Construction guidelines have been compiled in Appendix 10 of Environmental Management Framework.

686. Impacts identified severe in consequence category and or likelihood category will be further analyzed to identify additional mitigation measures that are potentially available to eliminate or reduce the predicted level of impact. Potential mitigation measures will include:

- Habitat compensation program
- Species specific management program
- Engineering design solutions
- Alternative approaches and methods to achieving an activity's objective
- Stakeholders participation in finalizing mitigation measures
- Construction practice, including labor safety and welfare measures.
- Operational control procedures
- Management systems

687. Based on the past experience, a generic Mitigation/Compensation Measures Guideline for the EMP has been developed and is presented in Table 10.1 below for reference. This has been used as a reference material for comprehending the scope of the EMP. Table 10.1 will

be used in conjunction with the implementation of the polder specific mitigation measure stated in Chapter 6.

Table10.1: Generic Mitigation/Compensation Measures/Guideline

(ECoP: Environmental Code of Practice)

Parameter/Activities	Mitigation/Compensation Measure/Guideline
ECoP 1: Soil/ Land Management	
Sources of Material for Earthwork	• During design, the segment-wise soil requirement and location of the sources of soil for earthwork for each polder construction/rehabilitation will be identified. • Selection of Borrow pit areas for earthen material collection. • No objection from land owner/Revenue authorities as applicable • Contractor shall ensure that borrowed materials used for embankment filling is free of pollutants • Disposal of excess soil will be made at site with no objection from DoE and local authority
Borrowing of Earth	**Borrow Area Selection** Borrowing of spoil from places close to the toe line on any part of the embankment is prohibited. Earth available from dredging as per design, may be used as embankment material (if necessary and applicable), subject to the approval of the Engineer, with respect to acceptability of the material. Borrowing to be avoided from the following areas: • Borrowing of soil from close to the toe line on any part of the embankment is prohibited. • No borrowing of earth to be done from irrigated agricultural lands (In case of necessity for borrowing from such lands, the topsoil shall be preserved in stockpiles), although borrowing from agricultural land need to be avoided • Borrowing of earth is prohibited from grazing land. • No borrowing of earth is permissible from near to the settlements. • Borrowing of earth is prohibited from environmentally sensitive areas such as reserve forests, protected forests, sanctuary, and wetlands. • Borrowing of earth will not be done from streams and seepage areas. • Borrowing of earth will be avoided from areas supporting rare plant/ animal species. **Documentation of Borrow Pit** The contractor must ensure that following data base is documented for each identified borrowing areas before commencing the borrowing activity that provide the basis of the redevelopment plan. • Chainage along with offset distance; • Area (Sq.m); • Photograph and plan of the borrowing area from all sides; • Type of access/width/kutcha/pucka etc. from the roadway; • Soil type, Slope/drainage characteristics; • Water table of the area identified from the nearest well, etc.; • Existing land use, for example barren / agricultural /grazing land; • Location/name/population of the nearest settlement from borrowing area; • Quantity excavated (likely and actual) and its use; • Copy of agreement with owner/government; and • Community facility in the vicinity of borrow pit.

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	• Rehabilitation certificate from the land owner along with at least four photograph of the rehabilitated site from different angles.
Excavation operation and Management of Excavated Material	To minimize any adverse impact during excavation of material following measures are need to be undertaken: • Adequate drainage system shall be provided to the excavated area • The Contractor shall construct sediment barriers at the stockpiling locations to prevent the erosion of excavated material due to runoff. The followings precautions shall be undertaken during quarry operations. • Overburden shall be removed. • During excavation slopes shall be flatter than 20 degrees to prevent any sliding. • The Contractor shall ensure that all workers related safety measures shall be taken. • The Contractor shall ensure maintenance of crushers regularly as per manufacturer's recommendation. • During transportation of the material, measures shall be taken to minimize the generation of dust and to prevent accidents.
Handling Dredged Material from River Dredging	• Deposition of dredged material will be far away from the channel edge to limit damage to streamside habitats. This also allows a degree of flooding to occur on the floodplain, thereby creating opportunities for wet grassland, scrub/wet woodland, wetlands and seasonally grazed rough grass. • Apply biotechnical engineering where possible for example geo textiles, may be used to help in stabilizing the material and aid re-colonization. • Other possibilities include: drying and spreading the spoil over adjacent land, which can improve soil fertility in some cases, but may also smother important flora and habitats; excavating a trench and infilling it with spoil, thus minimizing disturbance to agriculture and the local environment; dumping off-site is possible but expensive, using spoil to create artificial wetlands.
ECoP 2: Water Resource & Hydrology Management	
Hazardous Waste Management	The contractor will minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical wastes).
Ponding of water/water logging	• Do not allow ponding of water especially near the waste storage areas and construction camps • Discard all storage containers,which are capable of storing water, after use or store them in inverted position • Reinstate relief and landscape • Monitor drainage pattern after high down pouring and recession flood • Connect water pockets to the nearest drainage channels/canals
Soil Erosion and siltation	The Contractor shall • Water the material stockpiles, access roads and bare soils on an as and where required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds) • All working sites (except permanently occupied by the road and supporting facilities) will be reinstated to its initial conditions (relief, topsoil, vegetation cover). • Ensure that roads used by construction vehicles are swept regularly to remove sediment
Dredging	• Disturbance can be minimized if mechanical excavators work from one bank. If the channel is too wide, the digger must work within the

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	channel. Disruption can be minimized by diverting the river down one side of the channel and dredging the other side while it is 'dry'. Smaller plant equipment generally limits the level of impact on bank-side and in-stream habitats.
Construction activities in water bodies	• Protect water bodies from sediment loads by silt screen or bubble curtains or other barrier. • Do not discharge cement and water curing used for cement concrete directly into water courses and drainage inlets • Monitor the water quality in the runoff from the site or areas affected by dredge plumes, and improve work practices as necessary
ECoP 3: Air Management	
Construction vehicular traffic	The Contractor will • Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. • Operate the vehicles in an efficient manner • Covered haul vehicles to be used carrying dusty materials (cement, borrow and quarry) moving outside the construction site • Impose speed limits on all vehicle movement at the worksite to reduce dust emissions • Control the movement of construction traffic • Water construction materials prior to loading and transport • Service all vehicles regularly to minimize emissions • Materials will be transported to site in off peak hours.
Construction activities	• Water the material stockpiles, access roads and bare soils on an as and where required basis to minimize the potential for environmental nuisance due to dust. • Increase the watering frequency during periods of high risk (e.g. high winds). • Stored materials such as excavated earth, dredged soil, gravel and sand shall be covered and confined to avoid them from wind-drift • Minimize the extent and period of exposure of the bare surfaces • Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary to avoid during periods of high wind and if visible dust is blowing off-site • Restore disturbed areas/side of the embankment as soon as practicable by plantation/vegetation/grass-turfing • Establish adequate locations for storage, mixing and loading of construction materials, in such a way that dust dispersion is prevented because of such operations • Crushing of rocky and aggregate materials shall be wet-crushed, or performed with particle emission control systems.
Odor from Construction labor Camps	• Construction worker's camp shall be located at least500 m away from the nearest habitation. • The waste disposal and sewerage system for the camp shall be properly designed, built and operated so that no odor is generated.
ECoP 3: Agriculture Management	
Loss of Top Soil	• Soil from fallow lands/ non-agricultural lands will be used in all type of earthwork and in embankments • Collect/strip top soil before earth filling and store the same for and reusing it for final surfacing of embankment top and tree plantation/afforestation. • Strip the top soil to a depth of 15 cm and store in stock piles of height not exceeding 2m

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	• Remove unwanted materials from top soil like grass, roots of trees and similar others • The stockpiles will be maintained a slopes of 2:1 to reduce surface runoff and enhance percolation through the mass of stored soil • Locate topsoil stockpiles in areas outside the drainage lines and protect from erosion • Spread the topsoil to maintain the physio-chemical and biological activity of the soil. • The stored topsoil will be utilized for covering all disturbed area and along the proposed plantation sites • Topsoil stockpiles will be monitored and the adverse conditions are to be identified and the following corrective actions are to be undertaken: o Anaerobic conditions-turning the stockpile or creating ventilation holes through the stockpile; o Erosion – temporary protective silt fencing will be erected;
Soil salinity	• Use of duckweed will remove soil salinity • Flushing with pre-monsoon rain water will reduce soil salinity. • Saline tolerant crops need to be cultivated. • Environmentally and socially responsive shrimp farming e.g. shrimp-rice farming system to be encouraged. • Increasing upland discharge of fresh water will push back ingress of saline water from the sea • Green manure application is to be promoted • Ground water abstraction for shrimp farming will be avoided.
ECoP 4: Noise Management	
Construction vehicular traffic	• Maintain all vehicles in order to keep it in good working condition in accordance with manufactures maintenance procedures • Organize the loading and unloading of trucks, and handling operations for the purpose of minimizing construction noise at the work site.
Construction machinery	• Appropriately site all noise generating activities to avoid noise pollution to local residents • Maintain all equipment in order to keep it in good working order in accordance with manufactures maintenance procedures.
Construction activity	• Notify adjacent landholders/Schools prior any typical noise events outside of daylight hours • Employ best available work practices on-site to minimize occupational noise levels • Install temporary noise control barriers where appropriate • Plan activities on site and deliveries to and from site to minimize impact • Monitor and analyze noise and vibration results and adjust construction practices as required • Avoid working during 09:00pm to 06:00 am within 500m from residences.
ECoP 5: Ecology Management	
Flora	
Vegetation Clearance	• Tree outingwill be performed upon preliminary notification to the relevant authority (District Forest Office, DoE). • Preparation of maps in GIS format, cadastral description of trees to be felled, marking, and supervision of Forest Department are necessary elements of the procedure. • Provide adequate knowledge to the workers regarding nature of protection and the need of avoid felling trees during construction

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	• Fruit and timber trees owned by local population will be compensated at their replacement cost according to market prices
Plant Management	• Tree seedlings of local/indigenous species are planted in such a way that minimizes damage to the soil, while facilitating seedling survival. Tree seedling species are to be selected appropriately for maintaining long-term productivity. • Focus on tree species suitable for site condition • Prevent unreasonable species resulting in slow growth, less water and soil conservation and pest or disease outbreaks • Local species as planting materials, since natural selection and succession are most suitable for local climates and natural conditions • Ensure of avoiding single species or clone monoculture • Choose suitable species for berm, turfing and side
Planting	• Leave set back requirements around streams, restricted areas e.g. native vegetation, protected riparian strips, historic and heritage sites, research areas. • For nursery raising, physical and biological controls are to be practiced to control the pests and diseases in the nurseries. • Do not plant spread-prone species on sites where there is a high risk of uncontrollable wilding spread beyond the boundaries of the plantation. • Consider appropriate species, patterns and layout when planting areas with high visual values and/or with important recreational values
Polypropylene Bags Handling	• Make a borrow Pit at each site for collection of poly bags • Collect all bags at the pits after plantation • If feasible, inform private sector to collect those bag for recycling
Pest Management to Nursery	• During outbreak of any deadly plant disease develop a plan to manage pest in coordination with neighbors by identifying existing pests and diseases and the risks for the introduction of new pests and diseases.
Water Management	• Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from nursery • Divert runoff from undisturbed areas around the harvesting site • Stockpile of fertilizer or agrichemical should be far away from drainage lines • Prevent all solid and liquid wastes entering waterways by collecting solid waste, oils, chemicals, fertilizer waste and transport to an approved waste disposal site
Fauna	
Construction works in the surrounding lands	• Pre-entry survey and prevention of damage to fauna prior to start up • Limit the construction works within the designated sites allocated to the contractors • To restrict any destruction of active nests or eggs of resident birds • Provide adequate knowledge to the workers regarding protection of flora and fauna, and relevant government regulations and punishments for illegal poaching.
ECoP 6: Fisheries Management	
Construction works in the rivers and on the surrounding lands	• Critical breeding areas of major fish species will be identified and declared as sanctuaries. • Creation of small lagoons and pools,which may trap the fishes should

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	be avoided. • Creation of artificial waterfalls and other barriers for migration will be avoided. • Natural river channel will be reinstated after completion of construction works
Hydraulic Structure	• Sufficient free flow will be guaranteed in the design and construction work to ensure free passage of migrating fishes. • Hydraulic structure will be operated considering the time of fish migration and spawning time • Area specific hydraulic structure operation guideline will have to be developed
Dredging	• Ensure that the dredging activity will create minimum sediment load in the water • Avoid dredging during spawning period of fish
ECoP 7: Socio-Economic Management	
Construction Camp Management	
Location of constructionCamps (MRDI, 2011)	• The contractor shall hoist signboard/s at worksite mentioning the details of adtivities to be performed along with cost, work tenure and name and address of the firm. It will also contain the address of the supervision organization, who may be informed of any grievances of the activities. • Locate the construction camps at areas which are acceptable from environmental, cultural or social points of view. • Consider the location of construction camps away from communities in order to avoid social conflict in using the natural resources such as water or to avoid the possible adverse impacts of the construction camps on the surrounding communities. • BWDB will endorse detailed layout plan for the development of the construction camp submitted by the contractor. The plan will show the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, prior to the development of the construction camps. • Local authorities responsible for health, religious and security shall be duly informed on the set up of camp facilities so as to maintain effective surveillance over public health, social and security matters
Construction Camp Facilities	The following facilities will have to be provided by the Contractor • Adequate housing for all workers • Safe and reliable water supply • Hygienic sanitary facilities and sewerage system. • Treatment facilities for sewerage of toilet and domestic wastes • Storm water drainage facilities • Provide in-house community/common entertainment facilities, dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Solid Waste Management	• Ensure proper collection and disposal of solid wastes within the construction camps • Store inorganic wastes in a safe place within the household and clear organic wastes on daily basis to waste collector. • Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. • Not to establish site specific landfill sites. All solid waste will be

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	collected and removed from the work camps and disposed in approved disposal sites
Fuel supplies for cooking and heating purposes	• Provide fuel to the construction camps for their domestic purpose, in order to discourage them to use fuel wood or other biomass. • Conduct awareness campaigns to educate workers to protect the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	• Provide adequate health care facilities within construction sites • Provide first aid facility round the clock. Maintain stock of medicines in the facility • Provide ambulance facility for the laborers during emergency for transferringto nearest hospitals. • Initial health screening of the laborers coming from outside areas • Train all construction workers on basic sanitation and health care issues and safety matters, and on the specific hazards of their work • Provide HIV awareness programming, including STI (sexually transmitted infections) • And HIV information, education and communication for all workers on regular basis • Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellant sprays during monsoon. • Carryout short training sessions on best hygiene practices to be mandatorily participated by all workers. • Place display boards at strategic locations within the camps containing messages on best hygienic practices
Payment of Wages	• The payment of wages will be as per the Minimum Wages Act, Department of Labor, and Government of Bangladesh for both male and female workers. • Display of the minimum wages board at camps and major construction sites will be made in local languages at the construction and labor camp sites. • Wages will be paid to the laborers only in the presence of BWDB staff; • Contractor is required to maintain register for payment of labor wages with entry of every labor working for him. Also, he has to produce it for verification if and when asked by the DDCS&PMSC, PMUand/or the concerned BWDB staff/DSC's representative • Cotractor to follow the guidelines of prevalent by-laws of Bangladesh Labour Act, 2006.
Rehabilitation of Labor and Construction Camp	At the completion of construction, all construction camp facilities shall be dismantled and removed from the site. The site shall be restored to a condition in no way inferior to the condition prior to commencement of the works. Various activities to be carried out for site rehabilitation include: • Oil and fuel contaminated soil shall be removed and transported or buried in waste disposal areas. • Soak pits, septic tanks shall be covered and effectively sealed off. • Debris (rejected material) will be disposed of suitably. • Underground water tank in a barren/non-agricultural land should be covered. However, the tank shall be removed from agricultural land. • If the construction camp site is on an agricultural land, preserve top soil and good earth can be spread back for a minimum 30cm for faster rejuvenation of the land. • Proper documentation of rehabilitation site is necessary.

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	• This shall include the following: • Photograph of rehabilitated site; • Land owner consent letter for satisfaction in measures taken for rehabilitation of site; and • Undertaking from contractor; In cases, where the construction camps site is located on a private land holding, the contractor would still have to restore the campsite as per the guideline. The rehabilitation is mandatory and will be included in the agreement with the landowner by the contractor. Also, he would have to obtain a certificate for satisfaction from the landowner.
Damage and Loss of Cultural Properties	
Conservation of Religious Structures and Shrines	• All necessary and adequate care shall be taken to minimize impact on cultural properties which includes cultural sites and remains, places of worship including mosques, temples, churches and shrines, etc., graveyards, monuments and any other important structures as identified during design and all properties / sites / remains notified. No work shall spill over to these properties and premises. The design options for cultural property relocation and enhancement need to be prepared. • All conservation and protection measures will be taken up as per design. Access to such properties from the road shall be maintained clear and clean.
	• During earth excavation, if any property is unearthed and seems to be culturally significant or likely to have archaeological significance, the same shall be intimated to the Engineer. Work shall be suspended until further orders from the PD. The Archaeological Department shall be intimated of the chance find and the DDCS&PMSC shall carry out a join inspection with the department. Actions as appropriate shall be intimated to the Contractor along with the probable date for resuming the work. • All fossils, coins, articles of value of antiquity, andstructures and other remains or things of geological or archaeological interest discovered on the site shall be the property of the Government, and shall be dealt with as per provisions of the relevant legislation.
Worker's Accident Risk	
Risk from Operations	• The Contractor is required to comply with all precautions as required for the safety of the workmen as per the International Labor Organization (ILO) convention. The contractor shall supply all necessary safety appliances such as aprons, safety goggles, helmets, masks, boos, etc., to the workers and staff. The contractor has to comply with all regulation regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and outlet.
Risk from Electrical Equipment	• Adequate precautions will be taken to prevent danger from electrical equipment. No materials on any of the sites will be so stacked or placed as to cause danger or inconvenience to any person or the public. All necessary fencing and lights will be provided to protect the public. All machines to be used in the construction will conform to the relevant Bangladesh Standards (BS) codes, will be free from patent defect, will be kept in good working order, will be regularly inspected and properly maintained as per BS provisions and to the satisfaction of the DDCS&PMSC.
Risk from Hazardous Activity	• All workers employed on mixing material, cement, lime mortars, concrete etc., will be provided with protective footwear and protective

Parameter/Activities	Mitigation/Compensation Measure/Guideline
	goggles. Workers, who are engaged in welding works, would be provided with welder's protective eye-shields. Stone-breakers will be provided with protective goggles and clothing and will be seated at sufficiently safe intervals.
Malarial Risk	• The Contractor shall, at his own expense, conform to all anti-malarial instructions given to him by the DDCS&PMSC and the EMU, including filling up any borrow pits which may have been dug by him.
Disruption to Users	
Loss of Access	• At all times, the Contractor shall provide safe and convenient passage for vehicles, pedestrians and livestock. Work that affects the use of existing accesses shall not be undertaken without providing adequate provisions to the prior satisfaction of the DDCS&PMSC. • The works shall not interfere unnecessarily or improperly with the convenience of public or the access to, use and occupation of public or private roads, and any other access footpaths to or of properties whether public or private.
Traffic Management	• Special consideration shall be given in preparation of the traffic control plan for the safety of pedestrians and workers at night • The temporary traffic detours in settlement areas shall be kept free from dust by frequent application of water
Traffic Control and Safety	• The Contractor shall take all necessary measures for the safety of traffic during construction and provide, erect and maintain barricades, including signs, markings, flags, lights and flagmen as may be required by the DSC for the information and protection of traffic approaching or passing through the cross section.

10.5 Chance-Find Procedures for Physical Cultural Property

688. The Contractor will be responsible for familiarizing themselves with the following "Chance Finds Procedures" in case culturally valuable materials are uncovered during excavation or any project activities as per Antiquities Act, 1968, including:

- Stop work immediately following the discovery of any materials with possible archeological, historical, paleontological, or other cultural value, announce findings to project manager and notify relevant authorities;
- Protect artifacts as well as possible using plastic covers, and implement measures to stabilize the area, if necessary, to properly protect artifacts;
- Prevent and penalize any unauthorized access to the artifacts; and
- Restart construction works only upon the authorization of the relevant authorities (e.g. UpazilaNirbahi Officer, Deputy Commissioner and Department of Archeology).

10.6 Monitoring Plan

689. Extensive monitoring of the environmental concerns of the CEIP project will be required as per World Bank guideline. The monitoring program will help to evaluate: (i) the extent and severity of the environmental impacts against the predicted impacts and baseline; (ii) the performance of the environmental protection measures or compliance with pertinent rules and regulations; (iii) trends in impacts; and (iv) overall effectiveness of the project environmental protection measures. The monitoring plans should be included in the EMP for specific sub-projects. Moreover, for all type of monitoring, a comprehensive database of the polder specific Environmental Impact and Monitoring information should be created, which will help to evaluate the impacts easily.

690. The Monitoring activities during design/preconstruction period are:

(i) checking the contractor's bidding documents, particularly to ensure that all necessary environmental requirements have been included; and

(ii) checking that the contract documents' (Construction Environmental Action Plan) references to environmental mitigation measures requirements have been incorporated as part of contractor's assignment and making sure that any advance works are carried out in good time.

691. Construction environmental monitoring is a function of supervision, and the essential purpose is to ensure adherence to the EMP. The monitoring is a daily process, which ensures that departures from the EMP are avoided or quickly rectified, or that any unforeseen impacts are quickly discovered and remedied.

692. Post project monitoring evaluation will be carried to evaluate the impacts of the Project during first three (3) years of operation of the Project. Regular monitoring of the condition of the embankment, drainage structures and slope protection structures and afforestation are important from an environmental management point of view. In addition to this activity, information on the locations, type and consequences of flooding, erosion, flora and fauna mortality, availability of fish, occupational shift, migration is required. Recommended air, noise and water quality monitoring, greening and landscaping and community feedback are also included in the Monitoring Plan. The monitoring plan and details of monitoring locations for environmental condition indicators of the project during the construction and operation stage are presented in Table 10.2 and Table 10.3.

Table 10.2: Environmental Monitoring Plan during Construction and Operation of Rehabilitation and Improvement of Polders System

Parameter	Location	Means of Monitoring	Frequency	Responsible Agency	
				Implemented by	Supervised by
During Construction					
Sources of Material	Work Site	Possession of official approval or valid operating license of suppliers materials (Cement, soil).	Before an agreement for the supply of material is finalized.	Contractor	DDCS&PMSC and M&E Consultants, BWDB
Operation of borrow site	Borrow pit/site	Visual inspection of borrow site and ensuring operational health and safety	monthly	Contractor	DDCS&PMSC and M&E Consultants, BWDB
Top Soil	Storage area	Top soil of 0.15 m depth should be excavated and stored properly	Beginning of earthwork	Contractor	DDCS&PMSC Consultant, BWDB
	do	The stored top soils should be used as cladding material over the filled lands	Immediately after filling and compaction of dredge materials	Contractor	DDCS&PMSC and BWDB
	Work Site	Some of the top soil are placed on top and berm of embankment for	At the end of filling activity	Contractor	DDCS&PMSCand BWDB

Parameter	Location	Means of Monitoring	Frequency	Responsible Agency	
				Implemented by	Supervised by
		turfing and plantation			
Erosion	Side slopes of the embankments and material storage sites	Visual inspection of erosion prevention measures and occurrence of erosion	At the end off filling activity	Contractor	DDCS&PMSC and M&E Consultants, BWDB
Traffic safety	Construction area	Visual inspection to see whether proper traffic signs are placed and flagmen for traffic management are engaged	Monthly	Contractor	DDCS&PMSC and BWDB
Air quality (dust)	Construction site	Visual inspection to ensure good standard equipment is in use and dust suppression measures (spraying of waters) are in place.	Daily	Contractor	DDCS&PMSC and BWDB
	Material storage sites	Visual inspection to ensure dust suppression work plan is being implemented	Monthly	Contractor	DDCS&PMSC and BWDB
Air Quality (PM_{10}, $PM_{2.5}$)	Close to School/ Madrasha, Hospital &Villages	Air quality monitoring	Half Yearly	Contractor through a nationally recognized laboratory	DDCS&PMSC, M&E Consultants and BWDB
Noise	Construction sites	Visual inspection to ensure good standard equipment are in use	Weekly	Contractor	DDCS&PMSC, M&E Consultants and BWDB
	Construction sites	Ensure work restriction between 09:00 pm-6:00 am close to School/ Madrasha, Hospital & Villages	Weekly	Contractor	DDCS&PMSC, M&E Consultants and BWDB
Surface Water Quality (TDS, Turbidity, pH, DO, BOD, COD etc.)	Water sample at each of river for each polder	Sampling and analysis of surface water quality	During dry season	Contractor through a nationally recognized laboratory	DDCS&PMSC, M&E Consultants and BWDB
Drinking Water Quality	Sources of drinking	Sampling and analysis of water	yearly	Contractor through a	DDCS&PMSC, M&E Consultants

Parameter	Location	Means of Monitoring	Frequency	Responsible Agency	
				Implemented by	Supervised by
(TDS, Turbidity, pH, FC, as if groundwater etc.)	water at construction camp/site	quality		nationally recognized laboratory	and BWDB
Waste Management	Construction camp and construction site	Visual inspection of collection, transportation and disposal of solid waste and solid waste is deposited at designated site	Weekly	Contractor	DDCS&PMSC, M&E Consultants and BWDB
Reinstatement of Work Sites	All Work Sites	Visual Inspection	After completion of all works	Contractor	DDCS&PMSC, M&E Consultants and BWDB
Top Soil	Storage area	Top soil of 0.15 m depth should be excavated and stored properly	Beginning of earthwork	Contractor	DDCS&PMSC and BWDB
	Storage area	The stored top soils should be used as cladding material over the filled lands	Immediately after filling and compaction of dredge materials	Contractor	DDCS&PMSC and BWDB
	Work Site	Some of the top soil are placed on top and berm of embankment for turfing and plantation	At the end of filling activity	Contractor	DDCS&PMSC and BWDB
Workers' Health safety	Workers' camp site and work site	Use of PPE by the workers, provision of safe drinking water, sanitation and first aid facilities	Daily	Contractor	DDCS&PMSC and BWDB
Habitat Condition	Khals	Observation	Four (4) times of year (dry & wet season)	Consultancy farm	DoF, BFRI, DDCS&PMSC, M&E Consultants and BWDB
Fish Migration		Catch Assessment Survey	Two (2) times of year (dry & wet season)	Consultancy farm	DoF, BFRI, DSCS, M&E Consultants and BWDB
Vegetation clearance	Each of construction sites at embankment and proposed khal bank	Survey and comparison with baseline environment	Quarterly	Contractor through nationally recognized institute	DDCS&PMSC, M&E Consultants and BWDB
During Operation and Maintenance					
Surface Water Quality	Water sample at	Sampling and analysis of	Yearly	BWDB through a	M&E Consultant

Parameter	Location	Means of Monitoring	Frequency	Responsible Agency	
				Implemented by	Supervised by
(TDS, Turbidity, pH, DO, BOD, COD etc)	each of river for each polder	surface water quality		nationally recognized laboratory	
Air Quality (Dust PM_{10}, $PM_{2.5}$)	At the baseline monitoring site	24 hours Air quality monitoring	Yearly	BWDB through a nationally recognized laboratory	M&E Consultant
Operation of hydraulic structure	In the project area	Visual inspection and public feedback	Yearly	BWDB	M&E Consultant
Crop production	In the polder area	Compare the production with the baseline	3 (Three) cropping season	BWDB through a nationally recognized institution	M&E Consultant
Soil quality	In the polder area	Compare the soil quality with the baseline	Two (2) times of year (dry & wet season)	SRDI	Consultant
Habitat Condition	Khals	Observation	Four (4) times of year (dry & wet season)	Consultancy farm	DoF, BFRI, DDCS&PMSC and BWDB
Fish Migration		Catch Assessment Survey	Two (2) times of year (dry & wet season)	Consultancy farm	DoF, BFRI, DDCS&PMSC, M&E Consultants and BWDB
Fishing Activities and Stock susceptibility		Catch Assessment Survey	Two (2) times of year (dry & wet season)	Consultancy farm	DoF, BFRI, DDCS&PMSC and BWDB
Bagda/Golda Gher and Fish Farm	Polder Area	Farm Survey	Four (4) times of year (dry & wet season)	Consultancy farm	DoF, BFRI, DDCS&PMSC,M&E Consultants and BWDB

(Source: MRDI, 2011, LGED, 2011)

Table 10.3: Environmental Monitoring Plan during Construction and Operation of Afforestation

Parameter	Location	Means of Monitoring	Frequency	Responsible Agency	
				Implemented by	Supervised by
During Implementation					
Water Quality	Water bodies near nursery	Odor and chemical testing	Half yearly	Contractor through nationally recognized laboratory	DDCS&PMSC, M&E Consultants and BWDB
Plant species selection	Nursery	Visual inspection. Type and variety of plant species to be planted for turfing on the top of embankment and foreshore	Before plantation	Contractor	DDCS&PMSC, M&E Consultants and BWDB
Waste Management	Afforestation sites and Nursery	Visual inspection of collection,	Weekly	Contractor through nationally	DDCS&PMSC, M&E Consultants and

Parameter	Location	Means of Monitoring	Frequency	Responsible Agency	
				Implemented by	Supervised by
		transportation and disposal of poly bags, debris and is deposited at designated site		recognized institute	BWDB
During Operation and Management					
Erosion	Along Alignment	Visual Inspection presence of gullies or erosion	Yearly	BWDB	M&E Consultant
Survival and growth of coastal afforested saplings and turfed grasses	Proposed afforestation foreshore area and re-sectioned embankment	Survey and comparison with baseline environment	Yearly	Contractor through nationally recognized institute	DDCS&PMSC, M&E Consultants and BWDB
Faunal composition	Proposed afforestation foreshore area and along the re-sectioned embankment	Survey and comparison with baseline environment	Yearly	Contractor through nationally recognized institute	DDCS&PMSC, M&E Consultants and BWDB

10.6.1 Qualitative Spot Checking Indicators

667. Moreover, a rapid environmental monitoring will be carried out as per the following checklist in terms of visual judgment during field visit as a control of the implementation of the Environmental Mitigation plan. Table 10.4 can be followed during the construction phase.

Table 10.4: Spot Checking Indicator

Parameter	Visual Judgment			
	Poor	Moderate	Satisfactory	Comments
Workers' Safety (provision of PPE, safe drinking water, sanitation facility, first aid facility etc.)				
Hoisting of signboard for work				
Camp Site Management				
Plant Site Management				
Borrow Area Management				
Top Soil Prevention				
Waste Management				
Occupational Health and Safety				
Stockpiling of construction materials				
Reporting and Documentation				

10.7 Third Party Validation

694. BWDB will engage independent consultants to conduct a third party validation (TPV) of the EMP implementation on a yearly basis during the construction phase. During the TPV, the consultants will review the implementation and effectiveness of various EMP activities including mitigation measures, environmental monitoring, trainings, and documentation. The consultants will also identify gaps and non-compliances in EMP implementation and propose actions for their remediation.

10.8 Documentation, Record keeping and Reporting

10.8.1 Record Keeping

695. Proper arrangements are necessary for recording, disseminating and responding toinformation which emerges from the various environmental monitoring and management programs. They are also necessary for rendering the environmental management system "auditable". However, the primary focus must remain on the pragmatic control of pollution, not the creation of complex bureaucratic procedures. BWDB will maintain database of the polder specific Environmental Impact and Monitoring information for keeping all type of monitoring record. The ESCU will assist BWDB for keeping those records initially. The trained BWDB staff will take the responsibility of record keeping and monitoring during operation phase.

10.8.2 Monitoring Records

Quantitative Physical Monitoring

696.The objective of quantitative physical monitoring is to ensure that the mitigation measures designed to prevent, reduce and where possible offset any significant adverse impacts on the environment are being implemented throughout the Project lifecycle. The DDCS&PMSC will regularly monitor and provide information to ESCU for updating the database. The DDCS&PMSC will provide the following information bi-weekly to ESCU, if not urgent.

- Sampling points;
- Dates and times of sample collection;
- Test results;
- Control limits;
- "Action limits" (circa 80 percent of the control limits) at which steps must be taken to prevent the impending breach of the control limit; and
- Any breaches of the control limits, including explanations if available.

697. The monitoring data would be continually processed as it is received, so as to avoid a buildup of unprocessed data.

General Site Inspections and Monitoring

698. A Site Inspection Checklist for recording the findings of the general site condition surveys would be developed by the respective contractors, on the basis of the Environmental Mitigation Plan described in Chapter 6 and Table 6.11, during the construction phase. The Site Inspection Checklist would be supported by sketches, as necessary.

10.8.3 Information Sources

699. A complete and up-to-date file of all relevant sources of information should be maintained by the ESCU of PMU. This file would be readily accessible and include, as a minimum, copies of the following documents:

- Current environmental permits and consents;
- Action to fulfill the requirement of annual site clearance for polder area
- All relevant national regulations, international guidelines and codes of practice;
- Manufacturers' MSDSs for all hazardous substances used on the plant;

- Manufacturers' operating manuals for all the environmental monitoring equipment;
- Current calibration certificates for all the equipment that requires calibration by an external organization; and
- The latest version of this Environmental Management and Monitoring Plan.

10.8. 4 Non-Compliance Report

700. Any breaches of the acceptable standards specified, would be reported to the PMU using a standard form, i.e. a Non-Compliance Report (NCR).

701. A copy of each completed NCR would be held on file by DDCS&PMSC, to be replaced by the reply copy when it is received. A record of corrective actions would also be made and tracked to their completion.

10.8.5 Monthly Internal Reports by DDCS&PMSC

702. The DDCS&PMSC will prepare a monthly report for issue to the ESCU of PMU. These reports will summarize the following:

- Progress in implementation of EMP;
- Findings of the monitoring programs, with emphasis on any breaches of the control standards, action levels or standards of general site management;
- Any emerging issues where information or data collected is Very goodly different from the baseline data reported in the Environmental Assessment;
- Outstanding NCRs;
- Summary of any complaints by external bodies and actions taken / to be taken; and
- Relevant changes or possible changes in legislation, regulations and international practices.

10.8.6 Bi-annual Progress Report by BWDB

703. ESCU of BWDB will prepare the Bi-annual progress report on environmental management and will submit to the World Bank for review during construction phase. The progress report will summarize the information presented in Article 10.6.

10.8.6.1 EMP complianceEnvironmental Audit Report &Third Party Monitoring Report

704. It is expected that BWDB will conduct annual environmental audits. In addition, the environmental audit will be carried out before the mid-term evaluation and before project closing. All Environmental Audit Report will be shared with Bank. Environmental monitoring will be conducted during the project.

Third Party Monitoring

705. The Third Party Monitoring consultants will monitor the quality of environmental compliance and will share their findings with the World Bank.

Donor Agency/WB Monitoring

706. The Donor Agency/WB will also monitor from time to time the quality of environmental compliance as part of their regular implementation support missions.

10.9 Contractual arrangements for EMP implementation

707. A fixed Budget will be assigned for EMP implementation. The contractors may need orientation on the requirement of the EMP in the pre-bidding meeting. The contractor needs to submit a Construction Environmental Action Plan (CEAP) based on the EIA including the

EMP in line with the construction schedule and guideline. The CEAP needs to be reviewed by the supervision consultant and cleared by BWDB and World Bank.

10.9.1 Guideline to Incorporate Environmental Management in Bid Document & Preparation of EAP

- Prepare cost estimates, to be incorporated in Bid Documents.
- The EMP along with the good environmental construction guidelines to be incorporated in the bid document's work requirements.
- Preparation of work requirement (addendum/corrigendum to polder & hydraulic structure construction/afforestation) and
- Corrigendum / Addendum to polder/embankment specification, if any, as special provisions to be incorporated in bid document.
- Penalty clauses for not complying with EMP requirements to be incorporated. Indicative penalty clauses proposed in the CEIP-I are presented below (Addendum to Clause 17.2 Contractor's Care of the Works of FIDIC).
- The contractor has to follow all traffic safety measures as defined in the technical specification. Damage shall be levied at the rate Tk. 3000/- per day per location for non – conformity of traffic safety measures as per the decision of the engineer.
- The contractor has to follow all environmental mitigation measures as defined in the technical specification read along with the Environmental Management Plan for the specific CEIP activities. Damage shall be levied at the rate Tk. 3000/- per day per location for nonconformity of Environmental Management Plan measures as per the decision of the BWDB Engineer.
- The contractor has to ensure that prior to every monsoon season, during the construction period; all the temporary and permanent cross drainage structures are free from debris as defined in the Technical Specifications read along with the Environmental Management Plan. Damage shall be levied at the rate of Tk.3000/- per day per location for non-conformity as per the decision of the Engineer.
- The contractor has to ensure that sufficient numbers and good quality Personnel Protective Equipment (PPE), should be provide to staff and labor all time as defined in the labor codes read along with the EMP. Damage shall be levied at the rate of Tk. 1000/- per day for non-conformity as per the decision of the Engineer.

10.9.2 Guideline for Compensation and Contingency Plan during Project Period

708. Compensation becomes necessary when project impacts cannot be mitigated satisfactorily. This can be paid in cash or kind and the emphasis should be on ensuring fairness and causing minimum inconvenience to the affected party. The most common cause of compensation payment is displacement of people and loss of productive land due to land acquisition, tree cutting, or property damage. Such impacts can rarely be fully compensated. The compensation should be given as per provision of the Resettlement Action Framework. Any disputes over the compensation should be handles by the Grievance Redress Committee.

709. In addition to the compensation, water management projects should also have a contingency plan to deal with emergencies and accidents. Such incidences encompass a whole range of situations from personal injury during operation of a machine to breaching of an embankment. Therefore, BWDB would prepare for the following emergency situations:

- Embankment failure during a flood – keep sufficient numbers of sand bags in reserve.
- Bank caving/erosion – keep sufficient numbers of concrete blocks and sand bags in reserve.
- Have an emergency evacuation plan for the people in the line of danger.

10.10 EMP Implementation Cost

710.The estimated costs for the environmental management and monitoring activities are set in Table 10.5.

Table 10.5: Tentative Cost Estimates for Environmental Management and Monitoring*

Sl. No	Description of EMP activities	BDT	In Thousand $
1.	Crop compensation to the indirect loser/ land owner/ share croppers of construction sites /damage to dredge spoils	75715.00	946.44
2.	Soil quality monitoring including N,P,K, S, Zn, salinity, organic Matter, pH etc. during preconstruction, construction and post construction period 6 samples in polder 47/2 = 6 samplesx3 times @ Tk.5,000	90000.00	1125.00
3.	Habitat Observation for four (4) times of year (dry & wet season).	50000.00	625.00
4.	Construction of fish sanctuary in perennial khals	50000.00	625.00
5.	Catch Assessment Survey for two (2) times of a year (dry & wet season).	142500.00	1781.25
6.	Farm Survey for four (4) times of year (dry & wet season).	60000.00	750.00
7.	Awareness program on plant and wild life conservation.	96000.00	1200.00
8.	Consultancy services cost for supervision and monitoring of EMP	276440.00	3455.50
9.	Training to the farmers with field demonstration regarding IPM and ICM.	80000.00	1000.00
10.	Awareness building up to local community for conservation of threatened fish species.	40000.00	500.00
11.	Training to the fisherman/pond owner with field demonstration regarding pond culture.	40000.00	500.00
12.	Release fish fry in the khals inside the Polder after completion of construction works.	37500.00	468.75
13	Air and noise quality monitoring and analysis.	200000.00	2500.00
14	Solid and liquid waste disposal arrangement.	60000.00	750.00
15	Capacity building and training to the WMOs regarding gate operation, post project monitoring	900000.00	11250.00
16	Consultancy services cost for river bank erosion monitoring	1200000.00	15000.00
17	Training to the Contractors regarding environmental management	100000.00	1250.00
18	Training of Environmental awareness of local population	80000.00	1000.00

Sl. No	Description of EMP activities	BDT	In Thousand $
19	Updating EMP as per requirement.	100000.00	1250.00
20	Construction of alternative or bypass channels at each construction sites.	1061053.00	13263.16
21	Materials for net pen culture (at least 25 households in each word/council of a Union).	324000.00	4050.00
22	Conservation and stocking of threatened fish species (at least 3 spots).	120000.00	1500.00
23	Conserve threatened animals	300000.00	3750.00
24	Campaigning and providing training on improved culture practices as well as the rice cum golda farming.	200000.00	2500.00
25	Emergency budget allocation for closing breach points of embankments and repairing the damage of structure	1200000.00	15000.00
26	Surface and ground Water quality monitoring cost (testing for Turbidity, pH, DO, BOD, Salinity etc. + test of As, e etc. for HTWs at workers' camp site) 6 samples in polder-47/2 during pre-construction, construction and post-construction periods + water quality analysis of HTWs of 10 workers' camp= (Tk.4,000x6x3) + (Tk.700X10)	79000.00	987.50
27	Additional Tree Plantation at HH and other grounds to compensate the tree cutting (planting 3 trees for cutting 1tree) @ Tk.50 each tree including the cost of sapling, gabion and nursing etc. (19,834 nos. of trees)	991700.00	12396.25
28	Water sprinkling at re-sectioned/newly constructed embankments (@ Tk.3,000 per km (of embankment 17.49 km)	51750.00	646.88
29	WMOs monitoring cost	120000.00	1500.00
Total cost of EMP		**8125658**	**101570.73**

Note: 1 $= 80 BDT

10.11 EMP Updating

711. The study infers that the EMP has been developed assessing the impacts of interventions on the basis of baseline and prediction information. But monitoring has to be carried out to collect information on the impacts at actuality resulted due to construction of interventions. Furthermore, actual information due to implementation of the EMP measures need to be collected for updating the EMP to make the development more environmental friendly as because EMP is not an one time plan rather it is a plan which needs updating continuously.

10.12 Grievance Redress Mechanism

712. BWDB will establish a Grievance Redress Mechanism (GRM) as a means to ensure social accountability and to answer to queries and address complaints and grievances about any irregularities in application of the guidelines adopted in this EMF for assessment and mitigation of social and environmental impacts. Based on consensus, the procedure will help

to resolve issues/conflicts amicably and quickly, saving the aggrieved persons from having to resort to expensive, time-consuming legal action.The procedure will however not pre-empt a persons right to go to the courts of law.

10.12.1 Grievance Redress Focal Points

713. A Grievance Redress Committee (GRC) at local level will be formed for each Union with union level representation to ensure easy accessibility by the project affected persons and communities. This local GRC will be the local focal points of the project GRM. The GRM sets out the information and communications strategy to ensure that PAPs and communities are fully informed about their rights to offer suggestions and make complaints. All grievances received through the GRM process will primarily be forwarded to the GRCs. The Secretariat for each GRC will be at the office of the Executive Engineer. If any grievance is not resolved at GRC, the aggrieved person may request the convener of GRC to forward the case to the Project Director at PMU. The GRC will officially forward the cases with their comments to the Project Director. Hearing of petitions with GRCs will be held at the Convener's office or at Union Parishad/Ward Councilor's office as agreed by the committee members. The membership of the GRCs will ensure proper presentation of complaints and grievances as well as impartial hearings and investigations, and transparent resolutions.

Membership of GRC

1. Executive Engineer (BWDB Division Office) : Convener
2. Representative of the RP Implementing NGO : Member-Secretary
3. Local UP Chairman /Ward Councillor : Member
4. Teacher from Local Educational Institution (nominated by Upazila Administration) :Member
5. Representative from Local Women's Group :Member
6. Representative from the PAP Group :Member

714. Members of the GRCs will be nominated by the Executive Engineer at division level and approved by the Project Director, PMU, BWDB, Dhaka.

10.12.2 Grievance Resolution Process

715. All complaints will be received at the GRCs facilitated by the implementing agency. The aggrieved persons may opt to make complaints directly to the Project Director or Secretary of the MoWR or even to the court of law for resolution. The Member Secretary will review and sort the cases in terms of nature of grievance, urgency of resolution, and schedule hearings in consultation with the Convener. All cases will be heard within four weeks from the date of receiving the complaints.

716. If the resolution attempt at the local level fails, the GRC will refer the complaint with the minutes of the hearings to the Project Director at PMU for further review. The Project Director will assign the ESCU at PMU for review the grievance cases and assist Project Director in making decision. The ESCU will review the case records and pay field visits for cross examining and consult the GRC members and aggrieved persons, if required. If a decision at this level is again found unacceptable by the aggrieved person(s), BWDB can refer the case to the MoWR with the minutes of the hearings at local and headquarters levels. At the ministry level, decisions on unresolved cases, if any, will be made in no more than four weeks by an official designated by the Secretary, MoWR. A decision agreed with the

aggrieved person(s) at any level of hearing will be binding upon BWDB. The GRM Process is shown in Figure 10.3.

717. To ensure that grievance redress decisions are made in formal hearings and in a transparent manner, the Convener will apply the following guidelines:

- Reject a grievance redress application with any recommendations written on it by a GRC member or others such as politicians and other influential persons.
- Remove a recommendation by any person that may separately accompany the grievance redress application.
- Disqualify a GRC member who has made a recommendation on the application separately before the formal hearing:
- A GRC member when is removed, appoint another person is to be appointed in consultation with the Project Director.

The Convener will also ensure strict adherence to the impact mitigation policies and guidelines adopted in this SMRPF and the mitigation standards, such as compensation rates established through market price surveys.

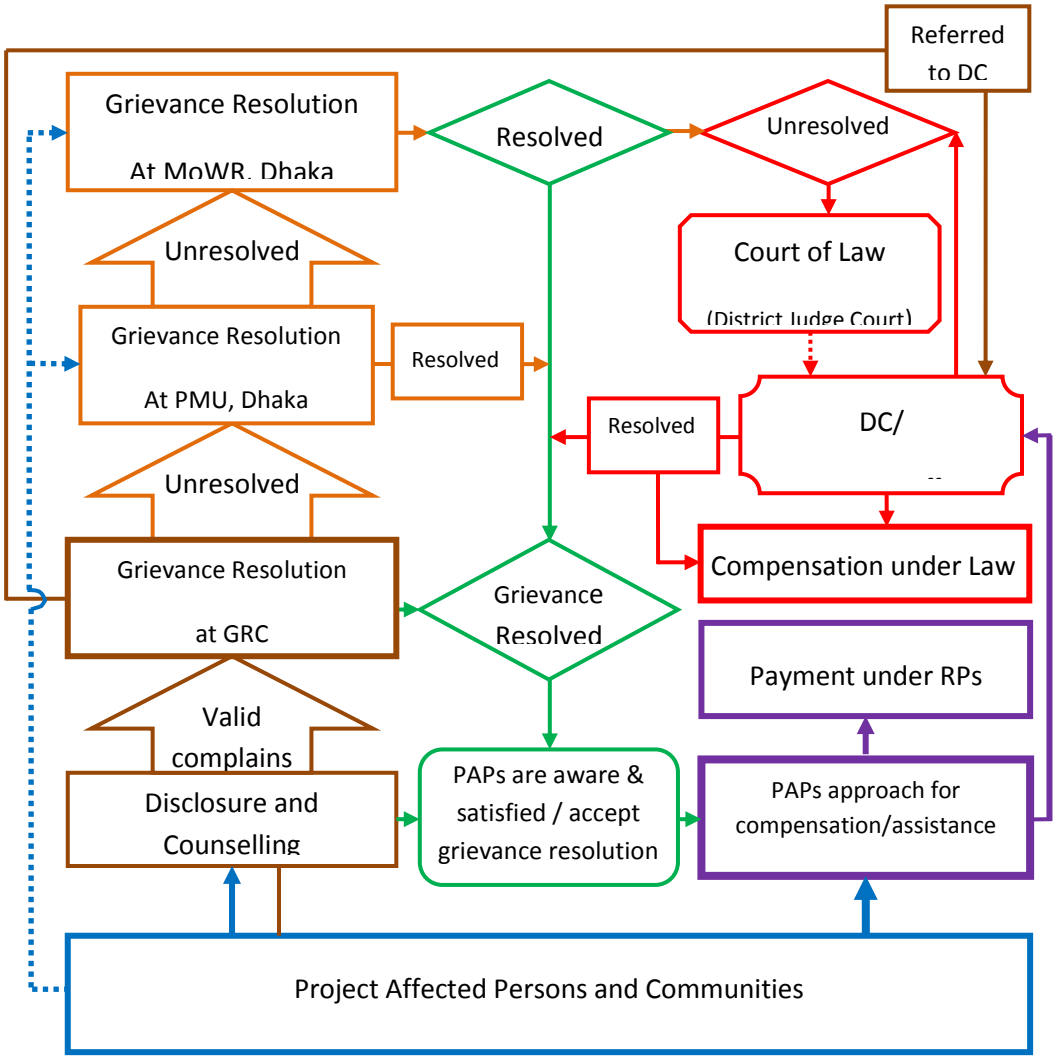

Figure 10.3: GRM Process flow Chart

10.12.3 GRM Disclosure, Documentation and Monitoring

718.The affected persons and their communities will be informed of the project's grievance redress mechanism in open meetings at important locations and in PAP group meetings. Bangla translations of the EMF and the GRM in the form of information brochures will be distributed among the project affected persons. The PAPs will also be briefed about the scope of the GRC, the procedure for lodging grievances cases and the procedure of grievance resolution at the project level.

719. To ensure impartiality and transparency, hearings on complaints will remain open to the public. The GRCs will record the details of the complaints and their resolution in a register, including intake details, resolution process and the closing procedures. BWDB will maintain the following three Grievance Registers:

Intake Register: (1) Case number, (2) Date of receipt, (3) Name of complainant, (4) Gender, (5) Father or husband, (6) Complete address, (7) Main grievance regarding social (loss of land/property or entitlements) or environmental, (8) Complainants' story and expectation with evidence, and (8) Previous records of similar grievances.

Resolution Register: (1) Serial no., (2) Case no.,(3) Name of complainant, (4) Complainant's story and expectation, (5) Date of hearing, (6) Date of field investigation (if any), (7) Results of hearing and field investigation, (8) Decision of GRC, (9) Progress (pending, solved), and (10) Agreements or commitments.

Closing Register: (1) Serial no., (2) Case no., (3) Name of complainant, (4) Decisions and response to complainants, (5) Mode and medium of communication, (6) Date of closing, (7) Confirmation of complainants' satisfaction, and (8) Management actions to avoid recurrence.

720. Grievance resolution will be a continuous process in RP implementation. The PMU and SMOs will keep records of all resolved and unresolved complaints and grievances (one file for each case record) and make them available for review as and when asked for by WB and any other interested persons/entities. The PMU will also prepare periodic reports on the grievance resolution process and publish these on the BWDB website. The format of SMF may be used for periodic grievance reporting.

10.13 Capacity Building

721. Since the effectiveness of the Environmental Assessment & implementation depends considerably on the understanding and preparedness of their Engineers and in particular their Environmental Team (Consisting of Contracto, Environmental specialist, Consultant environmental specialist and ESCU of BWDB). It is important that the project authority makes effort to sensitize the Engineers and Environmental Team on management of environmental issues, provides guidance, and encourages them to build requisite capacities. Table 10.6 provides a summary of various aspects of the environmental and social trainings to be conducted at the construction site. PMU may revise the plan during the Project implementation as required.

722. During the O&M phase of the Project, these trainings will continue to be conducted by BWDB staff for all relevant O&M personnel and community.

Table 10.6: Environmental Training

Contents	Participants	Responsibility	Schedule
General environmental and socioeconomic awareness; Environmental and social sensitivity of the project area; Key findings of the EIA; Mitigation measures; EMP; Social and cultural values of the area.	Selected BWDB; PMU and DDCS&PMSC staff	DDCS&PMSC & ESCU	Prior to the start of the Project activities (To be repeated as needed.)
General environmental and socioeconomic awareness; Environmental and social sensitivity of the project area; Mitigation measures; Community issues; Awareness of transmissible diseases Social and cultural values.	PMU; DDCS&PMSC; selected contractors' crew	DDCS&PMSC & ESCU	Prior to the start of the field activities. (To be repeated as needed.)
EMP; Waste disposal; HSE	Construction crew	Contractors	Prior to the start of the construction activities. (To be repeated as needed.)
Road/waterway safety; Defensive driving/sailing; Waste disposal; Cultural values and social sensitivity.	Drivers; boat/launch crew	Contractors	Before and during the field operations. (To be repeated as needed.)
Camp operation; Waste disposal; HSE Natural resource conservation; Housekeeping.	Camp staff	Contractors	Before and during the field operations. (To be repeated as needed.)
Restoration requirements; Waste disposal.	BWDB core unit, Restoration teams	Contractors	Before the start of the restoration activities.
Strengthening of water management organizations(i.e. WMGs, WMAs and WMF) and beneficiaries organizations	Member of water management organizations(i.e. WMGs, WMAs and WMF) and beneficiaries organizations	BWDB, ESCU, Contractor	Before and during construction activities

723. Capacity building training programs should be undertaken in the following area:

- Training of the management level officials of BWDB, BWDB environmental compliance personnel on the overall environmental concerns and responsibilities for implementing EMP;
- Recruitment of new professionals with background on environment, if required and provide necessary training ;
- Organizing workshop, seminar, with stakeholders on the environmental concerns of CEIP ;
- Special training program for the contractors and workers on the EMP and their responsibilities, who will actually be involved in the construction of the project interventions. The Contractors will be provided guideline for preparation of Environmental Action Plan in line with the construction work plan;
- Training of the WMOs on successful operation of hydraulic structures; and
- Training on structured format in reporting for all stages of implementation and those of relevant agencies who are involved in EMP implementation.

724.The training programs should be arranged before implementation of the interventions in the Polder area. A Detail plan can be made by the proposed ESCU of BWDB.

Annexure-5: Status of Implementation of the WB Aid memoire action plan

The following key actions were mutually agreed with the CEIP-I PMU during the Implementation Support review mission during **February 26 to March 20, 2023.**

Sl. No.	Sub-actions	Agreed time line (SR: February 26 to March 20, 2023)	Updated status
1	Implement the recommendations of the monthly EHS meeting	Continuous	Being implemented
2	Follow up the recommendations of third party annual Environmental audit report	Continuous	Being followed
3	Complete the remaining demolishing activities of rented CC block yards of Package 1	June 30, 2023	Partly completed. The whole activities will be furnished by end of December, 2023.
4	Start the decommissioning activities of rented CC block yards of Package 2	July 30, 2023	Done
5	Share lesson learned note on Environmental safeguard practices in Package 2	September 30, 2023	Expected to be shared with the World Bank by end of October, 2023.
6	Share a brief note on Environmental improvement areas in Package 2	September 30, 2023	Expected to be shared with the World Bank by end of October, 2023.
7	Conducting regular toolbox talk	Continuous	Being conducted
8	Continue COVID-19 safety measurements following the guidelines in work and CC block manufacturing sites	Continuous	Being followed

Annexure-6: Compliance matrix of the recommendations of last report

A matrix of the recommendations suggested in the last report against the actions that was targeted for January-June 2023 are presented here:

Sl.	Suggested recommendation in previous report	Progress	Remarks
1	Management of Covid-19 according to approved EPP and from past experience	Being Followed	Continuous
2	Assure the use of PPE by the workers.	Being Followed	Continuous
3	EHS practices for emergency works in Pkg. 01 area	Done	-
4	Documentation on Environmental Safeguard practices	Done	-
5	Completing the decommissioning activities in Pkg. 01 area	On-going	Needs to be completed
6	Construction of fish sanctuaries in Pkg. 02 areas	Done	-
7	Finalizing the report on Riverbank Erosion Monitoring under Environmental Mitigation Works (EMW) of Pkg. 02	Done	-
8	Sharing the activity completion report on fisheries implemented in in Pkg. 02 areas	Done	-
9	Completing the training of the WMOs regarding Capacity Building on Gate operation & Post Project Monitoring under Environmental Mitigation Works for Pkg. 02	Done	-
10	IPM training for WMO members in Pkg. 02 areas	Done	-
11	Implementations of the recommendations of 6th annual Environmental report	Being Followed	Continuous

Annexure 7: Time bound action plan for suggested actions items of 15th bi-annual environmental monitoring report for the period of January-June, 2023

Sl	Recommended actions	Responsible party	Target date	Means for implementation	Challenges	Suggestive measures
01	02	03	04	05	06	07
1	Assure the use of PPE by the workers while implementing defect work	Contractor of Package W-02	Continuous	Regular monitoring by EHS officer & discussing in Tool-box talking	In some cases workers & staffs are decline to use PPE	Contractors should also be careful on the issue
2	Documentation on Environmental Safeguard practices	Contractor of Package W-02	October, 2023	Submission in time	Willingness of contractor	DDCS&PMS consultants and PMU Specialists should monitor closely
3	Completing the decommissioning activities in Pkg. 01 & 02 areas	Contractors of Package W-01 & 02	December, 2023	The Contractor Package-1 is following the developed decommissioning plan	Almost completed and no significant challenges are observed.	DDCS&PMS consultants and PMU Specialists should monitor closely
4	Finalizing as well as implementing annual environmental audit report	Contractor of Package W-02	Continuous	Third party has shared a plan for proper implementation	No major challenges	DDCS&PMS consultants and PMU Specialists should monitor closely