

Semi-annual Environmental Monitoring Report

Project No. 52174-001
December 2020

BAN: Emergency Assistance Project

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Emergency Assistance Project

ADB Project 52174-001 | Grant 0582-BAN | TA 9546 BAN

Environmental Monitoring Report

Fifth Semi-Annual Environmental Monitoring Report

Reporting Period

July to December 2020

Implementing Agency

Local Government Engineering Department (LGED)

Department of Public Health Engineering (DPHE)

Ministry of Local Government, Rural Development and Cooperatives (MLGRDC)

Roads and Highways Department (RHD)

Ministry of Road Transport and Bridges

Bangladesh Rural Electrification Board (BREB)

Ministry of Power, Energy and Mineral Resources

December 2020

BAN: EMERGENCY ASSISTANCE PROJECT

Fifth Semi-Annual Environmental Monitoring Report

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ABBREVIATIONS

ADB	Asian Development Bank
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BREB	Bangladesh Rural Electrification Board
DPHE	Department of Public Health Engineering
EAP	Emergency Assistance Project
EARF	Environmental Assessment and Review Framework
ECA	Environmental Conservation Act
ECC	Environmental Clearance Certificate
ECR	Environmental Conservation Rules
EIA	Environmental Impact Assessment
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ETP	Effluent Treatment Plant
GoB	Government of Bangladesh
H&S	Health and Safety
IEE	Initial Environmental Examination
LGED	Local Government Engineering Certificate
MPEMR	Ministry of Power, Energy and Mineral Resources
NFP	National Forest Policy
NOC	No Objection Certificate
RHD	Roads and Highways
RRRC	The Refugee Relief and Repatriation Commission
SPS	Safeguards Policy Statement
SSC	Site Clearance Certificate
ToR	Terms of Reference
UN	United Nations
USEPA	United States Environmental Protection Agency
WB	World Bank

Executive Summary

1 This report is the Fifth Semi-annual Environmental Monitoring Report (hereinafter refereed as EMR) of the ADB financed Emergency Assistance Project (ADB) in Bangladesh, which covers the period of July – December 2020. The report is produced to comply with the environmental scope stipulated in the sub-projects' Environmental Management Plans (EMPs) implemented by various Government Agencies/Departments under the project.

2 The Government of Bangladesh (GoB) requested Asian Development Bank (ADB) on 7 May 2018 for grant support to provide basic infrastructure and essential services to displaced persons. Given the humanitarian need and heart-wrenching condition of the displaced persons, ADB is providing grant financing of \$100 million for the first phase of the project. ADB' support is focused, selective, and well-targeted in the areas of (i) road access to and within camps; (ii) water and sanitation; (iii) energy supply; and (iv) disaster risk mitigation. It builds on the support provided by GoB and complement support provided by the United Nations (UN) agencies, the World Bank (WB) and other agencies. With the principle of putting people first, the project seeks to ease the vulnerabilities and risk of hunger, disease, and disaster. The project is known as Emergency Assistance Project (Project No. 52174-001, Grant 0582-BAN).

3 ADB environmental safeguards objectives are: (i) to ensure the environmental soundness and sustainability of projects and (ii) to support the integration of environmental considerations into the project decision-making process. ADB environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.

4 The project has been categorized as B for environment under the ADB's Safeguards Policy Statement 2009 (SPS). Individual subprojects are screened and classified, and based on the classification, and where required, environmental assessments are undertaken and EMPs developed. Based on Schedule 1 of the ECR, subprojects are likely to require IEEs and EIAs.

5 Subprojects selected are not likely to have significant environmental impacts. Environmental guidelines for subproject selection in **Table 1** provide further guidance to avoid or minimize adverse impacts during the identification and finalization of subprojects.

Table 1 Environmental guideline for new subproject

Component	Environmental Guidelines for Subproject Selection
Overall (Applicable to all Subprojects)	Comply with all applicable national and local laws, regulations, and standards.
	Comply with ADB's SPS.
	Avoid land acquisition and involuntary resettlement and have no impacts on indigenous peoples.
	Avoid protected areas and areas of historical/cultural value.
	Avoid building or setting-up construction camp sites along elephant migration routes
Transport Infrastructure	Do not build new* roads and avoid widening existing roads, as much as possible.
	Avoid hill cutting.
	Do not build new* bridges.
	Avoid cutting trees on the roadside and if any trees have to be removed, plant two new trees for every tree lost.
	Consult the relevant archaeological agency regarding archaeological potential subproject areas to ensure that these are located in areas where there is a low risk of chance finds.

6 The Department of Environment is responsible for environmental issues while forest issues are looked after Department of Forests. Over the years, the MoEFCC has adopted number of legal instrument in the form of Acts for the protection and conservation of the environment.

7 The important elements of ADB's resettlement policy statement (APS 2009) include the following:

- i. Compensation to replace lost assets, livelihood, and income;
- ii. Assistance for relocation, including provision of relocation sites with appropriate facilities and services; and
- iii. Assistance for rehabilitation to achieve at least the same level of well-being with the project as without it.

8 Refer to **Table 2** for the status of the respective component sub-projects with regard to compliance status to ADB's policy statement (APS 2009).

Table 2 ADB Safeguards Policy Status

ADB Safeguard Policy Statement	Contract Package Status				
	Cyclone Shelter Sub-project	Road Sub-project	Drainage/erosion Sub-project	Water Supply Sub-project	Others Sub-project
(i) Involuntary resettlement will be avoided whenever feasible.	complied	complied	complied	complied	complied
(ii) Where population displacement is unavoidable, it should be minimized.	No displacement	No displacement	No displacement	No displacement	No displacement
(iii) All lost assets acquired or affected will be compensated. Compensation is based on the principle of replacement cost.	NA	NA	NA	NA	NA
(iv) Each involuntary resettlement is conceived and executed as part of a development project or program. Affected persons need to be provided with sufficient resources to re-establish their livelihoods and homes with time-bound action in co-ordination with civil works.	NA	NA	NA	NA	NA
(v) Affected persons are to be fully informed and closely consulted.	complied	complied	complied	complied	complied
(vi) Affected persons are to be assisted to integrate economically and socially into host communities so that adverse impacts on the host communities are minimized and social harmony is promoted.	NA	NA	NA	NA	NA
(vii) The absence of a formal title to land is not a bar to ADB policy entitlements.	NA	NA	NA	NA	NA
(viii) Affected persons are to be identified and recorded as early as possible to establish their eligibility, through a census, which serves as a cut-off date, and prevents subsequent influx of	NA	complied	complied	NA	NA

ADB Safeguard Policy Statement	Contract Package Status				
	Cyclone Shelter Sub-project	Road Sub-project	Drainage/erosion Sub-project	Water Supply Sub-project	Others Sub-project
encroachers.					
(ix) Particular attention will be paid to vulnerable groups including those without legal title to land or other assets; households headed by women; the elderly or disabled; and indigenous groups. Assistance must be provided to help them improve their socio-economic status.	NA	complied	complied	NA	NA
(x) The full resettlement costs will be included in the presentation of project costs and benefits.	NA	NA	NA	NA	NA

9 To date 49 sub-projects have been finalized, instead of 60 sub-projects preliminarily identified in 2018. Out of these 49 subprojects, BREB implements eight subprojects, DPHE implements 21 subprojects, LGED implements 17 subprojects while RHD implements three subprojects. In terms of categorization, 31 subprojects were category B based on SPS 2009.

10 According to SPS 2009, category B projects and/or subprojects were required to prepare IEEs. Given that the subprojects under the EAP were identified after the approval of the Grant, an EARF was prepared and agreed between the government and ADB. The EARF was disclosed to ADB website in June 2018.

11 However, out of the 49 subprojects contracts awarded, 14 packages have already been completed. The summary status of the subprojects is given in **Table 3**.

Table 3 Sub-project progress status of EAP (information up to 31 December 2020)

Executing Agency	Total Package	Contact Awarded	Completed Package	Financial Progress
BREB	08	08	07	94%
DPHE	21	21	06	84%
LGED	17	17	01	92%
RHD	03	03	00	97%
Total	49	49	14	90%

12 To date (December 2020) out of 31 B category projects according to ADB classification, 31 IEEs (including 7 indicative IEE) have been drafted with 31 EMPs and 8 ECoPs. Some EMPs and subsequent IEEs are due to either detailed design is not yet completed, additional work needs to be done, etc. **Table 4** represents the status of preparation of safeguards documents.

Table 4 Summary Status of safeguards documents preparation for B category subprojects

Agency	Total B Category project	IEE	EMP	ECoP
DPHE	13	13	13	4
LGED	14	14	14	2
RHD	02	2	2	0
REB	02	2	2	2
Total	31	31	31	8

13 To date 13 EMPs for DPHE, 14 EMPs for LGED, 2 EMPs for BREB and 2 EMPs for RHD have been prepared. Of 31 IEEs, 13 IEEs for DPHE, 14 IEEs for LGED, 2 IEEs for RHD and 2 IEEs for BREB have been prepared.

14 During planning phase in 5th six-month July-December 2020, a total 5 visits have been conducted by the Environmental specialists appointed by ADB. Besides, until date 51 environmental safeguards monitoring visits have been conducted at different times during the current cycle (5th six-month July-December 2020) of monitoring period. See **Table 5** for details break down. Environmental compliance report has been submitted to the concerned EA and ADB based on site visit and follow ups were tracked to observe corrective measures and desired progress.

Table 5 Environmental safeguards monitoring visit conducted during Jul- Dec 2020

Site Visit During Planning Phase	Site Visit During Construction Phase				Total
	BREB	DPHE	LGED	RHD	
5	4	16	19	12	56

15 Besides monitoring visits, onsite trainings and meetings with contractors and EAs were conducted during the current monitoring period. The site-based trainings were arranged by the environmental specialists to sensitize the contractors on implementing the environmental safeguards according to the EMPs and other contracts. A total 14 onsite trainings were arranged during July – December 2020 where total 160 participants were attended. Environmental specialists have given a brief lecture to the participants majorly focused on: occupational health and safety including PPEs, safety signage, housekeeping, waste management, management of hazardous materials, emergency procedures. Moreover, explained about the standard procedure for COVID-19 such as appropriate PPEs, entry protocol to the worksite, hand washing protocol, discourage gathering at site and maintain physical distance, place signboard and posters at site on COVID response etc. However, all the participants hold a very positive attitude towards the training program. Details of the monitoring visits are given in **Table 6** below.

Table 6 Environmental safeguards trainings conducted during Jul- Dec 2020

Onsite Training and No. of Participant				Total
BREB	DPHE	LGED	RHD	
1	4	6	3	14
8	39	77	36	160

16 Besides trainings, regular meetings with EAs were conducted on frequent basis to better coordinate with all the EAs. To date 21 meetings have been conducted. **Table 7** below represents the breakdown of meetings carried out by the environmental specialists.

Table 7 Meetings conducted on environmental safeguards implementation during Jul- Dec 2020

Meeting with EAs				Total
BREB	DPHE	LGED	RHD	
2	6	8	5	21

17 To conclude, the Environmental safeguards compliance performance of the Contractors are improving slowly but steadily. The onsite training workshop and regular monitoring of ADB to sensitize the EAs and contractors seems to have obvious impact in this regard. However, due to accessibility issues

attributed to restrictions associated with COVID-19, implementation of environmental safeguards is hindered, causes increasing trend in noncompliance issues. In addition, inadequate safety measures are arranged to encounter COVID-19 in the construction sites.

18 There were instances that can be considered as poor implementation of the EMPs due to construction works of EAP. To address these concerns, a number of recommendations were made to improve the EMP implementation. The actions recommended have been implemented, ongoing, and to be monitored. **Table 8** presents the environmental concerns along with the corrective actions.

Table 8 Environmental issues and corrective action plan

No.	Environmental Issues	Corrective Action	Component	Requirement	Responsibility
1	Obtaining legal permits (ECC and NOCs) from the DOE and Forest Department are still under process	EAs require to expedite the process of securing the permits from the DOE, the Forest Department, and other relevant authority.	DPHE/ LGED	Clearance/NOC	DPHE/LGED
2	None of the contractors has appointed EHSO at the project sites	Appoint qualified EHSO to guide the contractors in the preparation and implementation of site-specific EMPs and follow up EHS issues with EAs, DMSC, and ADB. The EAs need to pay attention to improve the implementation of the EMPs by the contractors.	RHD/ DPHE/ LGED	EHS Officer	RHD/ DPHE/ LGED
3	Seven indicative IEEs for DPHE component (surface water supply and waste management packages) require revisions for disclosure on the ADB website.	Final/detailed design should be provided to the environmental consultant to finalize the remaining IEEs for disclosure.	DPHE	Final detailed design	DPHE
4	Hillocks located along the RHD road alignment are being razed for the improvement of the road side drainage system therefore; gully erosion is formed at the slope due to torrential downpour.	Disturbance to hill slope needs to be stopped, if it cannot be avoided, contractor should be required to implement bioengineering measures such as RCC wall, geotextile over the slopes of the hill with appropriate nailing, and planting of indigenous species on the slopes.	RHD/W1 and RHD/W2	Hill slope protection measures	RHD
5	Waterlogging problems due to changes of stream flow that occurred along the cyclone shelter in Teknaf (LGED/W9) causing inundation to the adjacent land.	Appropriate drainage facilities such as piped drain beneath the cyclone shelter would be the solution for the waterlogging problem. Other measures need to be explored to address the issue. Consultations must be conducted with the affected community to get their views and concerns on a more appropriate solution.	LGED/W9	Drainage facility	LGED
6	Occupational safety and health measures are partially addressed at construction sites in EAP. COVID-19 response on health and safety guidance is also partially followed in EAP sites.	Appropriate use of health and safety equipment, PPEs, and monitoring and documentation of OHS hazards at work and camp sites. Technical Guidance for Social and Institutional Containment and Prevention of Pandemic COVID-19 Infection by GOB and ADB has to be complied with. Monitoring of compliance by contractors need to be strictly enforced.	LGED/BREB/ DPHE/RHD	Compliance to H&S Plan and guidelines for COVID-19	Contractors

1 Introduction

1.1 BACKGROUND

19 This report is the Fifth Semi-Annual Environmental Monitoring Report (hereinafter referred as EMR) of the ADB financed Emergency Assistance Project (ADB) in Bangladesh, which covers the period of July – December 2020. The report is produced to comply with the environmental scope stipulated in the sub-projects' Environmental Management Plans (EMPs) implemented by Government Agencies/Departments under the project.

20 This report is drafted by the Environmental Specialist working for Bangladesh Residence Mission (BRM) of ADB to ensure preparation of Environmental Safeguard documents for various subprojects to comply with ADB and Bangladesh Government's environmental rules and regulations as well as implementation of environmental mitigation measures during the construction phase. Environmental issues also are anticipated in this report to be identified in advance for avoidance and to ensure timely completion of the project.

1.2 THE PROJECT

21 On 7 May 2018, the Government of Bangladesh (GoB) requested Asian Development Bank (ADB) for grant support to provide basic infrastructure and essential services to displaced persons¹. Given the humanitarian need and heart-wrenching condition of the displaced persons, ADB is providing grant financing of \$100 million for the first phase of the project. ADB's support is focused, selective, and well-targeted in the areas of (i) road access to and within camps; (ii) water and sanitation; (iii) energy supply; and (iv) disaster risk mitigation. It builds on the support provided by GoB and complement support provided by the United Nations (UN) agencies, the World Bank (WB) and other agencies. With the principle of putting people first, the project seeks to ease the vulnerabilities and risk of hunger, disease, and disaster. The project is known as Emergency Assistance Project (Project No. 52174-001, Grant 0582-BAN)².

22 The project supports the Government of Bangladesh in addressing the immediate and urgent needs of the displaced persons from Myanmar in Cox's Bazar District, as identified by the United Nations (UN) in

¹ United Nations, Strategic Executive Group. 2018. 2018 JRP for Rohingya Humanitarian Crisis, March–December 2018. Cox's Bazar. Various terminology is used in media, official and unofficial documents to describe the affected people. Terminology used herein is intended solely to identify such people for the purposes of this paper, and not to assert any view regarding the manner or circumstances of such persons' displacement. Such terminology may not reflect the terminology used or accepted by any government or any agency thereof. ADB expresses no view and takes no position herein regarding the legal rights or political assertions or the characterization of any such persons. The use of the term "displaced persons" in this paper is not intended to have the same meaning as the term "displaced persons" defined in ADB's Safeguard Policy Statement (2009).

² Asian Development Bank. Grant 0582-Bangladesh: Emergency Assistance Project, <https://www.adb.org/projects/52174-001/main#project-pds>.

its Joint Response Plan (JRP) (displaced persons). The project mainly supports the improvement of water supply and sanitation, disaster risk management, sustainable energy supply, and access roads.

23 The impact of the project: Social recovery of affected communities accelerated in the sub-districts of Ukhia and Teknaf. The outcomes: Living conditions and resilience of affected communities improved. Four (04) outputs are expected from this project. They are:

- Output 01: Water supply and sanitation improved.
- Output 02: Disaster risk management strengthened
- Output 03: Energy sources provided
- Output 04: Access roads improved.

24 **Output 1: Water supply and sanitation improved.** This consists of providing the camp areas with (i) mobile water carriers for the distribution of treated water; (ii) community bathing facilities for women; (iii) mini piped water supply systems with a production tube well, distribution pipe network, and standpipe water distribution points; (iv) an integrated waste management facility with collection system; and (v) small surface water treatment plants.

25 **Output 2: Disaster risk management strengthened.** This includes constructing in and around the camp areas (i) multipurpose cyclone shelters with emergency access roads, (ii) food distribution centers, (iii) hill slope protection and/or toe walls to resist landslides, and (iv) storm water drainage networks. The project also provides lightning arresters and support the preparation of gender-sensitive disaster risk management plans with community-based disaster risk reduction approach.

26 **Output 3: Energy sources provided.** This includes providing the camp areas with (i) stand-alone solar powered street lights with solar photovoltaic panels, battery boxes, and mini grid-connected street lights; and (ii) access to electricity by augmenting substations, distribution lines, and transformers.

27 **Output 4: Access roads improved.** This consists of rehabilitating (i) rural roads to connect to food storage and distribution centers, field hospitals, primary health care centers, and primary education centers; (ii) emergency access roads to the camp areas; and (iii) existing access roads to and within the camps and drainage systems. The project also supports resurfacing the road from Cox's bazar to Teknaf, which is the main supply line.

28 The project is being implemented for 2.5 years, and the grant will close by 30 June 2021. As a condition for being selected, each subproject must have an implementation period that can be completed prior to the project closing date.

1.3 PURPOSE OF THE ENVIRONMENTAL SAFEGUARDS

29 ADB environmental safeguards objectives are: (i) to ensure the environmental soundness and sustainability of projects and (ii) to support the integration of environmental considerations into the project decision-making process. ADB environmental safeguards are triggered if a project is likely to have potential environmental risks and impacts.

30 The purpose of the Environmental Safeguards for the project are defined as:

- Assist in determining adequacy of cost for EMP implementation;
- Assist in addressing any concern related to IEEs and EMPs;

- Assist in summarizing IEEs, translating to language understood by local people and disclosure in public locations;
- Oversee implementation of EMP including environmental monitoring of contractors;
- Assist in implementing corrective actions when necessary to ensure no environmental impacts;
- Review monthly reports by contractors, assist PMU to submit environmental monitoring reports on regular basis;
- Assist in establishing the grievance mechanism for safeguards and addressing any grievances brought about through the GRM in a timely manner as per IEEs;
- Submit semi-annual environmental safeguards monitoring report to ADB via PMU;
- Be responsible for training the PMU/contactor safeguards officers on environmental awareness and management in accordance with both ADB and government requirements and implement the capacity building program for PMU and all staff involved in project implementation on (a) ADB SPS, (b) Government of Bangladesh national and local environmental laws and regulations, (c) core labor standards, (d) occupational health and safety monitoring given in the environmental safeguards monitoring report and (e) EMP implementation especially spoil management, working in congested areas, public relations and ongoing consultations, grievance redress, etc.; and
- Provide induction course for the training of contractors preparing them on EMP implementation.

31 A location map of the proposed subproject is presented in **Figure 1**.



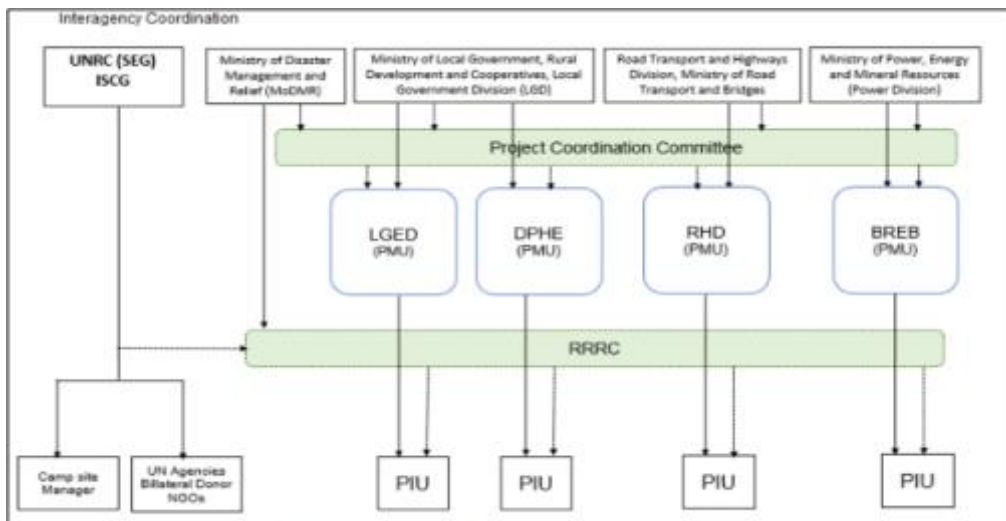
Figure 1 Location map of the project

2 Environmental Responsibilities and Institutional Setup

2.1 INSTITUTIONAL SETUP AND IMPLEMENTATION ARRANGEMENTS

32 The Refugee Relief and Repatriation Commission (RRRC) acts as the coordinator in the EAP on behalf the government to execute all the interventions. A steering committee, comprising of higher officials from relevant ministries, coordinated by the Economics Relations Division of the Ministry of Finance, was formed to provide the necessary guidance in expediting subproject development and implementation. The Local Government Engineering Department (LGED), the Department of Public Health Engineering (DPHE), the Roads and Highways Department (RHD), and the Bangladesh Rural Electrification Board (BREB) are the executing agencies (EA) and implementing agencies (IA) responsible for project oversight and coordination. Safeguards focal person has been designated by each EA who deals with safeguard concerns. EA/IA is assisted by Project Management Consultants. Dedicated project implementation units (PIUs) in each IA has been set-up, as needed, to oversee day-to-day implementation activities, project management, and reporting. The PIUs have identified a focal person for environmental safeguard. The focal person is assisted in the conduct of the environmental assessment, the development and implementation of EMPs, and compliance monitoring by project consultants. **Figure 2** presents the organizational structure of EAP.

33 All the IAs are currently implementing ADB projects under this institutional arrangement. ADB, through the Bangladesh Resident Mission (BRM), conducts regular safeguards training for EAs, IAs, and other development partners to build institutional capacity and improve safeguards implementation. A training was conducted by BRM on 19-20 August 2019, and a webinar on COVID-19 response and ensuring safe workplaces in ADB projects was held in July 2020.



Source: ADB. Project Administration Manual, June 2018

Figure 2 Project organizational structure

2.2 RESPONSIBILITIES: ENVIRONMENTAL SAFEGUARDS

34 In compliance with ADB's Safeguard Policy Statement (2009), the project's safeguard categories are as follows:

35 **Environment (category B):** ADB formed subproject selection criteria to avoid significant adverse environmental impacts. An environmental assessment and review framework (EARF) has been prepared following ADB's Safeguards Policy Statement (2009) and government laws and regulations. ADB has disclosed the EARF on its website. Implementation arrangements build on the implementing agencies' experience from other ADB-financed projects, and the project team is helping the implementing agencies gain adequate capacity to manage environmental impacts through consultant support. Initial environmental examinations and environmental management plans are being prepared consistent with the EARF and incorporated in bidding documents and contract documents to be implemented by contractors and monitored by the implementing agencies. Executing and/or implementing agencies are providing environmental report to the Bangladesh Resident Mission on a semiannual basis.

36 **Involuntary resettlement (category B):** ADB formed subproject selection criteria to avoid land acquisition and involuntary resettlement impacts and social risks. A resettlement framework has been prepared and disclosed, following ADB's Safeguards Policy Statement and government laws and regulations, to guide planning studies and detailed designs of subprojects. The project team helps the implementing agencies gain adequate capacity to prepare resettlement plans, if required, through consultant support. Consultations have been undertaken with stakeholders in project areas during implementation. Executing and/or implementing agencies are providing resettlement implementation report to the Bangladesh Resident Mission on a semiannual basis.

2.3 ENVIRONMENTAL CRITERIA FOR SUBPROJECT SELECTION

37 Subprojects selected should not have significant environmental impacts. Environmental guidelines for subproject selection in Table 1 provide further guidance to avoid or minimize adverse impacts during the identification and finalization of subprojects.

Table 1 Environmental Guideline for new subproject

Component	Environmental Guidelines for Subproject Selection
Overall (Applicable to all Subprojects)	Comply with all applicable national and local laws, regulations, and standards.
	Comply with ADB's SPS.
	Avoid land acquisition and involuntary resettlement and have no impacts on indigenous peoples.
	Avoid protected areas and areas of historical/cultural value.
	Avoid building or setting-up construction camp sites along elephant migration routes
Transport Infrastructure	Do not build new* roads and avoid widening existing roads, as much as possible.
	Avoid hill cutting.
	Do not build new* bridges.
	Avoid cutting trees on the roadside and if any trees have to be removed, plant two new trees for every tree lost.
	Consult the relevant archaeological agency regarding archaeological potential subproject areas to ensure that these are located in areas where there is a low risk of chance finds.

3 Monitoring Framework and Environmental Compliance

3.1 MONITORING FRAMEWORK

Impact the Project is Aligned with Social recovery of displaced persons in Teknaf and Ukhiya camps accelerated (Defined by the project)			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Living conditions and resilience of displaced persons improved	By 2021 a. Reported cases of waterborne diseases decreased by 20%. b. Occurrence of landslides and flooding in project area during average monsoon months reduced by 50%. c. At least 90% of households in project area connected to electricity. d. Average travel time to transport relief goods and services to campsites reduced by 50%.	a. Project beneficiary survey, executing agency reports	Crisis and influx of displaced persons extend beyond the project life and exceed projected demand for services.
Outputs 1. Water supply and sanitation improved	By 2020 1a. 5 mobile water carriers for the distribution of potable water to the camps provided (2018 baseline: 0) 1b. 600 community bathing facilities for women constructed and maintained, of which 10%–20% of women are employed and involved (2018 baseline: 0) 1c. 40 mini piped water supply systems with production tube wells constructed (2018 baseline: 0) 1d. 5 integrated waste management facilities constructed, and a collection system established (2018 baseline: 0) 1e. 2 small surface water treatment plants constructed or expanded (2018 baseline: 0)	1a–e. Periodic project progress reports prepared by the executing agency	Extreme climate events disrupt or delay execution of works.

2. Disaster risk management strengthened	<p>2a. 10 multipurpose cyclone shelters constructed with sex- disaggregated toilets and designated space for women, including pregnant women and lactating mothers (2018 baseline: 0)</p> <p>2b. 20 semi-permanent food distribution centers constructed and employed 10%–20% of women in the community (2018 baseline: 0)</p> <p>2c. 5 km of hill slope protection and/or toe walls constructed (2018 baseline: 0)</p> <p>2d. 5 km storm water drainage network constructed (2018 baseline: 0)</p> <p>2e. 200 lightning arresters installed (2018 baseline: 0)</p> <p>2f. Gender-sensitive disaster risk management plans, adopting community-based disaster risk reduction approach, prepared and implemented (2018 baseline: not applicable)</p>	2a–f. Periodic project progress reports prepared by the executing agency	
3. Energy sources provided	<p>3a. A 33/11 kV, 10 MVA substation constructed; and Cox's bazar-Teknaf grid augmented</p> <p>3b. A 50 km, ≤11 kV new distribution line constructed with 5 MVA distribution transformers installed (2018 baseline: 0)</p> <p>3c. 2,000 new mini grid-connected street lights and 4,000 new stand- alone solar LED lights with built-in solar PV panels and battery banks installed (2018 baseline: 62 grid-connected street lights and 2,495 solar PV street lights inside the camps)</p> <p>3d. 70,000 retained heat cookers provided (2018 baseline: 0)</p> <p>3e. 50 solar PV micro-grid systems installed at Balukhali, Kutupalong, Noyapara, Leda, and Shamlapur camps (2018 baseline: 0)</p>	3a–e. Periodic project progress reports prepared by the executing agency	
4. Access roads improved	<p>4a. 30 km of internal roads and stairs (where required) with drainage facilities constructed (2018 baseline: 0)</p> <p>4b. 30 km of rural roads to connect to food storage centers, food distribution centers, field hospitals, primary health care centers, cyclone shelters, and primary education centers reconstructed and rehabilitated (2018 baseline: 0)</p> <p>4c. 50 km of the road from Coxsbazar to Teknaf resurfaced, including the improvement of critical sections (market areas and culverts) (2018 baseline: 0)</p> <p>4d. 10%–20% of women employment in the construction and rehabilitation of access roads achieved (2018 baseline: 0)</p>	4a–d. Periodic project progress reports prepared by the executing agency	
Key Activities with Milestones 1. Water supply and sanitation improved			

- 1.1 Identify and appraise subprojects, as required (by Q3 2018)
- 1.2 Recruit consultants (by Q3 2018)
- 1.3 Prepare bid documents and commence bidding (by Q3 2018)
- 2. Disaster risk management strengthened
- 2.1 Identify and appraise subprojects, as required (by Q3 2018)
- 2.2 Recruit consultants (by Q3 2018)
- 2.3 Prepare bid documents and commence bidding (by Q3 2018)
- 2.4 Complete disaster risk capacity building for implementing agencies and key stakeholders (Q4 2018)
- 3. Energy sources provided
- 3.1 Identify and appraise subprojects, as required (by Q3 2018)
- 3.2 Recruit consultants (by Q3 2018)
- 3.3 Prepare bid documents and commence bidding (by Q3 2018)
- 4. Access roads improved
- 4.1 Identify and appraise subprojects, as required (by Q3 2018)
- 4.2 Recruit consultants (by Q4 2018)
- 4.3 Prepare bid documents and commence bidding (by Q3 2018)

3.2 COMPLIANCE WITH ENVIRONMENTAL RELATED PROJECT COVENANTS

3.2.1 National Covenant

38 The National Environmental Policy (NEP) was adopted in 1992 and is now under revision. It embraces different sectors related to agriculture, forest, power, health, transport, housing etc. The central theme of policy is to ensure protection and improvement in environment. The policy supports sustainable development and long-term use of natural resources. The National Environment Policy contains policy statements and strategic options with regard to population and land-use management, management and utilization of natural resources and other socio-economic sectors, as well as the necessary arrangements for the implementation of the policy.

39 The main Ministry, Department, Institutions and Boards responsible for development of policy, framing regulation, developing projects, monitoring and approval of issues related to environment protection and conservation are presented in this section. The Department of Environment (DoE) was established in 1977 under the Environment Pollution Control Ordinance, 1977. During 1987-89, Forestry was a Division of Agriculture Ministry with a Secretary to Government in charge of the Forestry Division. With the formation of the new Ministry of Environment and Forests, in 1989, both the departments were transferred to this new Ministry.

40 The DoE has been placed under the MoEFCC as its technical wing and is statutorily responsible for the implementation of the Environment Conservation Act, 1995. Besides these two departments, MoEFCC controls the Bangladesh Forest Industries Development Corporation (BFIDC), Bangladesh Forest Research Institute (BFRI) and Bangladesh National Herbarium (BNH).

41 The Environment Conservation Act (ECA) 1995 and the Environment Conservation Rules (ECR) 1997 are the main environmental regulations in Bangladesh which provide that no project or industrial unit can be undertaken without securing an environmental clearance certificate (ECC) from the Department of Environment (DOE). **Table 2** provides an overview on the status of securing the relevant clearances and permits.

Table 2 Status of Clearances and Permits

Clearances and Permits	RHD Component	LGED Component	DPHE Component	BREB Component
Environmental Clearance Certificate from DOE	Submitted all the documents to DOE in October 2019 and resubmitted the revised document in August 2020. Finally obtained Environmental clearance certificate (ECC) from DOE on 15 November 2020 (Appendix-1).	Waiting to receive the Environmental clearance from DOE. LGED has prepared an IEE for all packages and started processing to obtain the environmental clearance (within 30 working days from the submission date).	Waiting to receive the Environmental clearance from DOE. DPHE has prepared an IEE for all packages and started processing to obtain the environmental clearance (within 30 working days from the submission date).	Waiting to receive the Environmental clearance from DOE. BREB has prepared an IEE for all packages and started processing to obtain the environmental clearance (within 30 working days from the submission date).
NOC from the Forest Department	Not required; road rehabilitation works is being done within existing ROW and no forest patch is affected.	LGED applied to FD for the NOC for LGED/W5 and final approval is awaited.	DPHE applied to FD for the NOC for DPHE/W12B and final approval is awaited.	Application process is under progress for the NOC for BREB/W2.
NOC from Local Authority	Obtained NOC from DC office.	Obtained NOC from respective Union Parishad.	Obtained NOC from RRRC.	Obtained NOC from RRRC.
Permit for use of groundwater	Not required. Required only when constructing a deep tube well in Dhaka and Chattogram metropolitan area.	Not required. Required only when constructing a deep tube well in Dhaka and Chattogram metropolitan area.	Not required. Required only when constructing a deep tube well in Dhaka and Chattogram metropolitan area.	Not required. Required only when constructing a deep tube well in Dhaka and Chattogram metropolitan area.
Bangladesh Labor Law of 2006	Complied. Occupational Health and Safety has been addressed in the EMP.	Complied. Occupational Health and Safety has been addressed in the EMP.	Complied. Occupational Health and Safety has been addressed in the EMP.	Complied. Occupational Health and Safety has been addressed in the EMP.
Public Health (Emergency Provisions) Ordinance, 1994	Complied.	Complied.	Complied.	Complied.
Bangladesh National Building Code, 2006	Complied.	Complied.	Complied.	Complied.
BREB = Bangladesh Rural Electrification Board; DC = Deputy Commissioner; DOE = Department of Environment; DPHE = Department of Public Health Engineering; ECC = environmental clearance certificate; FD = Forest Department; LGED = Local Government Engineering; NOC = No objection certificate; ROW = right of way; RRRC = Refugee Relief and Repatriation Commission				

3.2.2 SPS, 2009 Compliance Status

42 Refer to **Table 3** for the status of the respective component sub-projects with regard to compliance status to ADB's policy statement (2009).

Table 3 ADB Safeguards Policy compliance Status for the EAP subprojects

ADB Safeguard Policy Statement	Contract Package Status				
	Cyclone Shelter Sub-project	Road Sub-project	Drainage/erosion Sub-project	Water Supply Sub-project	Others Sub-project
(i) Involuntary resettlement will be	complied	complied	complied	complied	complied

ADB Safeguard Policy Statement	Contract Package Status				
	Cyclone Shelter Sub-project	Road Sub-project	Drainage/erosion Sub-project	Water Supply Sub-project	Others Sub-project
avoided whenever feasible.					
(ii) Where population displacement is unavoidable, it should be minimized.	No displacement	No displacement	No displacement	No displacement	No displacement
(iii) All lost assets acquired or affected will be compensated. Compensation is based on the principle of replacement cost.	NA	NA	NA	NA	NA
(iv) Each involuntary resettlement is conceived and executed as part of a development project or program. Affected persons need to be provided with sufficient resources to re-establish their livelihoods and homes with time-bound action in co-ordination with civil works.	NA	NA	NA	NA	NA
(v) Affected persons are to be fully informed and closely consulted.	complied	complied	complied	complied	complied
(vi) Affected persons are to be assisted to integrate economically and socially into host communities so that adverse impacts on the host communities are minimized and social harmony is promoted.	NA	NA	NA	NA	NA
(vii) The absence of a formal title to land is not a bar to ADB policy entitlements.	NA	NA	NA	NA	NA
(viii) Affected persons are to be identified and recorded as early as possible to establish their eligibility, through a census, which serves as a cut-off date, and prevents subsequent influx of encroachers.	NA	complied	complied	NA	NA
(ix) Particular attention will be paid to vulnerable groups including those without legal title to land or other assets; households headed by women; the elderly or disabled; and indigenous groups. Assistance must be provided to help them improve their socio-economic status.	NA	complied	complied	NA	NA
(x) The full resettlement costs will be included in the presentation of project costs and benefits.	NA	NA	NA	NA	NA

3.2.3 Compliance with Grant Covenants

43 Schedule 5 of the Agreements for Grant 0582-BAN includes covenants for environmental issues. The Project's compliance with the contractual environmental safeguards covenants are shown in the **Table 4**.

Table 4 Compliance with Environmental Considerations of Grant Agreements

Covenant	Reference in the Grant Agreement	Compliance Status
Procurement		
The Recipient shall not award any Works contract for a Subproject which involves environmental impacts until all the applicable EAs has: Obtained the final approval of the IEE from the concerned sector agency for IEEs; and, Incorporate the relevant provision from the EMP into the Works contract.	Schedule 3, para. 3, page 11	Complied.
Subproject Selection Criteria		
The Recipient shall ensure, or cause the EAs to ensure that the subprojects are selected and approved in accordance with the selection criteria set out in Appendix 1 to the PAM. The Recipient shall cause the EAs to retain appraisal files for each Subproject throughout Project Implementation period and thereafter for review by ADB.	Schedule 3, para. 7, page 12	Complied.
Safeguards		
Environment The Recipient shall ensure, or cause the EAs to ensure, that the preparation, design, construction, implementation, operation and decommissioning of each Subproject comply with (a) all applicable laws and regulations of the Recipient relating to environment, health, and safety; (b) the Environmental Safeguards; (c) EARF; and (d) all measures and requirements set forth in the respective IEE and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	Schedule 3, para. 8, page 12	Complied. All requirements addressed in preparation and design stages including contract documentation.
Human and Financial Resources to Implement Safeguards Requirements		
The Recipient shall make available, or cause the EAs to make available, necessary budgetary and human resources to fully implement the EMPs and the RPs.	Schedule 3, para. 12, page 13	Complied.
Safeguards – Related Provisions in Bidding Documents and Works Contracts		
The Recipient shall ensure, or cause the EAs to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to:	Schedule 3, para. 13, page 13	Complied.
(a) comply with the measures and requirements relevant to the contractor set forth in the relevant IEE, EMP and RP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report;		Complied. All Bidding Documents and Contracts contain the required provisions
(b) make available a budget for all such environmental and social measures;		Complied.
(c) provide the Recipient with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Subproject that were not considered in the relevant IEE, EMP and RP;		Complied.
(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction.		Complied.
Safeguards Monitoring and Reporting		
The Recipient shall do the following, or shall cause the EAs to do the following:	Schedule 3, para. 14, page 13	Complied
(a) submit semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission.		

Covenant	Reference in the Grant Agreement	Compliance Status
(b) If any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Subproject that were not considered in the relevant IEE, EMP and RP, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and,		Complied
(c) report any actual or potential breach of compliance with the measures and requirements set forth in the relevant EMP or the RP promptly after becoming aware of the breach.		Complied
Prohibited List of Investments		
The Recipient shall ensure, or cause the EAs to ensure, that no proceeds of the Grant are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.	Schedule 3, para. 15, page 14	Complied

3.2.4 Compliance Status with ADB' Review Mission

44 The Asian Development Bank (ADB), Bangladesh Resident Mission (BRM) fielded a Mid-term Review Mission from 16 to 26 June 2019 for Emergency Assistance Project (EAP). The MTR mission reviewed the overall environmental management system adopted in the EAP. The mission visited several completed, ongoing and planned activities and reviewed the implementation and compliances of EMP of several subprojects, recommended corrective actions plan (CAP) for ensuring compliances of EMP implementation. Status of implementation of CAP in provided in **Table 5**.

Table 5 Status of implementation of Corrective Action Plan

Recommended Corrective Action Measures	Responsibility	Implementation Status
Share the design of Surface Water Treatment Plant (Package- EAP/DPHE/W12B) with the TA consultant (environmental Specialist) immediately so that IEE can be prepared accordingly.	DPHE	Partially complied. Indicative IEE is done based on preliminary design which to be finalized after having detail design of SWTP, transmission and distribution network which is now underway.
Contractor should prepare site specific EMP and submit to ADB for pipe water supply system at Unchiprang under DPHE.	Contractor	Partially complied. Contractor is preparing the SEMP which to be submitted as early as possible.
PMU to take necessary action to stop wastewater discharge to the cultivated land from the site (Palongkhali substation).	Contractor	Complied.
Move the construction materials from the school building/ do not use the school as labor shed (School: Nhila Burmese Government Primary School)	Contractor	Partially complied. Contractor started to relocate construction materials and labor shed from school building.
Finalize the design of access road (EAP/LGED/W5) and immediately share with the TA consultant (environmental Specialist) so that EMP and IEE can be prepared accordingly.	LGED	Complied. IEE is done and disclosed.
Quarterly environmental monitoring report to be prepared by the contractor as per the agreement and share the report with ADB TA Safeguards consultant. (Cox's Bazar-Ukhiya Highway package)	Contractor	Complied.
To improve the Health & Safety condition of the site, contractor should use the ADB recommended checklist (to be shared by ADB TA consultant) on weekly basis.	LGED/DPHE/RHD	Complied.

Recommended Corrective Action Measures	Responsibility	Implementation Status
		Contractors (RHD, LGED and DPHE) submitted the checklist on monthly basis.

3.3 GRIEVANCE REDRESS MECHANISM

45 The objective of the grievance redress mechanism (GRM) is to resolve complaints as quickly as possible and at the local level through a process of conciliation; and, if that is not possible, to provide clear and transparent procedures for appeal. A well-defined grievance redress and resolution mechanism is planned to be established to resolve grievances and complaints in a timely and satisfactory manner. All affected persons to be made fully aware of their rights, and the detailed grievance redress procedures should be publicized through an effective public information campaign.

46 During implementation of the project, a grievance redress committee (GRC) is essentially required to be formed at the Upazila level to District / National level by following by the approved Environmental Assessment and Review Framework (EARF) through discussion at all the respective levels of the EAs (LGED, DPHE, RHD and BREB). The grievance redress mechanism and procedure as per EARF are depicted in the following **Figure 3**.

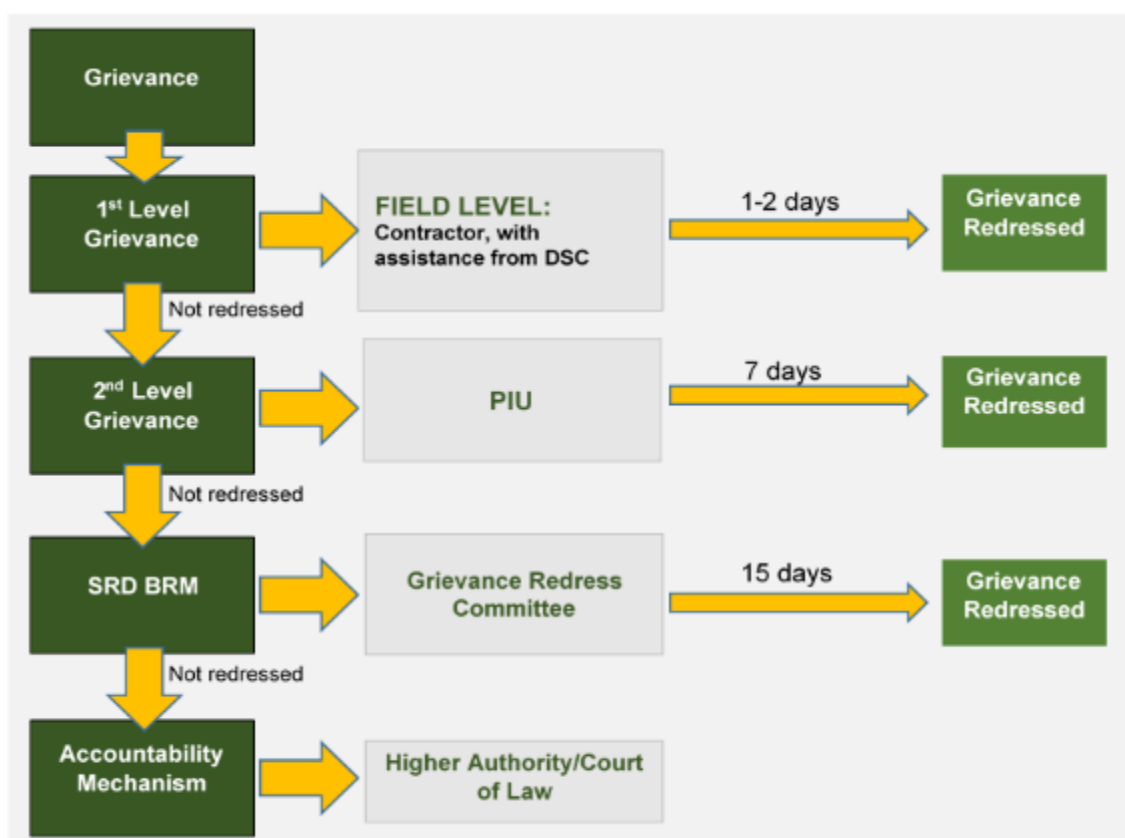


Figure 3 Grievance redress mechanism

47 GRM is yet to be formed in EAP. In connection to this, environmental consultant accompanied by social safeguard consultant conducted several meetings with the representative of EAs in Cox's Bazar.

4 Status of Ongoing Contract Packages

4.1 PROJECT STATUS

48 To date 49 sub-projects have been finalized, instead of 60 sub-projects preliminarily identified in 2018. Out of these 49 subprojects, BREB implements eight subprojects, DPHE implements 21 subprojects, LGED implements 17 subprojects while RHD implements three subprojects. In terms of categorization, 31 subprojects were category B based on SPS 2009. According to SPS 2009, category B projects and/or subprojects were required to prepare IEE. Given that the subprojects under the EAP were identified after the approval of the Grant, an EARF was prepared and agreed between the government and ADB. The EARF was disclosed to ADB website in June 2018.

49 However, out of the 49 subprojects contracts awarded, 14 packages have already been completed. The summary status of the subprojects is given in **Table 6**.

Table 6 Sub-project progress status of EAP (information up to 31 December 2020)

Executing Agency	Total Package	Contact Awarded	Completed Package	Financial Progress
BREB	08	08	07	94%
DPHE	21	21	06	84%
LGED	17	17	01	92%
RHD	03	03	00	97%
Total	49	49	14	90%

50 A comparative analysis of contract awards in the first six month (July- December 2018), second six-month (January – June 2019), third six-month (July – December 2019), fourth six-month (January- June 2020) and fifth six-month (July – December 2020) has been given in Table 7. In the fifth six-month, 6 contracts were awarded while in the first, second, third and fourth six-month 7, 15, 4 and 17 contracts were awarded respectively.

Table 7 Comparative analysis of contract awards in first, second, third, fourth and fifth six month

Executing Agency	Total Package	1st six month (2018)	2nd six month (2019)	3rd six month (2019)	4th six month (2020)	5th six month (2020)	Total Contract awarded
BREB	08	4	1	1	2	0	09
DPHE	21	1	8	1	7	4	17
LGED	17	0	5	2	8	2	15
RHD	03	2	1	0	0	0	03
Total	49	7	15	4	17	6	44

51 The list of sub-projects that have been awarded to date are presented in **Table 8**.

Table 8 List of subprojects been awarded to date and their progress status

SL no.	Component	Package No.	Description	Progress to date
BREB				
1	Disaster Risk management	EAP/BREB/G1	Supply and installation of 200 nos. lightning arresters along the access roads from Palongkhali to Kutupalong camp, and all other camps.	a) All 200 lightning arresters completed b) Progress 100%

SL no.	Component	Package No.	Description	Progress to date
2	Energy	EAP/BREB/G2A	Supply, installation and Operation & Maintenance of 2,000 Nos. Solar PV Powered LED Street Lights	a) All 2,000 street lights completed; b) Progress 100%
3	Energy	EAP/BREB/G2B	Supply and installation of 2,000 nos. solar powered 20-watt LED street lights, in all camps	a) All 2,000 street lights completed; b) Progress 100%
4	Energy	EAP/BREB/G5	Supply, Installation Testing commissioning of 50 nos. solar nano-grid for household electricity supply within the camp (150 household per cluster: to cater 7,500 HH) at Balukhali mega camp	a.) All 50 nos. solar nano-grid installation complete. b.) Progress 100%.
5	Energy	EAP/BREB/W1A	Design, Supply, Installation, Testing & Commissioning of 33/11kV, 10/14MVA Electrical Sub-station (Turn-key)	Progress 100%. The system is functioning appropriately.
6	Energy	EAP/BREB/W2	Design, Supply and Construction of 50 KM, 11KV and Below Lines in the Camp Areas of Displaced Personnel and Other Areas at Ukhiya and Teknaf (Turnkey)	Completed works: Poles installed = 1130 no, Conductor installation = 43 km, Transformer installed = 66 nos. (out of 100). Total line completed = 43 km (out of 50 km). Overall physical progress is 100%.
7	Energy	EAP/BREB/G6	Supply, Installation, Operation and Maintenance of 50 Nos. (Lot G6A – 25 nos. & Lot G6B – 25 nos.) Solar PV Nano Grid for household electricity.	Overall 75% physical progress achieved to date.
8	Disaster Risk management	EAP/BREB/G7	Supply and installation of 200 lightning arrestors along the access roads within the camps	a.) All 200 lightening arrestors complete. b.) Progress 100%.
DPHE				
9	Water and Sanitation	EAP/DPHE/G1	Supply of 7 no. Water Carriers for Emergency Water supply including operation and maintenance for 2 years in Cox's Bazar, Ukhiya and Teknaf	Progress 100%. Handover completed.
10	Water and sanitation	EAP/DPHE/G2	Supply and operation of waste management equipment/vehicle for two years for Camps in Ukhiya.	Contract signed on 27 December 2020. Contractor is advised to supply the equipment in due time.
11	Water and sanitation	EAP/DPHE/G3	Supply and operation of waste management equipment/vehicle for two years for camps in Teknaf.	Contract signed on 13 December 2020. Contractor is advised to supply the equipment in due time.
12	Water and Sanitation	EAP/DPHE/G4	Supply and operation of 4 no. drilling rigs	Supply of equipment in progress and overall progress is 93%.
13	Water and Sanitation	EAP/DPHE/W1	Construction and operation of mini piped water	Progress 100%. Handover completed.
14	Water and Sanitation	EAP/DPHE/W2	Construction and operation of mini piped water supply system (10 schemes): Package 2	Progress 100%. Handover completed.
15	Water and Sanitation	EAP/DPHE/W3	Construction and operation of mini piped water supply system (10 schemes): Package 3	95% physical progress has been achieved up to date.
16	Water and Sanitation	EAP/DPHE/W4	Construction and operation of mini piped water supply system (10 schemes): Package 4	75% physical progress has been achieved up to date.
17	Water and Sanitation	EAP/DPHE/W5	Construction and operation of mini piped water supply system (5 schemes): Package 5	85% physical progress has been achieved up to date.
18	Water and Sanitation	EAP/DPHE/W9A	Construction and operation of 2 Integrated waste management and resource recovery facilities with collection system at the outskirts of Kutupalong Balukhali Mega camp, Ukhiya Group-2	Lot - 1: 15% progress has been achieved to date. Lot - 2: 50% progress has been achieved to date.

SL no.	Component	Package No.	Description	Progress to date
19	Water and Sanitation	EAP/DPHE/W9B	Construction and operation of Integrated waste management (Kutupalong Balukhali) Group-3	80% physical progress has been achieved to date.
20	Water and Sanitation	EAP/DPHE/W10	Construction and operation of Integrated waste management system (Shamlapur, Teknaf) Group -1	85% physical progress has been achieved to date.
21	Water and Sanitation	EAP/DPHE/W11	Construction of Surface Water Treatment Plant for supporting water supply at Cox's Bazar city and surrounding areas	Lot 1: 10% physical progress has been achieved to date. Lot 2: 5% physical progress has been achieved to date. Lot 3: 5% physical progress has been achieved to date. Lot 4: 5% physical progress has been achieved to date. Lot 5: 5% physical progress has been achieved to date.
22	Water and sanitation	EAP/DPHE/W12A	Construction of surface water reservoir based piped water system (Nayapara, Teknaf)	Lot 1: 25% physical progress has been achieved to date. Lot 2: 5% physical progress has been achieved to date.
23	Water and Sanitation	EAP/DPHE/W12B	Construction of piped water systems (Unchiprang/ Shamlapur)	18% physical progress has been achieved to date.
24	Water and Sanitation	EAP/DPHE/W13	Construction of Community Bathing Facilities (100 units), Group -1	Progress 100%. Handover completed.
25	Water and Sanitation	EAP/DPHE/W14	Construction of Community Bathing Facilities (200 units), Group -2	Progress 100%. Handover completed.
26	Water and Sanitation	EAP/DPHE/W15	Construction of Community Bathing Facilities (200 units), Group -3	Progress 100%. Handover completed.
27	Water and sanitation	EAP/DPHE/W18	Construction of piped water supply with surface water reservoirs, treatment plant and other and associated facilities at Ukhiya	Lot 1: Contract signed on 27 December 2020. Contractor is advised to mobilize to the site. Lot 2: 10% physical progress has been achieved to date. Lot 3: 5% physical progress has been achieved to date.
28	Water and sanitation	EAP/DPHE/W19	Design, Supply, Install, Test, Commission, Operation and Maintenance of Faecal Sludge and Segregated Solid Waste Treatment Plant	5% physical progress has been achieved to date.
29	Water and Sanitation	EAP/DPHE/CON/1	Design, Monitoring and Supervision consulting services of DPHE component, Cox's Bazar	Consultants fielded as per TOR.
LGED				
30	Roads	EAP/LGED/ OCB-N/W1A	Construction of 7.5 km Internal Roads and Stairs with Drainage Facilities Inside the camps in Ukhiya, Group 1	20% physical progress has been achieved to date.
31	Roads	EAP/LGED/ OCB-N/W1B	Construction of 7.5 km Internal Roads and Stairs with Drainage Facilities Inside the camps. in Ukhiya, Group 2	55% physical progress has been achieved to date.
32	Roads	EAP/LGED/OCB-N/W2A	Construction of 7.5 km Internal Roads and Stairs with Drainage Facilities Inside the camps. in Ukhiya -Group 3	5% physical progress has been achieved to date.
33	Roads	EAP/LGED/OCB-N/W2B	Construction of 7.5 km Internal Roads Internal Roads and Stairs with Drainage Facilities Inside the camps in Teknaf Group 4	8% physical progress has been achieved to date.
34	Roads	EAP/LGED/ OCB-N/W3	Improvement of 1.5 km existing Folia Para road connecting Highway to U-B Road Ukhiya+ Upgradation of 5.5 km existing	55% physical progress has been achieved to date.

SL no.	Component	Package No.	Description	Progress to date
			N.I. Chowdhury Road Connecting Marine Drive to U-B road.	
35	Roads	EAP/LGED/ OCB-N/W5	Upgradation of existing 8.8 km link road connecting Coks Bazar-Teknaf and Marine Drive Highways, Ukhiya	30% physical progress has been achieved to date.
36	Disaster Risk Management	EAP/LGED/OCB-N/W6	Construction of 4 nos. school cum cyclone shelter for affected people, 3 story LGED Prototype, in Ukhiya	76% physical progress has been achieved up to date.
37	Disaster Risk Management	EAP/LGED/OCB-N/W8	Construction of 3 nos. school cum cyclone shelter for affected people, 3 story LGED Prototype, in Ukhiya	81% physical progress has been achieved up to date.
38	Disaster Risk Management	EAP/LGED/OCB-N/W9	Construction of 3 nos. School cum cyclone shelter for affected people, 3 story LGED Prototype, in Teknaf	74% physical progress has been achieved up to date.
39	Disaster Risk Management	EAP/LGED/OCB-N/W10	Construction of Hill Slope Protection inside the Kutuplong Balukhali Mega Camp at Ukhiya	12% physical progress has been achieved up to date.
40	Roads	EAP/LGED/ OCB-N/W4C	Improvement of Hajirpara Mukter Swdagor bari Side-Dakhin Faliapara Sajahan bari Rd. Ch. 00-2400 m, Malercul LGED Road-Dakhin Faliapara Rd. Ch. 00-814 m & Ali Mohammed Pingir Rd. Ch. 00-2327 m by BC, under Ukhiya Upazila, Dist: Cox's Bazar	46% physical progress has been achieved to date.
41	Roads	EAP/LGED/ OCB-N/W4D	Improvement of Ratnapalong UP office Coat Bazar – Valukhiya Bazar Road by BC at Ch. 00-4300m & Ratnapalong UP Office – Chakbaita Bazar via Goyalmara Road by BC at Ch. 00-4435m under Ukhiya Upazila, Dist: Cox's Bazar	33% physical progress has been achieved to date.
42	Disaster Risk Management	EAP/LGED/OCB-N/W6A	Construction of Boundary wall of 7 nos. Multipurpose Cyclone Shelters at Ukhiya Upazila and 3 nos. Multipurpose Cyclone Shelters at Teknaf Upazila in Cox's Bazar	37% physical progress has been achieved to date.
43	Disaster Risk Management	EAP/LGED/OCB-N/W19	Construction of Semi-Permanent Food Distribution Centers and loading /unloading yard in Ukhiya and Teknaf	100% complete. All 4 FDCs handed over.
44	Disaster Risk Management	EAP/LGED/OCB-N/W20	Construction of Storm Water Drainage Network inside camps and evacuating water outside camps, 2 groups in Ukhiya	80% physical progress has been achieved to date.
45	Disaster Risk Management	EAP/LGED/OCB-N/W21	Construction of Storm Water Drainage Network inside camps and evacuating water outside camps: 1 group in Teknaf	65% physical progress has been achieved to date.
46	Disaster Risk Management	EAP/LGED/CON/1	Design, Monitoring and Supervision consulting services through ICT for LGED component, Cox's Bazar	Consultant fielded as per TOR.
RHD				
47	Roads	EAP/RHD/W1	Rehabilitation of National Highway from LinkRoad (Coks Bazar) (Chainage 381+494) to Ukhia (Chainage- 406+494)	Pavement for widening (sub-base) 100% (23 km) completed ▪ Pavement for widening (ISG) 100% (23km) completed ▪ Base Type-1, 100% (23 km) completed ▪ Rigid pavement 100% (2 km) completed at growth centre area ▪ Box cutting 100% (23 km) completed ▪ Culverts 100% (10 nos.) completed ▪ Toe Wall 100% (1 km) completed ▪ "U"-shaped drain 96% (6.2 out of 6.5 km) completed

SL no.	Component	Package No.	Description	Progress to date
				<ul style="list-style-type: none"> Overall 96% physical progress has been achieved to date.
48	Roads	EAP/RHD/W2	Rehabilitation of National Highway from Ukhia (Chainage 406+494) to Unchiprang (Chainage-431+494)	<ul style="list-style-type: none"> Pavement for widening (sub-base) 100% (21 km) completed Pavement for widening (ISG) 100% (21 km) completed Base Type -1, 100% (21 km) completed Rigid pavement 85% (3.8 out of 4.0 km) completed at growth centre area Box cutting 100% (21 km) completed Culverts 100% (12 nos.) completed Toe Wall 85% (1.7 out of 2.0 km) completed "U"-shaped drain 79% (9.6 out of 12.2 km) completed Overall 83% physical progress has been achieved to date.
49	Roads	EAP/RHD/CON/1	Design, Monitoring and supervision consulting services for RHD component , Cox's bazar	Consultant fielded as per TOR.

4.2 CONTRACT REQUIREMENTS (ENVIRONMENT)

52 The following documents, relating to the identified environmental safeguards, form part of the Contract Package and are part of the monitoring requirements in ascertaining the degree of compliance:

- a. Initial Environmental Examination (IEE)
- b. Environmental Management Plan (EMP)

53 In addition to the foregoing, the Contractor is to provide the Project Director with a written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the Plant or Works, which were not considered in the IEE's and the EMP's.

54 The general anticipated impacts for all subprojects and their mitigation measures are summarized in later paragraphs for reference of the later chapters which discuss the environmental safeguard compliance in relation to the requirements set by subproject specific EMPs.

4.2.1 Air Quality

55 During construction period the impact on air quality is mainly due to the material movement. However, air quality over a small area is affected, though, not in significant levels. There is an increase in the dust levels all along the haul roads, the borrow areas and dumping areas is expected. The emissions from the construction machinery are the source of ambient air pollution during the actual construction. Continuous use of generators, bulldozers, rollers, crane, trucks etc. give rise to the ambient levels.

56 The general mitigation measures are as follows:

- i. In order to curb the increased fugitive dust emissions in the area due to vehicular movement and raw material transport, provisions should be made for sprinkling of water on the haul roads in the area. Sprinkling of water should be carried out at least once a day on a regular basis during the entire construction period. Special attention should be given to all the haul roads passing through residential areas in the region. Daily inspection at

haul roads and at construction site should be carried out to ensure removal of construction debris to the landfill sites.

- ii. Covered trucks shall be used for transportation of materials prone to fugitive dust emissions. Additionally, materials which may collect on the horizontal surfaces of these trucks during loading should be removed before transportation.
- iii. Idling of delivery trucks or other equipment should not be permitted when not in active use.
- iv. The emission levels from diesel vehicles being used should be checked on monthly basis and brought to the required levels of emission standards.
- v. Proper care should be taken for storage of furnace oil, diesel, petrol etc.
- vi. Work schedule and the operation time of construction machinery should be suitably modified to exercise a control on ambient air quality standards.
- vii. To ensure the efficacy of the mitigation measures suggested, air quality monitoring shall be carried out as per environmental monitoring plan;
- viii. As soon as the construction activity is over the surplus earth should be utilized to fill up the low-lying areas, if any.

4.2.2 Noise Quality

57 Noise quality is also important for the construction phase. During the construction phase, there would be an increase in ambient noise levels due to construction machinery operation and movement of construction vehicles.

58 The following mitigation measures may be adopted:

- i. Construction yard shall be established at least 200 m away from any residential area. This will allow the noise to attenuate.
- ii. Special acoustic enclosures should be provided for individual noise generating equipment. Enclosures may be provided by way of noise shields, which can, be either brick masonry structure or any other physical barrier which is effective in adequate attenuation of noise levels. A 3 m structure made up of brick and mud with internal plastering and of non-reflecting surface will be very effective in this regard.
- iii. Noise measurement should be conducted during construction to assess the prevailing noise levels. Earplugs should be provided to those workers who will be working very close to noise generating construction machinery.
- iv. The exposure of workers to high noise levels especially, near the construction site needs to be minimized during construction period. This could be achieved by: Job rotation, Protective devices, and Noise barriers. Stationery construction equipment should not be located near human habitation in particular schools, hospitals and institutions.

- v. Noise levels from loading and unloading can be reduced by usage of various types of cranes and by placing materials on sand or on the beds of sandy bags.
- vi. Use of noisy construction equipment should not be permitted during night hours near residential areas or sensitive areas.

4.2.3 Disposal of Construction Spoil and Debris

59 During construction about 15% of gravel, sand, bricks and cement is left as construction spoils. It is advocated that construction spoils shall be disposed of at a site, as approved by the local authority. The Contractor shall prepare a spoils management plan, which shall include the following:

- i. Spoils Information: Materials Type; Potential Contamination; Expected Volume and Sources; Spoil Classification
- ii. Spoils Management: Transportation of Spoil; Storage of Spoil; Contamination of Spoil; Approved Reuse and/or Disposal Sites
- iii. Records of Reuse and/or Disposal

4.2.4 Surface Water and Groundwater Contamination

60 Use of toxic materials such as solvents and vehicle maintenance fluid (oil, coolant) and diesel fuel may contaminate surface and groundwater if these are disposed of directly into the ground or washed into the streams. Human waste from construction workers may also contaminate surface water and groundwater if there are no adequate sanitary facilities.

61 The following mitigation measures can be adopted:

- i. All earthworks must to be conducted during dry season/dry spell to maximum extent possible to avoid the difficult working conditions that prevail during monsoon season such as problems from runoff.
- ii. Prioritize re-use of excess spoils and materials in construction activities. If spoils will be disposed, consult with Local Authority on designated disposal areas.
- iii. Ensure diverting storm water flow during construction shall not lead to inundation and other nuisances in low-lying areas.
- iv. Monitor water quality according to the environmental management plan.
- v. Garbage disposal service to be provided, Concrete refuse reused or disposed of without habitat loss;
- vi. All other effluents not to be disposed of directly into natural waters, but via settling basins to allow suspended sediment to settle out.
- vii. Workforce camps will be located away from water resources. All practical measures such as provision of septic tanks, garbage bags, and other sanitation facilities will be implemented at the construction camps to prevent the wastewater and solid wastes from entering well and groundwater recharge areas.

- viii. Wells used for drinking will be tested quarterly to ensure potability. The wells will be designated during labour camp establishment.
- ix. Take all precautions to minimize the wastage of water in the construction activities. In this case there is no waterbody nearby. However, it needs to be noted that, no temporary or long-term waterlogging during the construction should be allowed.

4.2.5 Occupational and Health and Safety Risks

62 Occupational hazards may arise if not properly managed (risk of fall and electrocution, etc.). Increase in dust may cause health problems to workers. Insufficient supply and improper use of personal protective equipment (PPE) and lack of safety procedures may cause injuries or fatal accidents. For safety there will be a need to interrupt electricity supply to existing businesses while new poles, conductors and other installations are put in place. This needs to be done in a phased manner allowing small sections of lines to be reconnected to the network, keeping down time to a minimum for existing users. Close contact with persons afflicted with diseases and lack of sanitation in worker's camps may also pose health risks. Outbreaks of diseases like diphtheria and measles can be avoided by observing proper sanitation facilities and observing good personal hygiene habits.

63 The following generic measures suggested are as followed;

- i. Comply with requirements of Government of Bangladesh Labour Law of 2006 (amended in 2013) and all applicable laws and standards on workers' health and safety (H&S).
- ii. Ensure that all site personnel have a basic level of environmental awareness training. If necessary, the environmental management specialist and/or a translator shall be called to the sites to further explain aspects of environmental or social behavior that are unclear.
- iii. Produce and implement a site H&S plan which include measures as: (i) excluding the public from worksites; (ii) ensuring all workers are provided with and required to use personal protective equipment (reflectorized vests, footwear, gloves, goggles and masks) at all times; (iii) providing H&S training for all site personnel; (iv) documenting procedures to be followed for all site activities; and (v) maintaining accident reports and records.
- iv. Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances
- v. Maintain necessary living accommodation and ancillary facilities in functional and hygienic manner in work camps. Ensure (i) uncontaminated water for drinking, cooking and washing, (ii) clean eating areas where workers are not exposed to hazardous or noxious substances; and (iii) sanitation facilities are available at all times.
- vi. Provide medical insurance coverage for workers;
- vii. Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;
- viii. Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;

- ix. Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;
- x. Ensure moving equipment is outfitted with audible back-up alarms;
- xi. Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and
- Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.

4.2.6 Community Health and Safety Hazards

64 Community hazards may arise during construction (dust, air quality, noise, electrocution etc.). Traffic accidents and vehicle collision with pedestrians during material and waste transportation may occur if no proper signage are placed.

65 The following Generic Measures are suggested:

- i. Contractor's activities and movement of staff will be restricted to designated construction areas.
- ii. Locations of hot-mix plants, batching plants and crushers (if these establishments are being set up exclusively for the subproject) shall be located at least 100 m away from the nearest dwelling preferably in the downwind direction.
- iii. Consult with the Local Authority on the designated areas for stockpiling of, soils, gravel, and other construction materials.
- iv. If the contractor chooses to locate the work camp/storage area on private land, he must get prior permission from the environment management specialist and landowner.
- v. Use small mechanical excavators to attain faster excavation progress. For rock and concrete breaking, use non-explosive blasting chemicals, silent rock cracking chemicals, and concrete breaking chemicals.
- vi. Under no circumstances may open areas or the surrounding bushes be used as a toilet facility.
- vii. Recycling and the provision of separate waste receptacles for different types of waste shall be encouraged.
- viii. A general regard for the social and ecological well-being of the site and adjacent areas is expected of the site staff. Workers need to be made aware of the following general rules:
 - a. (i) no alcohol/drugs on site; (ii) prevent excessive noise; (iii) construction staff are to make use of the facilities provided for them, as opposed to ad hoc alternatives (e.g. fires for cooking, the use of surrounding bushes as a toilet facility); (iv) no fires permitted on site except if needed for the construction works; (v) trespassing on private/commercial properties adjoining the site is forbidden; (vi) other than pre-

approved security staff, no workers shall be permitted to live on the construction site; and (vii) no worker may be forced to do work that is potentially dangerous or that he/she is not trained to do.

- ix. Interested and affected parties need to be made aware of the existence of the complaints book and the methods of communication available to them. The contractor must address queries and complaints by: (i) documenting details of such communications; (ii) submitting these for inclusion in complaints register; (iii) bringing issues to the environment management specialist's attention immediately; and (iv) taking remedial action as per environment management specialist's instruction.
- x. The contractor shall immediately take the necessary remedial action on any complaint/grievance received by him and forward the details of the grievance along with the action taken to the environment management specialist within 48 hours of receipt of such complaint/grievance.
- xi. Create traffic regulation and diversion zones during construction work. The proposed site is on the main road, and it is expected that heavy vehicle movements can cause traffic nuisance. Therefore, traffic regulation and diversion will be important to avoid traffic nuisance.

4.2.7 Soil Erosion

66 Clearing topsoil in proposed widening areas can lead to loss of nutrient and erosion particularly along the hill cut slopes and dust from unprotected storage sites. The erosion risk at hill cut slopes is possible. Gully erosion along the exposed track slope during rainy season may cause localized sedimentation congestions.

67 The following measures are suggested:

- i. Topsoil storage areas must be protected during the dry season, wind erosion—by covering.
- ii. Rapid revegetation and use of hydro-seeding and jute erosion protection mats should be applied in areas where erosion is noted during the regular monthly inspections.

4.2.8 Topography and Landscape Change

68 Visual intrusion from large piles of bridge/culverts materials and ballast obstructing views and excavation along the edge of the alignment leaving large unsafe holes is possible.

69 The following measures are suggested:

- Material stockpiles will be removed as soon as work is completed and the area re-landscaped. Same applies to borrow areas.

4.2.9 Post-construction clean-up

70 Damage due to debris, spoils, excess construction materials. The following general mitigation measures are suggested:

- i. Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;
- ii. All excavated roads shall be reinstated to original condition;
- iii. All disrupted utilities restored;
- iv. All affected structures rehabilitated/compensated;
- v. The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up;
- vi. All hardened surfaces within the construction camp area shall be ripped;
- vii. All imported materials removed, and the area shall be top soiled and regressed using guidelines set out in the re-vegetation specification that forms part of this document;
- viii. The contractor must arrange the cancellation of all temporary services;
- ix. Request PIU to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.

4.2.10 Submission of EMP implementation Report

71 Unsatisfactory compliance to EMP. The following mitigation measures are suggested:

- i. Appointment of Supervisor to ensure EMP implementation;
- ii. Timely submission of monitoring reports including pictures.

4.3 FINANCING AGREEMENT

72 Financial cost provision for the Contractor to complete all the required Environmental mitigation and monitoring requirements is given in the EMP cost stipulated with the subproject specific EMPs, along with the stipulated frequency and extent of sample monitoring, in accordance with the respective Environmental Management and Monitoring Plan, of the particular contract package.

5 Environmental Status

5.1 STATUS OF ENVIRONMENTAL SAFEGUARDS DOCUMENTS

73 To date (December 2020) out of 31 B category projects according to ADB classification, 31 IEEs (including 7 indicative IEE) have been drafted with 31 EMPs and 8 ECoPs. Some EMPs and subsequent IEEs are due to either detailed design is not yet completed, additional work needs to be done, etc. **Table 9** represents the status of preparation of safeguards documents.

Table 9 Summary Status of safeguards documents preparation for B category subprojects

Agency	Total B Category project	IEE	EMP	ECoP
DPHE	13	13	13	4
LGED	14	14	14	2
RHD	02	2	2	0
REB	02	2	2	2
Total	31	31	31	8

74 To date 13 EMPs for DPHE, 14 EMPs for LGED, 2 EMPs for BREB and 2 EMPs for RHD have been prepared. Of 31 IEEs, 13 IEEs for DPHE, 14 IEEs for LGED, 2 IEEs for RHD and 2 IEEs for BREB have been prepared. Details of subproject wise status of IEE and EMP preparation has been presented in **Table 10**.

Table 10 Subproject wise status of preparation of safeguards documents

Sl. No.	Package No.	Category	EMP	IEE	ECoP	Remarks
BREB						
01	EAP/BREB/G1	C	N/A	N/A		
02	EAP/BREB/G2A	C	N/A	N/A	Done	
03	EAP/BREB/G2B	C	N/A	N/A	Done	
04	EAP/BREB/G5	C	N/A	N/A		
05	EAP/BREB/G6	C	N/A	N/A		
06	EAP/BREB/G7	C	N/A	N/A		
07	EAP/BREB/W1A	B	Done	Done and disclosed		
08	EAP/BREB/W2	B	Done	Done and disclosed		
Total B category		02	02	02	2	
DPHE						
01	EAP/DPHE/G1	C	N/A	N/A	Done	
02	EAP/DPHE/G2	C	N/A	N/A		
03	EAP/DPHE/G3	C	N/A	N/A		
04	EAP/DPHE/G4	C	N/A	N/A		
05	EAP/DPHE/W1	B	EMP done, 2 nd revision	Done and disclosed		
06	EAP/DPHE/W2	B	EMP done, 2 nd revision	Done and disclosed		
07	EAP/DPHE/W3	B	EMP done, 3 rd revision	Done and disclosed		

Sl. No.	Package No.	Category	EMP	IEE	ECOP	Remarks
08	EAP/DPHE/W4	B	EMP done, 2 nd revision	Done and disclosed		
09	EAP/DPHE/W5	B	EMP done, 2 nd revision	Done and disclosed		
10	EAP/DPHE/W9A	B	EMP done, 3 rd revision	Done and disclosed		IEE to be revised again due to site change.
11	EAP/DPHE/W9B	B	EMP done, 2 nd revision	Done and disclosed		IEE to be revised again due to site and design change.
12	EAP/DPHE/W10	B	EMP done, 2 nd revision	Done and disclosed		
13	EAP/DPHE/W11	B	Indicative EMP done. Final version will be come out after final design of distribution pipeline, ground reservoir and location of OHTs and RP etc.	Indicative IEE done but revision required see EMP status.		IEE will be revised after receiving final design of the subproject.
14	EAP/DPHE/W12A	B	Indicative EMP done; 2 nd revision. Final version will be come out after final design of distribution pipeline and location of SWTP.	Indicative IEE done but revision required; see EMP status.		IEE will be revised after receiving final design of the subproject.
15	EAP/DPHE/W12B	B	Indicative EMP done. Final version will be come out after final design of distribution pipeline and location of the SWTP.	Indicative IEE done but revision needed, see EMP status.		IEE will be revised after receiving final design of the subproject.
16	EAP/DPHE/W13	C	N/A	N/A	Done	
17	EAP/DPHE/W14	C	N/A	N/A	Done	
18	EAP/DPHE/W15	C	N/A	N/A	Done	
19	EAP/DPHE/W18	B	Indicative EMP done. Final version will be come out after final design of SWTP, transmission and distribution pipeline and location of the clean water reservoirs etc.	Indicative IEE done but revision needed, see EMP status.		IEE will be revised after receiving final design of the subproject
20	EAP/DPHE/W19	B	Indicative EMP done; 2 nd revision. Final version will be come out after final design of Omni plant and location.	Indicative IEE done but revision needed, see EMP status.		IEE will be revised after receiving final design of the subproject
Total B category		13	13	13	4	
LGED						
01	EAP/LGED/OCB-W1A	B	EMP done, 3 rd revision	Done and disclosed		
02	EAP/LGED/OCB-W1B	B	EMP done, 1 st revision	Done and disclosed		
03	EAP/LGED/OCB-W2A	B	EMP done, 5 th revision	Done and disclosed		
04	EAP/LGED/OCB-W2B	B	EMP done, 5 th revision	Done and disclosed		
05	EAP/LGED/OCB-N/W3	B	EMP done, 4 th revision	Done and disclosed		
06	EAP/LGED/OCB/W4C	B	EMP done, 2 nd revision	Done and disclosed		
07	EAP/LGED/OCB/W4D	B	EMP done, 3 rd revision	Done and disclosed		
08	EAP/LGED/OCB-N/W5	B	EMP done 4 th revision	Done and disclosed		
09	EAP/LGED/OCB-N/W6	B	EMP done, 2 nd revision	Done and disclosed		
10	EAP/LGED/OCBN/W8	B	EMP done, 2 nd revision	Done and disclosed		
11	EAP/LGED/OCB-N/W9	B	EMP done, 2 nd revision	Done and disclosed	Done	
12	EAP/LGED/OCB-W10	B	EMP done, 2 nd revision	Done and disclosed		

Sl. No.	Package No.	Category	EMP	IEE	ECoP	Remarks
13	EAP/LGED/W19	C	N/A	N/A		
14	EAP/LGED/OCB-/W20	B	EMP done, 4 th revision	Done and disclosed		
15	EAP/LGED/OCB-/W21	B	EMP done, 2 nd revision	Done and disclosed		
16	EAP/LGED/W6A	C	N/A	N/A	Done	
Total B category		14	14	14	2	
RHD						
01	EAP/RHD/W1	B	Done	Done and disclosed		
02	EAP/RHD/W2	B	Done	Done and disclosed		
Total B category		02	02	02		
Grand Total (B category)		31	31	31	8	

75 For a detailed information on safeguards documents produced, see **Figure 4** below.

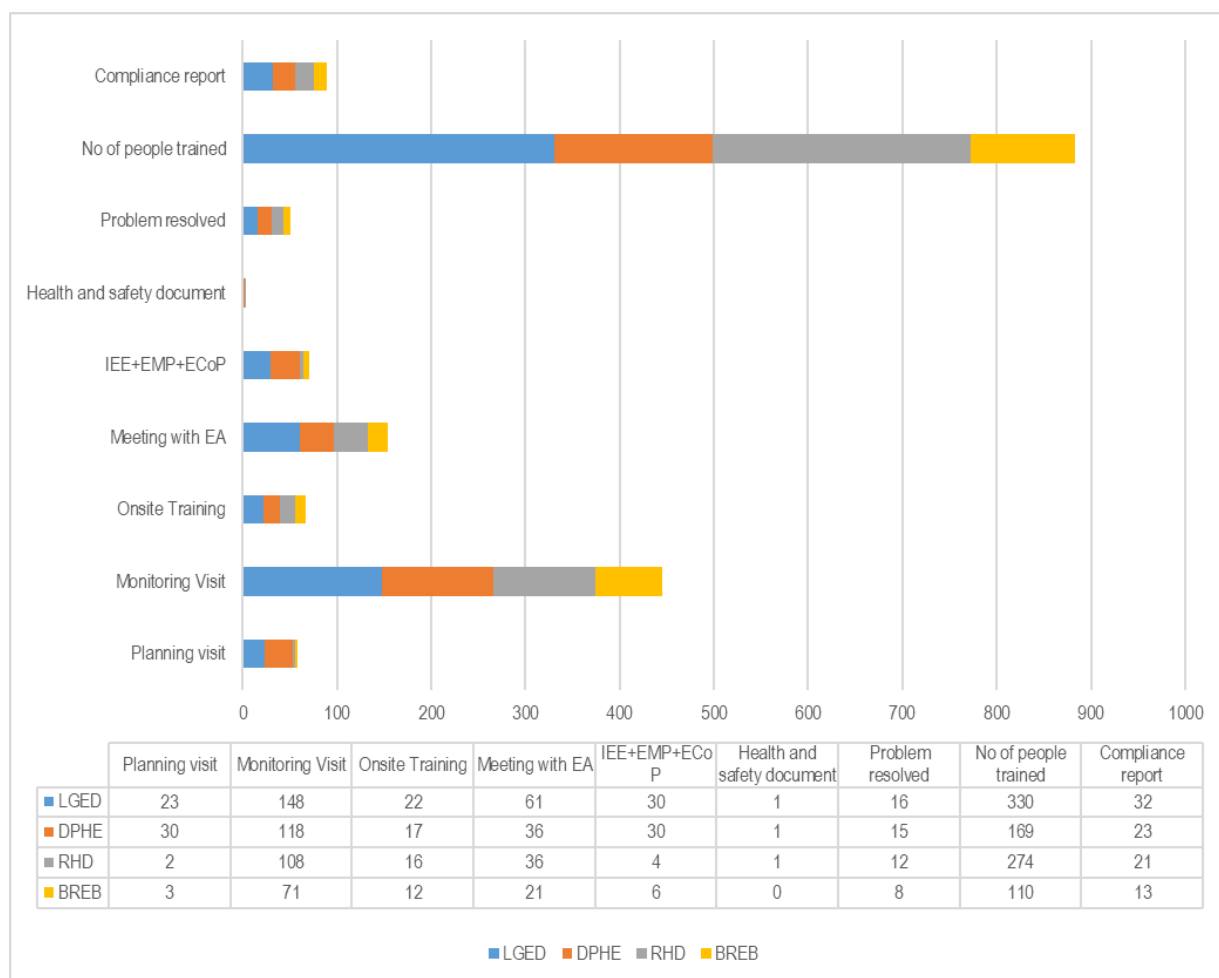


Figure 4 Comparative analysis of safeguard documents produced during monitoring (Dec 2020)

5.2 ENVIRONMENTAL SAFEGUARDS MONITORING

76 An environmental assessment, using ADB's Rapid Environmental Assessment (REA) checklist for urban development, was conducted and the results of the assessment demonstrated that the subprojects are not anticipated to cause significant adverse impacts. The proposed infrastructure development programme is classified as Environmental Category B as per the ADB's SPS 2009, as no significant impacts are envisioned. The related initial environmental examination (IEE) reports has been prepared in accordance with ADB SPS 2009 requirements for environment category B projects and provide mitigation and monitoring measures, for no envisaged significant impacts, as a result of implementing the subprojects.

77 The environmental mitigation measures, as stipulated in the respective EMP's and in the obtained environmental permit, are monitored during the implementation programme. In order to monitor the respective EMP's, environmental specialists from ADB and one environmental specialist from each DMSC are working as a team with the support of ADB safeguards team.

78 There are no indigenous people present in the subproject areas and so no impact on Indigenous peoples (IPs). These subprojects are hence categorized as Category C for Indigenous People. Therefore, no Indigenous Peoples Development Plan (IPDP) is required for this subproject.

79 The environmental mitigation measures, as stipulated in respective EMP's for the currently active civil works contract packages, are monitored as part of this EMR-05.

5.2.1 Monitoring Visits

80 In response to COVID-19, countries across the globe have implemented a range of public health and social measures, including movement restrictions, partial closure or closure of businesses, quarantine in specific geographic areas and international travel restrictions. During the reporting period the general level of epidemiology was not so high like urban area. However, the fear of death spread across the rural area also, thus, construction works slowed down rapidly due to the lockdown declared by the government. Environmental Safeguard team was not able to visit all the location due to pandemic situation which significantly affect environmental monitoring activity at EAP construction sites.

81 During planning phase in 5th six-month July-December 2020, a total 5 visits have been conducted by the Environmental specialists appointed by ADB. Besides, until date 51 environmental safeguards monitoring visits have been conducted at different times during the current cycle (5th six-month July-December 2020) of monitoring period. See **Table 11** and **Table 11** for details break down. **Figure 5 Planning visit to DPHE' water supply package** presents some photographs of planning visits. Also see photographs of monitoring visits in **Figure 5 Planning visit to DPHE' water supply package**. Environmental compliance report has been submitted to the concerned EA and ADB based on site visit and follow ups were tracked to observe corrective measures and desired progress (**Appendix-III**).

Table 11 Environmental safeguards monitoring visit conducted during July- December 2020

Site Visit During Planning Phase	Site Visit During Construction Phase				Total
	BREB	DPHE	LGED	RHD	
5	4	16	19	12	56



Figure 5 Planning visit to DPHE' water supply package



Figure 6 Monitoring visit to LGED/W9' work site (left) and DPHE/W9B' work site (right)

Table 12 Environmental monitoring visits and trainings conducted during July – December 2020

Date	DPHE								LGED										RHD		BREB		
	W3	W4	W5	W10	W9A	W9B	W12A	W11	W1A	W1B	W2B	W8	W3	W4C	W4D	W5	W6	W9	W20	W1	W2	G6	G7
21/7/2020				Training																			
18/8/2020																							
19/8/2020																					Training		
20/8/2020																							
13/9/2020																						Training	
29/9/2020										Training										Training			
1/10/2020																		Training			Training		
2/10/2020																							
28/10/2020										Training					Training		Training						
29/10/2020																		Training					
10/12/2020						Training																	
11/12/2020								Training															
12/12/2020							Training																

Legend	Visit
	Training

5.3 CONSTRUCTION PERIOD ENVIRONMENTAL QUALITY MONITORING

82 In order to ensure proper implementation of the environmental safeguard requirements during the construction period, Contractors have appointed third party organizations for testing of required environmental parameters (air quality, noise quality, surface water quality and groundwater quality). All instruments used by the organization are maintained following International Standards and calibrated regularly in accordance with the manufacturer's instructions (**Table 13**).

Table 13 Parameters, methods and laboratory for environmental quality sampling

Environmental Quality	Parameters	Methodology
Ambient Air Quality	PM10 and PM2.5	LATA Envirotech APM 250 with Combined PM10 Sampler and/or optical sensor mass measurement process
	SOx, NOx	LATA Envirotech LES 411
	CO	HTC CO-01 meter
Noise Level	Leq in dB	HTC Sound Level Meter
Surface Water Quality	pH and EC	Onsite test using EZDO 8200 Multi-meter
	Turbidity, TSS, DO, BOD, COD, Cl- and Ammonia	Samples collected from site & sent to the Laboratory for analysis.
Groundwater Quality	pH, EC and TDS	EZDO 8200 Multi-meter
	Fe, Mn, As, Cl-, TC, FC	Samples collected from site & sent to the Laboratory for analysis.

5.3.1 Air Quality

5.3.1.1 DPHE Component

83 Ambient air quality data at the project site measured to verify the current quality of air. The aim was to collect the existing air quality data and to compare the data with the air quality during project implementation phase to check if there is any high air pollution level due to the construction activities and to design adequate mitigation measures, as applicable. Dispersal of pollutants depends upon factors like prevailing wind direction and other weather conditions, atmospheric stability, height of the source. Ambient air quality testing was performed in Cox's Bazar Sadar (DPHE/W11) and Camp 26 (DPHE/W12A) in October 2020 for 8 hours (**Figure 7**). Filter and each chemical were measured before testing. Electro-Chemical Sensor device were calibrated before testing some other parameters. Results of the air quality monitored at the project location have been showed in **Table 14**.



DPHE/W11/AAQ in Cox's Bazar Sadar



DPHE/W12A/AAQ in Camp 26



RHD/W1/AAQ-1



RHD/W2/AAQ-1

Figure 7 Air quality monitoring in EAP sites

Table 14 Test results of ambient air quality monitoring in DPHE sites

Sample ID	Sampling Location	GPS Location	Parameters	
			PM2.5 ($\mu\text{g}/\text{m}^3$)	PM10 ($\mu\text{g}/\text{m}^3$)
DPHE/W11/AAQ	Cox's Bazar Sadar	21°26.130'N 92°01.196'E	24.4	48.9
DPHE/W12A/AAQ	Camp 26	20°56.932'N 92°15.226'E	32.5	63.1
*Bangladesh Standard for Ambient Air Quality			65	150
Duration (hour)			24	24

* The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.R.O. No. 220-Law/2005.

84 The air quality in the project area has slightly deteriorated along the roadside areas of the camps because of increased traffic. Brick kilns in Cox's Bazar and Teknaf may also be contributing to the problem. The monitoring team did not notice a significant impact in the camps but inhabitants have reported that they suffer from the dust generated from the loose soil when strong winds blow; serious dust pollution during stormy winds is an issue. From a health point of view, this should not be a great concern as the size of the dust particles does not allow them to penetrate into the respiratory tract. The area of influx is hilly and close to the sea, and this geographical location, coupled with the limited amount of industry in the area; means that air quality remains within acceptable limits.

5.3.1.2 RHD Component

85 The ambient air quality monitoring was carried out at four locations along the project corridor from 12 to 15 September 2020. The parameters were Particulate Matter (PM_{2.5} and PM₁₀), Sulphur Oxides (SO_x), Carbon Monoxide (CO), Nitrogen Oxides (NO_x), Temperature, Humidity, Wind Speed & Wind Direction. “AEROQUAL series 500 portable air quality monitors” were used for the measurement of particulate matters (PM₁₀ and PM_{2.5}) and gaseous pollutants (SO_x and NO_x) (**Figure 7**). The duration of monitoring was 8 hours. The weather was cloudy during the monitoring period. Proper Personal Protective Equipment (PPE) including vests and helmets, face mask and hand gloves were used during the monitoring period. Results of the air quality monitored at the project location have been showed in **Table 15**. The details of this result are shown in Appendix IV of this report.

Table 15 Test results of ambient air quality monitoring in RHD sites

Sample ID	Sampling Location	GPS Location	Parameters				
			PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)	SO ₂ (µg/m ³)	NO (µg/m ³)	CO PPM
RHD/W1/AAQ_01	Camp Site, Khuniapalong, Ramu	21.34154°N 92.07609°E	39.66	45.88	3.25	4.73	1
RHD/W1/AAQ_02	Moricha Bazar, Ukhiya	21.30612°N 92.09585°E	42.21	56.20	3.89	5.45	1
RHD/W2/AAQ_01	Base camp, Balukhali, Ukhiya	21.19822°N 92.17068°E	31.16	40.52	3.11	4.89	1
RHD/W2/AAQ_02	Unchiprang, Hnila, Teknaf,	21.09089°N 92.21284°E	34.98	46.22	4.55	5.34	1
*Bangladesh Standard for Ambient Air Quality			65	150	365	100	9
Duration (hour)			24	24	24	Annual	8

* The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.R.O. No. 220-Law/2005.

86 The results of the air quality test show that all of the parameters are within the national standard of ambient air quality for all the locations adjacent to the under construction highway and construction yards. Vehicles and people movement was limited due to COVID-19 pandemic than the usual time, whereas the emission of air pollutant was very minimum. Additionally, the air quality sampling was carried out during the rainy season which reduced dust generation.

5.3.2 Noise Level Measurement

5.3.2.1 DPHE Component

87 A-weighted sound pressure level was measured at the construction sites during normal working hours by using calibrated noise level meter. Noise level was measured in October 2020 from active construction sites during day time for 2 hours (**Figure 8**). Noise level was measured using a calibrated HTC Sound Level Meter set to A-weighting, slow response and statistical analysis settings. The values of noise levels at project sites are presented in **Table 16**.



Figure 8 Noise level monitoring in project sites

Table 16 Test results of noise level monitoring in DPHE sites

Sample ID	Sample Location	Time		Noise Level (dBA) (LAeq)	Bangladesh Standard*	Land Use Category
		Start	End			
DPHE/W11/NM	Cox's Bazar	10:00 AM	12:00 PM	52.3	55	Residential Area
DPHE/W12A/NM	Camp 26	10:00 AM	5:00 PM	61.1	60	Mixed Area

*Notes: Land use category is based on the classification provided in the Noise Pollution Control Rules (2006). The sound level standards for mixed area are 60 at day time and 50 at night time. Noise Level is the average noise recorded over the duration of the monitoring period.

88 Excessive noise is a potential issue for both human and biological receivers and can cause a range of negative issues, from mild annoyance and moderately elevated levels of aggression to significant disturbance of behavioral patterns and in severe cases temporary or permanent hearing loss. The Noise Pollution (Control) Rules 2006 were adopted under Section 20 of the Bangladesh Environment Conservation Act 1995 with a view to laying down the specific guidelines regarding noise pollution and the degree of allowable noise in different areas.

89 The road traffic along SWTP site in Cox's Bazar and small bazar and vehicles on the internal road in camp 26 are the main sources of noise. The impact of noise generation on the settlements is not significant as most of the houses are at some distance from the site. The test result revealed that noise level is not much disturbing due to project components. Different types of residential and commercial structures are located near the monitoring site in Camp 26 whereas only settlements are located along the SWTP site in Cox's Bazar. Moreover, noise originating from communication among the Rohingya people,

service providers, relief distributors, and from a sharp increase in vehicular movement. However, the level of noise was within the limit of residential as per DoE standard was satisfactory in DPHE/W11 and slightly exceeded in the camp 26.

5.3.2.2 RHD Component

90 Noise level was analyzed at eight (8) project influenced locations along the project alignment. The monitoring was conducted from 12 to 15 September 2020. Noise measurement at each location was done continuously for 30 minutes at day and night time. High visibility safety vests and helmets were used as PPE during the noise measurement period. Noise level was measured using a calibrated HTC Sound Level Meter set to A-weighting, slow response and statistical analysis settings (**Figure 8**). The values of noise levels at project sites are presented in **Table 17**. The Laboratory test result is given in Appendix IV of this report.

Table 17 Test results of noise level monitoring in RHD sites

Sample ID	Location	GPS Location	Time				Noise Level dBA (LAeq)*		Land Use Category	Bangladesh Standard	
			Day		Night		Day	Night		Day	Night
			Start	End	Start	End					
RHD/W1/NM-1	Camp Site, Khuniapalong	21.34164°N 92.07618°E	10.30 am	11.00 am	8.47 pm	09.02 pm	53.55	42.60	Industrial	75	70
RHD/W1/NM-2	Beside Mirza Ali Mosque, Khuniapalong	21.33791°N 92.07903°E	11.30 am	12.00 pm	9.15 pm	10.15 pm	67.90	56.84	Silent	50	40
RHD/W1/NM-3	Moricha Bazar	21.30869°N 92.09673°E	01.10 pm	01.40 pm	9.30 pm	10.00 pm	70.05	58.25	Commercial	70	60
RHD/W1/NM-4	Khademul Islam Madrasa, Khuniapalong	21.35620°N 92.07909°E	02.00 pm	02.30 pm	10.05 pm	10.35 pm	52.26	42.50	Silent	50	40
RHD/W2/NM-1	Base Camp, Balukhali	21.19816°N 92.17069°E	10.40 am	11.10 am	8.05 pm	08.35 pm	58.25	52.60	Industrial	75	70
RHD/W2/NM-2	Palongkhali Bazar	21.14537°N 92.15821°E	02.10 am	02.40 pm	08.57 pm	09.27 pm	68.15	58.47	Commercial	70	60
RHD/W2/NM-3	Ulubunia Rastar More	21.13274°N 92.18329°E	12.22 pm	12.52 pm	9.50 pm	10.20 pm	62.44	49.88	Commercial	70	60
RHD/W2/NM-4	Unchiprang	21.09093°N 92.21279°E	11.25 am	11.55 am	10.58 pm	11.28 pm	67.98	58.10	Commercial	70	60

*Notes: Land use category is based on the classification provided in the Noise Pollution Control Rules (2006). The sound level standards for mixed area are 60 at day time and 50 at night time. Noise Level is the average noise recorded over the duration of the monitoring period.

91 The result shows that time weighted average value of the sound measured in two locations are exceeding the national standard set for silent zone at day and night time (RHD/W1/NM-2 and RHD/W1/NM-4). The result also revealed that RHD/W1/NM-3 is the noisiest place (70.05 dBA for day time and 58.25 dBA in night time) whereas RHD/W1/NM-4 is the quietest location (52.56 dBA for day time & 42.50 dBA in night time) among the monitoring sites selected along the project alignment. Traffic volume, people movement and construction works are the possible noise sources identified during noise measurement. Furthermore, the sampling areas have already been disturbed by many commercial and anthropogenic activities. To conclude, the construction activity has insignificant impact over the noise limit exceedance at those sensitive areas.

5.3.3 Surface Water Quality

5.3.3.1 DPHE Component

92 The surface water sample was collected in October 2020 from water body flows through the camp 26 and Bakkhali river in Cox's Bazar (**Figure 9**). The quality of surface water is to be monitored through laboratory analysis collected from at least 1m from the bank/shore of the river. Polyethylene bottles (PET bottles) of 1 liter were recommended for samples to measure physical and chemical parameters. EZDO-8200 Multi-meter was used to conduct the on-site test of pH and EC for surface water. The collected samples were sent to the DPHE laboratory. Before collecting water sample, bottles were washed with distilled water. Results of the surface water quality at the project location are presented in **Table 18**.



Figure 9 Surface water sampling and onsite testing in project sites

Table 18 Test results of surface water quality monitoring in DPHE sites

Sample ID	Sampling Location	Surface water parameters							
		Turbidity NTU	pH	EC $\mu\text{s/cm}$	TSS mg/l	DO mg/l	BOD5 mg/l	COD mg/l	Cl- mg/l
DPHE/W11/SW	Cox's Bazar	77	7	464	8	6.52	6	24	112
DPHE/W12A/SW	Camp 26	566	5.9	191	21	5.92	9	40	26
* Standards for Inland Surface Water		NYS	6-9	1200	150	4.5-8	50	200	600

* Standards for Waste Water from Industrial Units or Projects is followed Environmental Conservation Rule (ECR) '97

93 The values of above mentioned parameters were within the acceptable limit of Department of Environment (Standard for Waste water from Industrial Units or Project wastes, Environmental conservation Rules 13, 1997). Nevertheless, the water is slightly acidic as per pH values which may cause skin diseases in the long run. Furthermore, the canal water has normal amount of DO, BOD and COD which is favorable for aquatic life. Therefore, it is recommended that the surface water is safe for any kind of domestic uses.

5.3.3.2 RHD Component

94 Surface water sample was collected from two (2) project influenced locations (Reju Khal and Noapara Khal) along the project alignment on 13 and 15 September 2020 (**Figure 9**). The parameters measured were pH, Temperature, Turbidity, Electric conductivity (EC), Phosphate (PO₄), Total suspended Solids (TSS), Chemical Oxygen Demand (COD), Biochemical Oxygen demand (BOD), Sulphate (SO₄) and Dissolved Oxygen (DO). The sample were collected in plastic sampling bottles, kept in an ice cooler, after necessary stabilization/fixing, and analyzed within 24 hours of being collected. The sampling bottle was washed by distilled water before sampling. EZDO 8200 Multimeter was used to conduct the on-site test of pH, EC and Temperature. Lutron DO-5509 was used to conduct the on-site test of Dissolved Oxygen (DO). The sample were placed to Department of Public Health Engineering (DPHE) Laboratories for testing of remaining parameters. Results of the surface water quality at the project location are presented in **Table 19**. The Laboratory test result is given in Appendix IV of this report.

Table 19 Test results of surface water quality monitoring in RHD sites

Sample ID	Sampling Location	Surface water parameters									
		pH	Temp °C	Turbidity NTU	EC µs/cm	TSS mg/l	DO mg/l	BOD5 mg/l	COD mg/l	PO ₄ mg/l	SO ₄ mg/l
RHD/W1/SW		7.5	31.2	63	222	8	7.5	9	40	0.18	1
RHD/W2/SW		7.14	29.6	71	148	7	6.5	2	8	0.13	43
* Standards for Inland Surface Water		6-9	40	NYS	1200	150	4.5-8	50	200	NYS	NYS

* Standards for Waste Water from Industrial Units or Projects is followed Environmental Conservation Rule (ECR)'97

95 According to the test results, it is found that the level of pH and DO of collected surface water samples are within the standard set by ECR'97. BOD levels are found to be below the limits as mentioned in ECR standards, 1997. None of the EC values exceeded the set standard of ECR-97. TSS concentrations in the collected water samples have shown lower concentration relative to the standard limit as per ECR-97. The result shows that the concentration of Sulphate and Phosphate is 1 and 43 mg/l and 0.18 and 0.13 mg/l recorded in RHD/W1 and RHD/W2 respectively which are not yet standardized according to ECR, 1997. Thus, it may be concluded that the project construction activities have less or no impact over the surface water adjacent to the project corridor.

5.3.4 Groundwater Quality

5.3.4.1 DPHE Component

96 The ground water sample was collected in December 2020 from a shallow tube-well of DPHE/W19 subproject site in Camp 4 ext. (**Figure 10**). The quality of ground water was collected properly by Polyethylene bottles (PET bottles) of 1 liter were recommended for samples to measure physical and chemical parameters. Iron content seems very high in the ground water which is not harmful for human health. Results of the ground water quality at the project location have been showed in **Table 20**.



DPHE/W19/GW in Camp 4 ext.



RHDW1/GW

RHDW2/GW

Figure 10 Groundwater sampling in project site

Table 20 Test results of groundwater quality monitoring in DPHE site

Sample ID	Sampling Location	Groundwater parameters								
		pH	TDS (mg/l)	Turbidity (NTU)	Salinity (ppt)	EC (μs/cm)	Chloride (mg/l)	Arsenic (mg/l)	Iron (mg/l)	Manganese (mg/l)
DPHE/W19/GW	Camp 4 ext.	6.7	65	59	0	99	8	<0.001	11	0.63
* Standards for Drinking Water		6.5-8.5	1000	10	-	-	150-600	0.05	0.3-1.0	0.1

* Standards for Drinking Water followed Environmental Conservation Rule (ECR) 97

97 As it can be seen that all the parameters were within the safe limit for Bangladesh as per ECR 1997 except Fe and Mn. The drinking water source is ground water well and is contaminated with Fe (11 mg/l) and Mn (0.63 mg/l). As mitigation measure all project personnel were suggested not to drink water from the tube-well and safe drinking water is being supplied to all employees and worker at the site.

5.3.4.2 RHD Component

98 Groundwater samples were collected from four (04) project influenced locations along the project alignment on 13 and 15 September 2020 (**Figure 10**). The parameters measured were pH, Color, Temperature, Turbidity, Manganese (Mn), Arsenic (As), Iron (Fe), Chloride (Cl), Salinity, Total Hardness as CaCO₃, Total coliform (TC) and Fecal Coliform (FC). The samples were collected in 1-liter plastic sampling

bottles and then kept in an ice cooler. The sampling bottle was washed by distilled water before sampling. PPE including vests and helmets were used during the sample collection period. EZDO 8200 Multimeter was used to conduct the on-site test of pH, Temperature and Salinity. The sample were placed to Department of Public Health Engineering (DPHE) Laboratories for testing of remaining parameters. Results of the ground water quality at the project location have been showed in **Table 21**. The Laboratory test result is given in Appendix IV of this report.

Table 21 Test results of groundwater quality monitoring in RHD sites

Parameters	Unit	RHD/W1/GW-1	RHD/W1/GW-2	RHD/W2/GW-1	RHD/W2/GW-2	Standards for Potable Water*
		21.33959°N 92.07819°E	21.34150°N 92.07550°E	21.19819°N 92.17059°E	21.09073°N 92.21338°E	
		Deep Tube well Water	Deep Tube well Water	Submergible Water Pump	Deep Tube well Water	
		Labor Shed, Khuniapalong	Base Camp, Khuniapalong	Base Camp, Balukhali	Madrasaha Unchiprang	
pH	-	6.15	5.95	7.55	6.36	6.5-8.5
Temperature	°C	31.5	30.6	28.9	30.1	20-30
Salinity	ppm	150	223	166	215	<600
Color	Hazen	1.7	1.2	1.1	0.9	15
Turbidity	NTU	3.9	2.8	2.3	1.0	10
Manganese (Mn)	mg/l	0.05	0.08	0.31	1.28	0.1
Iron (Fe)	mg/l	0.29	0.23	0.57	0.18	0.3-1
Arsenic (As)	mg/l	0.001	0.001	0.001	0.001	0.05
Chloride (Cl ⁻)	mg/l	12	10	15	160	150-600
Total Hardness as CaCO ₃	mg/L	125	130	167	200	200-500
Total Coliform (TC)	N/100ml	0	0	0	0	0
Fecal Coliform (FC)	N/100ml	0	0	0	0	0

* Standards for Drinking Water followed Environmental Conservation Rule (ECR) 97

99 According to the test results, it is found that value of all the sampling parameters are found well within the national standard set for potable water except temperature for two samples because of hot and humid weather conditions. pH level in three tube-wells are found to be below the limits as mentioned in ECR standards, 1997. None of the salinity values exceeded the set standard of ECR-97. As and Fe values of groundwater samples are found within the DoE's standard limit. The collected groundwater samples had shown to contain levels of CaCO₃ concentrations within the permissible limit as per ECR-97. Cl⁻ concentration level in the groundwater did not exceed the permissible limit set by ECR-97. TC and FC concentrations in the collected groundwater samples were found to be nil. Mn concentrations in two groundwater samples collected from RHD/W2 has exceeded the permissible limit set by ECR-97. As mitigation measure all project personnel were suggested not to drink water from the tube-well and safe drinking water is being supplied to all employees and worker at the site.

5.3.5 Soil Quality

100 Two soil samples were collected from project influenced location on 13 and 15 September 2020. The samples were collected in a composite sampling method by Auger boring from 10 inch below the surface level (**Figure 11**). The sample were first placed in zipped lock plastic bags and then transferred to plastic jars. The parameters are pH, Total Organic Carbon (TOC), Iron (Fe), Zinc (Zn) and Sulfur. The

collected soil sample were placed to the laboratory for further analysis. The results are in **Table 22** and laboratory test result is given in Appendix IV.



Figure 11 Soil sampling at different locations in RHD sites

Table 22 Test results of soil quality monitoring

Parameters	Unit	RHD/W1/SL	RHD/W2/SL	Dutch Standards for Soil*
		21.34212°N 92.07667°E	21.19711°N 92.17110°E	
		Camp site Khuniapalong	Base Camp, Batching Plant, Balukhali	
pH	-	7.22	7.19	NYS
Iron (Fe)	%	2.12	2.28	NYS
Total Organic Carbon	%	1.24	1.32	NYS
Zinc	mg/kg	17.76	19.91	140
Sulfur	mg/kg	33.21	29.37	NYS

NYS= Not yet set

101 There is no country regulation/standard for soil. In absence of local country standards, it is the environment consultant's practice to use globally recognized 'Dutch Ministry of Public Housing, Land-use and Environmental Guidelines - Soil and Groundwater Standards' to assess soil quality and to determine the need, if any, for remedial action. Parameters analyzed in baseline quality of soil were observed to be well below the threshold limits for Intervention as per the Dutch Standards where almost most of the parameters are not yet standards according Dutch Standards. Detail test result analysis is presented below:

102 **pH:** Soil pH or soil reaction is an indication of the acidity or alkalinity of soil and is measured in pH units. Soil pH is defined as the negative logarithm of the hydrogen ion concentration. From the test result, the pH values were 7.22 and 7.19 for the sampling location collected from RHD/W1 and RHD/W2 respectively.

103 **Iron (Fe):** Iron is the fourth most abundant element found in soil though it is largely present in forms that cannot be taken up by plants. From the test result, the Iron (Fe) concentration in the project influenced area was found 2.12% and 2.28%.

104 **Zinc (Zn):** The amount of zinc present in the soil depends on the parent materials of that soil. According to Dutch standard, the concentration of Zinc was below the standard. From the test results, Zinc concentration was found 17.76 and 19.91 mg/kg in the project influenced area.

105 **Sulfur:** Sulfur in soils alone do not pose a problem for roadways and structures. From the test results, Sulfur was found 33.21 and 29.37 mg/kg in the project influenced area.

106 **Organic Carbon (OM):** Total organic carbon is a measure of the carbon contained within soil organic matter. From the test results, Organic Carbon (OC) was found 1.24 % and 1.32% in RHD/W1 and RHD/W2 respectively.

107 In summary, the activities of both contracts have less effect on the degradation of the current soil quality.

5.4 TREE PLANTATION PROGRAMME

108 Due to implementation of Emergency Assistance Project, habitats of flora and fauna are being disturbed to some extent, therefore, provision for plantation is kept in the contract for all the components and this would help to conserve resources, prevent soil erosion, enhance air and water quality, sequestration of carbon and conservation of biodiversity.

109 During 5th monitoring period, tree plantation is being carried out along storm water drainage canals in both LGED/20 and LGED/21 packages and access road package LGED/W4D (**Figure 12**). The key objectives of this plantation are to stabilize the canal embankment, reduce risk of soil erosion and landslide, and improve biodiversity.

110 Special attention should be paid to the tree plantation plan covering selection of tree species, proper distribution of the species, plantation technique and after care of the planted saplings so that plantation to be successful and helpful in preventing soil erosion and restoration of biodiversity as well. In view of this, a detailed tree plantation programme is asked from the contractor to be prepared in line with the plantation plan and guideline is provided in the IEE. Site specific information on tree plantation program including quantities of saplings, species distribution, plantation technique etc. are given in **Table 23**.

Table 23 Tree plantation program conducted in LGED Component

Packages	Quantities of Saplings	Species Distribution	Plantation Technique
EAP/LGED/OCB-N/W20	6000	Jarul- 100 nos, Kanchanbadi- 100 nos, Jhao tree- 1500, Agor- 500nos, Sunali- 300 nos, Hybrid Akashi- 3000 nos, Gamari- 500 nos.	2 m distance
EAP/LGED/OCB-N/W21	2600	Kathbadam- 300 nos, Jam- 200 nos, Jolpai- 500 nos, Amloki- 300 nos, Arjun- 200 nos, Hybrid Akashi- 500 nos, Chalta- 300 nos, Hortoki-300 nos.	
EAP/LGED/OCB/W4D	1000	Hybrid Akashi/ Eucalyptus - 700 nos, Mahogany- 300 nos.	



Figure 12 Tree plantation programme in the project sites

111 Compensatory plantation programme to be done by RHD for the loss of 468 no. of trees due to the implementation of the Improvement of National Highway (N1) From Link Road (Cox's Bazar) To Teknaf under Emergency Assistance Project. This plantation is for environmental, landscape and for aesthetic purposes. However, in the event of an unforeseen rise in the number of deaths of COVID-19, tree planting may take place by July ~ August in 2021, in a tentative changed program.

112 Arboriculture unit under RHD have their own nurseries to produce saplings which will be used in this project. The saplings will be planted along the highways, however, two rows of plantations on both sides of the road is planned. The first row would be 1000 mm from the end of the slope, and the distance between rows of trees would be 2000 mm. Maintenance of the trees will be made for two years, where the health, vigor and compatibility of vegetation with the environment and damage from insects and diseases right from the time of planting will be conserved. On premature death of any plant, new plant will be planted. One gardener will be employed for per km maintenance and RHD will bear all the expenses incurred for it.

113 Under DPHE component, the plantation is being done to land stabilization, reduce risk of land slide, improve watershed, enrich micro-climatic condition. In addition, the planted native species also enrich the ecosystem by providing food and shelter to wildlife and other microorganism, improving overall goods and services can attain from the ecosystem. However, contractors are responsible for the after care of the sampling and payment is to be made only when trees are fully grown. Till date, more than 200 saplings of various species such as Garjan, Telsur, Jhaw, Neem etc. were planted in 15 schemes under DPHE/W1 and DPHE/W2.

5.5 TRAINING, AWARENESS AND WORKSHOP

114 Onsite trainings and meetings with contractors and EAs were conducted during the current monitoring period. The site-based trainings were arranged by the environmental specialists to sensitize the contractors on implementing the environmental safeguards according to the EMPs and other contracts. A total 14 onsite trainings were arranged during July – December 2020 where total 160 participants were attended. Environmental specialists have given a brief lecture to the participants majorly focused on: occupational health and safety including PPEs, safety signage, housekeeping, waste management,

management of hazardous materials, emergency procedures. Moreover, explained about the standard procedure for COVID-19 such as appropriate PPEs, entry protocol to the worksite, hand washing protocol, discourage gathering at site and maintain physical distance, place signboard and posters at site on COVID response etc. However, all the participants hold a very positive attitude towards the training program. Details of the monitoring visits are given in **Table 24** below. Photographs of onsite trainings are in **Figure 13**.

Table 24 Environmental safeguards training conducted during July – December 2020

Onsite Training and No. of Participant				Total
BREB	DPHE	LGED	RHD	
1	4	6	3	14
8	39	77	36	160

115 Besides trainings, regular meetings with EAs were conducted on frequent basis to better coordinate with all the EAs. To date 21 meetings have been conducted. **Table 25** below represents the breakdown of meetings carried out by the environmental specialists.

Table 25 Meeting held on environmental safeguards implementation during July – December 2020

Meeting with EAs				Total
BREB	DPHE	LGED	RHD	
2	6	8	5	21



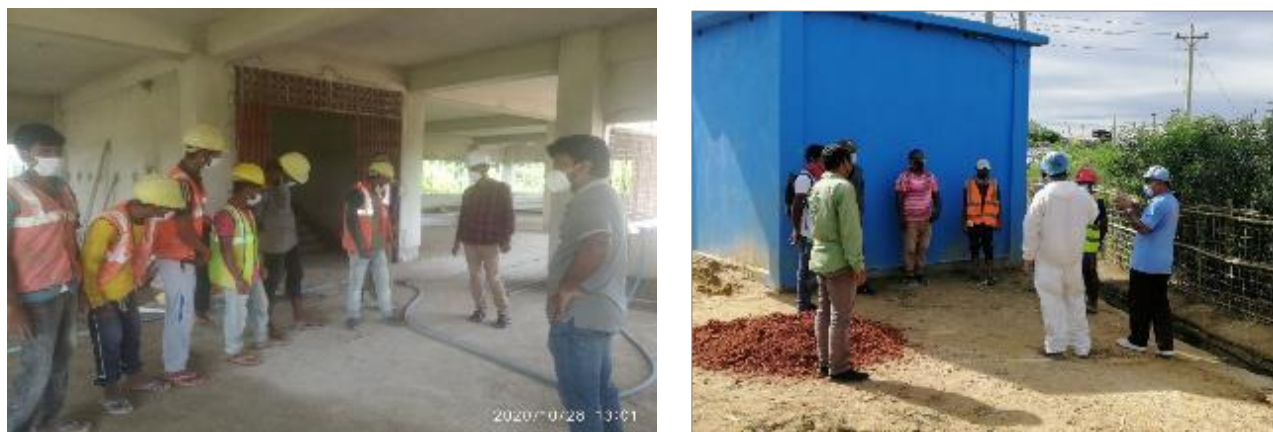


Figure 13 Onsite trainings conducted at RHD/W2, DPHE/W9B, LGED/W6 and BREB/G6

5.6 RESPONSE TO COVID-19

116 The whole reporting period (July-December 2020) went through pandemic situation of COVID-19. Though the situation was not favorable for construction activities works went on regular basis with quality. EAs directed all concerned to take proper measures to prevent the pandemic and contractor's workers were advised to keep proper health hygiene by wearing face mask, hand washing and maintaining physical distances at the work sites. The following preventive measures were taken during the reporting period to protect the pandemic situation:

117 **Respiratory hygiene.** Corona virus may transmit through respiration and it is one of the main causes to spread COVID-19. As a protection measure construction workers were used face mask supplied from respective Contractors when they were in construction works.

118 **Hand hygiene.** Hand sanitizer like soap, hand wash and alcoholic hand rubs were provided to only the management /supervising personnel of the contractors but not to the labors. Hand hygiene facilities were provided to the participants of training, workshops, official meetings and demonstration fields.

119 **Physical distancing.** A safe physical distance has been maintained in all indoor and outdoor workplaces and direct physical contact i.e., hugging, touching, shaking hands has been avoided. A strict control over external access, to the offices has been maintained. Reduction of people's density in the building (no more than one person per 10 square meters) has not been maintained but physical spacing at least 1 meter apart for workstations and common spaces, such as entrances /exits, canteens, stairs, and other areas congregation or queuing of employees or visitors /clients has been maintained. Physical meetings have been minimized and online meeting, by using teleconferencing facilities like zoom and Microsoft cloud meeting software has been enhanced in almost all offices.

120 **Regular environmental cleaning and disinfection.** To remove dirt, debris from used materials regular housekeeping was done at the regular basis in the construction sites. Office room, kitchen, toilets, working appliances and other common spaces with their fittings were disinfected regularly but the labor sheds and their kitchen and toilets were not disinfected as the contractors didn't provided those materials to them.

121 High risk category of exposure to COVID-19 was not found in the project area. No death case of project personnel or contractors' personnel by contamination of COVID-19 has been recorded during

reporting period. Therefore, no such preventive measures have not been described in this period of reporting.

5.7 ENVIRONMENTAL ISSUES OF THE CURRENT PROJECT

122 Until date a few numbers of environmental issues have ben encountered or identified to be affecting project design. **Table 26** represents the environmental issues, recommendations and measures taken.

123 Summary of Key Issues Identified are:

- Site specific EMP yet to be submitted by the contractors;
- Waterlogging problems due to project implementation at several sites in the project area;
- Inadequate environmental protection measures for both batching plant and hot mix plant;
- Lack of proper solid waste management system;
- Dust pollution resulting from construction work and irregular watering;
- Lack of proper management for hazardous materials;
- Lack of proper PPEs;
- Poor implementation of safety measures for COVID-19 in both camps and construction sites;
- Consideration of community health and safety is minimal; and
- No site has proper emergency procedure.

124 **Figure 14** later represents some currents safeguards photographs from various sites taken during field visits.

Table 26 Environmental Status of the subproject, issues and recommendation

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
DPHE W3	<ul style="list-style-type: none"> Environmental quality monitoring (air, noise, surface water and groundwater) for construction phase has been carried out by the contractor in January 2020 in accordance to the EMP. Monitoring report has been submitted by the contractor. Pump house constructed at the low laying area which might create waterlogging problems. Water storage tanks are kept on the access road created disturbance to the passerby. No safety measures were taken for working at height. Foundation pits of pump house and solar panel were not covered properly. 	<ul style="list-style-type: none"> Health and safety plan is partially followed. PPEs partially addressed. Site safety signs are placed at the construction site. Water tanks were removed from the access road and stored in the secured location. Plinth level of pump house has been raised and natural drainage kept undisturbed. Foundation pits were confined but unauthorized entry was observed in the active working site. First aid box is available at the site. Site safety signboards are placed in the site. 	<ul style="list-style-type: none"> Boundary fencing for the pump house and solar panel is yet to construct, unauthorized entry in the site was seen. Excavated soils are stockpiled on the local road hindering accessibility. Poor implementation of safety measures for COVID-19 at construction sites. Poor waste management was noticed during site inspection. No tool box meeting was conducted at site to educate the workers. Emergency procedure was not followed at site. 	Construction work is almost completed. Site to be reinstated properly.
DPHE W4	<ul style="list-style-type: none"> Environmental quality monitoring survey but yet to do. Labor were seen without PPEs at the excavation site. Socio-economical disturbance happened due to water distribution network works. Pump house constructed on the natural drainage canal which might create waterlogging problems. No safety measures were taken for working at height. Toolbox meeting is still not being held at any site. 	<ul style="list-style-type: none"> PPEs are partially implemented in the site. Plinth level of pump house has been raised and natural drainage kept undisturbed. Foundation pits were confined but unauthorized entry was observed in the active working site. Gas cylinder is supplied to the worker shed as cooking fuel. First aid box is available at the site. Site safety signboards are placed in the site. 	<ul style="list-style-type: none"> Environmental quality monitoring survey has not been done yet. Poor implementation of safety measures for COVID-19 at construction sites. Excavated soils are stored on the local road hinders accessibility. Poor waste management was reported during site inspection. No tool box meeting was conducted at site to educate the workers. Emergency procedure was not followed at site. 	Contractor needs to implement the Health and Safety plan to improve their construction practice.
DPHE W5	<ul style="list-style-type: none"> Environmental quality monitoring (air, noise, surface water and groundwater) for construction phase has been carried out by the contractor in January 2020 in accordance to the EMP. The construction site was confined but unauthorized access specially children were observed inside the active working site. No safety measures were taken for working at height. No fire protection is found in the site. Emergency procedure was not followed at site. Foundation pits of pump house and solar panel were not covered properly. 	<ul style="list-style-type: none"> Health and safety plan is partially followed. PPEs partially addressed. Site safety signs are placed at the construction site. Water tanks were removed from the access road and stored in the secured location. Plinth level of pump house has been raised and natural drainage kept undisturbed. Foundation pits were confined but unauthorized entry was observed in the active working site. First aid box is available at the site. 	<ul style="list-style-type: none"> Boundary fencing for the pump house and solar panel is yet to construct, unauthorized entry at the site was seen. Excavated soils are stockpiled on the local road hindering accessibility. Poor implementation of safety measures for COVID-19 at construction sites. Poor waste management was noticed during site inspection. No tool box meeting was conducted at site to educate the workers. Emergency procedure was not followed at site. 	Construction work is almost completed. Site to be reinstated properly.

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
		<ul style="list-style-type: none"> Site safety signboards are placed in the site. 		
DPHE W9A	Construction work was not started during this period.	<ul style="list-style-type: none"> Contractor mobilized to the site recently. Construction site is deviated from the design location due to land scarcity. Site preparation in underway in the camp 4 ext. Environmental quality monitoring for pre-construction stage is not conducted yet. Site Specific EMP yet to submit by the contractor. Waste management is absent in the site. Health and safety measures are not followed work in the construction site; labors found to work without PPEs. Insufficient safety measures for COVID-19 in construction sites. Tool box meeting was not conducted at site to educate the workers. Emergency procedure was not followed at site. 	Not enough time to analyze the issues.	Environmental monitoring for pre-construction should be done asap and Contractor needs more focused on OHS training, waste management and pollution control.
DPHE W9B	<ul style="list-style-type: none"> Construction site is deviated from the design location, shifted to the hilltop which is prone to landslide and has been razed without protection measures. Discussion is underway to resolve this issue. Construction site is confined but unauthorized entry was observed in the active working site. Drainage facility for storm water runoff is not adequate where gully erosion is seen. Slope protection measure should be taken immediately. Waste management measures are not followed especially for construction wastes at the site. Environmental quality monitoring for pre-construction stage is not conducted yet. Fuel storage is not confined and kept the drums along the kitchen. Moreover, no fire protection is arranged for fire incident. Health and safety measures are not followed work in the construction site; labors found to work without PPEs. Safety protocol for COVID-19 is not followed at the site. 	<ul style="list-style-type: none"> Design revision considering slope protection, drainage facility is being done by the Consultant. PPEs are partially addressed. Boundary fencing erected to control the unauthorized entry in the site. Site safety signs are placed. First aid box is available at the site. Gas cylinders are supplied to the labor shed for cooking to avoid tree cutting. 	<ul style="list-style-type: none"> Environmental quality monitoring has not been conducted yet. Site Specific EMP yet to submit by the contractor. Insufficient safety measures for COVID-19 in construction sites. Tool box meeting was not conducted at site to educate the workers. Emergency procedure was not followed at site. 	Environmental monitoring for should be done asap and Contractor needs more focused on OHS training, waste management and pollution control.

Package	Major issues identified during 4 th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
	<ul style="list-style-type: none"> No safety signage is placed in the site. No first aid box is available at the site. Tool box meeting was not conducted at site to educate the workers. Emergency procedure was not followed at site. 			
DPHE W10	<ul style="list-style-type: none"> Environmental quality monitoring (air, noise, surface water and groundwater) for pre-construction phase has been carried out by the contractor on 20 January 2020 in accordance to the EMP. Monitoring report has been submitted. Construction site is not confined and children were observed in the active working site. Health and safety measures are not followed for the labors; they work in the site without PPEs. Site safety signage are absent in the site. Waste management measures are not followed for construction waste in the site. Drainage congestion occurred in the working site. No protection was taken for site excavation site more than 2m in depth. No first aid box is available at the site. No fire protection was found. No tool box meeting was conducted at site to educate the workers. Emergency procedure was not followed at site. Safety protocol for COVID-19 is not followed in the site. 	<ul style="list-style-type: none"> Environmental quality monitoring for Construction phase has been done but monitoring report yet to submit. Health and safety plan is prepared and started to implement in the site. Housekeeping is partially implemented. PPEs partially addressed. Site safety signs are placed. 	<ul style="list-style-type: none"> Construction sites are partially confined where unauthorized access is still observed. Health and safety measures are not addressed satisfactorily. Insufficient safety measures for COVID-19 in construction sites. Construction waste are not managed properly in the site. Stagnant water is still found in the under construction pits. No first aid box is available at the site. Emergency procedure was not followed at site. 	Contractor needs more focused on OHS training, waste management and pollution control.
DPHE W11	Construction work was not started during this period.	<ul style="list-style-type: none"> Construction has been commenced recently. Site specific EMP yet to be generated by contractor and approved by the PD. Environmental Expert for implementation of EMP yet to be deployed by the contractor. Monthly monitoring checklist yet to be submitted by contractor. Health and safety plan should be prepared and implement at working site strictly. PPEs are partially implemented in the working site. Appropriate safety signs to be placed in the site. 	Not enough time to analyze the issues.	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
		<ul style="list-style-type: none"> • Proper waste management yet to be implemented in the camp site. • No first aid box is available at the site. • Tool box meeting is not conducted at site to educate the workers. • Emergency procedure for accident, fire incident is not maintained at the site. 		
DPHE G1, W1, W2, W13, W14 and W15		Construction is completed and the work site is reinstated prior to leaving the construction site.		
LGED W1B	<ul style="list-style-type: none"> • Construction has been commenced recently. • Site specific EMP yet to be generated by contractor and approved by the PD. • Environmental Expert for implementation of EMP yet to be deployed by the contractor. • Monthly monitoring checklist yet to be submitted by contractor. • Health and safety plan should be prepared and implement at working site strictly. • Access disturbance to the local community is occurred since no alternative route is being designated during construction activity. • No road safety measure is followed at site. • National labor standard was not followed to hire work force. • PPEs are partially implemented in the working site. • Appropriate safety signs to be placed in the site. • No first aid box is available at the site. • Tool box meeting is not conducted at site to educate the workers. • Emergency procedure for accident, fire incident is not maintained at the site. 	<ul style="list-style-type: none"> • Health and safety plan is provided to the contractor which is partially followed at site. • PPEs are partially addressed. • Onsite training is carried out to educate the contractor' staffs and workers in regard to environment, health and safety management. • Construction camp is confined and secured by boundary fencing. • Sanitation facility is improved in the camp site. • Site safety signage is placed in the camp site. 	<ul style="list-style-type: none"> • Site specific EMP yet to be generated by contractor and approved by the PD. • Environmental Expert for implementation of EMP yet to be deployed by the contractor. • Monthly monitoring checklist has not been submitted yet by the contractor. • Gully erosion is taken place at the disturbed hill slopes along the road alignment and no erosion control measures are taken to date causes high turbidity and affect aquatic species. • Waste management yet to be implemented in the camp site. • National labor standard was not followed to hire work force. • No first aid box is available at the site. • Tool box meeting is not conducted at site to educate the workers. • Poor implementation of safety measures for COVID-19 at construction sites. Tool box meeting is not conducted at site to educate the workers. 	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
LGED W1A	Construction work was not started during this period.	<ul style="list-style-type: none"> Construction has been commenced recently. Site specific EMP yet to be generated by contractor and approved by the PD. Environmental Expert for implementation of EMP yet to be deployed by the contractor. Monthly monitoring checklist yet to be submitted by contractor. Health and safety plan should be prepared and implement at working site strictly. No road safety measure is followed at site. Appropriate safety signs to be placed in the site. No first aid box is available at the site. Tool box meeting is not conducted at site to educate the workers. Poor implementation of safety measures for COVID-19 at construction sites. Tool box meeting is not conducted at site to educate the workers. 	Not enough time to analyze the issues.	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.
LGED W8	<ul style="list-style-type: none"> No waste management facility built in the site; wastes are burnt in the open area. Drainage congestion was occurred following moderate to heavy rainfall in the site. Water clogged in the water reservoir at ground floor to be source of mosquitoes. Due to lack of respiratory protection, workers were affected by dust particles during unloading cement bags from the truck. Fall protection for working at height is not available in the site. Electrical outlets were found in the active work site without any protection. 	<ul style="list-style-type: none"> Health and safety plan is partially followed. Waste management is partially improved hence domestic wastes are disposed in the earthen pit while construction wastes stored in a designated place in the site. Site safety signs are placed at different locations in the site. Sanitation facility for the labors is ensured at all the construction sites. First aid box is readily available at the site. 	<ul style="list-style-type: none"> Poor implementation of safety measures for COVID-19 at construction sites. During monsoon, drainage congestion was persisted following heavy rainfall. Emergency procedure for accident, fire incident is not maintained at the site. Fall protection is still unavailable in the site. Emergency procedure is not followed. 	Contractor needs to implement the Health and Safety plan to improve their construction practice.
LGED W6	<ul style="list-style-type: none"> Waste management facility should be ensured for both construction and domestic wastes. Currently kitchen waste is dumped openly at nearby the agricultural land. Drainage congestion is still persisting in the construction site. Labor accommodation facility should be improved along proper ventilation system. 	<ul style="list-style-type: none"> Health and safety plan is followed in the site. Site safety signboards were placed at the site. First aid box is readily available at the site. Fuel storage is designated in the work site needs to be confined. 	<ul style="list-style-type: none"> Hazardous materials including fuel drums are stored in the labor shed where no fire extinguisher is kept to put out the fire. Fire protection measures should be arranged immediately in the fuel storage site. Kitchen wastes are still disposed openly in the construction site. 	Contractor needs to implement the Health and Safety plan to improve their construction practice.

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
	<ul style="list-style-type: none"> Fire protection measures should be arranged immediately in the fuel storage site. Emergency procedure is not followed. 	<ul style="list-style-type: none"> Sanitation facility for the labors is ensured at all the construction sites. Gas cylinder is supplied to the worker shed as cooking fuel. 	<ul style="list-style-type: none"> Poor implementation of safety measures for COVID-19 at construction sites. Emergency procedure is still not followed. 	
LGED W9	<ul style="list-style-type: none"> Waterlogging problems due to changes of stream flow happened along the cyclone shelter causes disturbance to the local community. Discussion is underway to resolve the waterlogging problems. Labor shed is still not relocated from the school building. Waste management facility should be ensured for kitchen wastes which is dumped openly at nearby private land. PPEs are yet to be properly implemented. National labor standard was not followed in the work site. Emergency procedure is not followed. 	<ul style="list-style-type: none"> Pipe drain is under design revision to be built to maintain natural flow of the stream passes along the Dakkhin Baradail GPS. Housekeeping is partially implemented. Construction wastes were collected and stored in the designated location. Site safety signboards are placed. PPEs partially addressed. First aid box is readily available at the site. Sanitation facility for the labors is ensured at all the construction sites. 	<ul style="list-style-type: none"> Drainage congestion is a major concern for Nilah Burmese GPS since most of the construction yard was inundated during monsoon season. Labor shed is still seen in the school building which to be relocated immediately. Kitchen wastes are still disposed openly in the construction site. Insufficient safety measures for COVID-19 in construction sites. No electric safety was ensured in the site where electric wire was found in water which may cause accident. 	Contractor needs more focused on OHS training, slope protection, waste management and pollution control.
LGED W3	<ul style="list-style-type: none"> Site specific EMP yet to be prepared by contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor to DMSC. Camp management is not up to the mark. Labor shed is built without proper ventilation system where kitchen was built inside the shed which increase the temperature and make the shed intolerable. Severe dust pollution is being occurred due to lack of dust suppression measure. The green trees along the road turned into red due to dust. No waste management is observed at the site where both domestic and construction wastes are dumped openly. Tree plantation plan should be prepared for compensatory plantation and submit to ADB safeguard team prior to commencing plantation. Emergency procedure is not followed at site. 	<ul style="list-style-type: none"> Health and safety plan is followed partially. Workers are supplied PPEs. Road safety measures are partially addressed. Road detour, caution tape, cone etc. are used to control traffic during construction period. First aid box is available at the camp office. Gas cylinder is supplied to the worker shed as cooking fuel. Sanitation facility for the labors is ensured at all the construction sites. 	<ul style="list-style-type: none"> Environmental focal person yet to appoint to oversee EMP implementation. Site specific EMP yet to be prepared by contractor and approved by the PD. Poor implementation of safety measures for COVID-19 at construction sites. Dust resulting from construction work. Emergency procedure for accident, fire incident is not maintained at the site. Tool box meeting is not conducted at site to educate the workers. 	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.

Package	Major issues identified during 4 th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
LGED W5	<ul style="list-style-type: none"> Failed to obtain NOC from Forest Department has resulted in stoppage of works in the forest area. However, discussion is underway at Ministry level to resolve this issue. Site specific EMP yet to be generated by contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor. Severe dust pollution is being occurred due to lack of dust suppression measure. Due to lack of PPEs, workers are injured by the accident happened at the piling site; no accident report is submitted yet. Workers were observed in the dusty work site without respiratory protection. Access disturbance to the local community is occurred due to construction activity. 	<ul style="list-style-type: none"> LGED is still trying to obtain NOC from FD for 2.5km road section passes through the reserve forest. Health and safety plan is prepared and partially followed. First aid box is available at the camp office. Road safety signboards are placed at some places along the road. Awareness for biodiversity protection has been arranged at the camp site. Sanitation facility for the labors is ensured at all the construction sites. 	<ul style="list-style-type: none"> Environmental focal person yet to appoint to oversee EMP implementation. Site specific EMP yet to be prepared by contractor and approved by the PD. NOC from Forest Department has yet to be obtained. Poor implementation of safety measures for COVID-19 at construction sites. Dust is being occurred due to irregular dust suppression measure. Emergency procedure for accident, fire incident is not maintained at the site. Tool box meeting is not conducted at site to educate the workers. 	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.
LGED W20 and W21	<ul style="list-style-type: none"> Site specific EMP yet to be generated by contractor and approved by the PD. Necessary permission from the RRRC through the CICs has to be kept for legal safety and readily available at the site office. Environmental Expert for implementation of EMP yet to be deployed by the contractor. Embankment of the storm drainage canals need extensive erosion preventive plantation and grass turving which to be started during rainy season. Proper waste management yet to be implemented. Dust pollution occurred severely due to lack of adequate watering measure. Excavated spoils from the drainage canal is stockpiled on the bank which affected the field crops in adjacent areas. Health and safety plan should be prepared and implement at working site strictly. Labors were observed to work without PPEs at the construction site. Canal excavation was undertaken along the densely populate area without signalman which may result in a fatal accident. No proper egress and ingress is ensured at the construction site. 	<ul style="list-style-type: none"> Necessary permission from the RRRC has been obtained to work inside the camps. Without submitting tree plantation programme, plantation has been started recently in the embankment to prevent soil erosion and biodiversity protection. Discussion is underway for the plantation plan. Excavated spoils are removed from the cultivated land. Health and safety plan is provided to the contractor which is partially followed at site. PPEs are partially addressed. Onsite training is carried out to educate the contractor' staffs and workers in regard to environment, health and safety management. Sanitation facility is improved in the camp site. Site safety signage is placed in the camp site. Signalman is posted at the excavation site. Temporary labor shed built from plastic sheet has been removed and proper 	<ul style="list-style-type: none"> Environmental focal person yet to appoint to oversee EMP implementation. Site specific EMP yet to be prepared by contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor. Poor implementation of safety measures for COVID-19 at construction sites. Several sections of the canal bank protection works were eroded heavy surface runoff. Heavy drainage congestion is occurred due to lack of storm drainage system in the camp area. Worksites are to be equipped with safety signs. Tool box meeting is not conducted at site to educate the workers. 	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.

Package	Major issues identified during 4 th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
	<ul style="list-style-type: none"> Construction vesicles were moving without audible back-up alarms which resulted an accident at the construction camp. Construction camp is not managed satisfactorily where no boundary fence with security is observed. Moreover, a labor shed is built using plastic sheet without any ventilation system where 10-15 people are accommodated. Kitchen facility was found inside the shed which increased the room temperature. No sanitation facility was arranged in the site where female worker was observed. 	<ul style="list-style-type: none"> accommodation facility is arranged for the labors. First aid box is supplied with readily available accessories at the camp office. 		
LGED W4C	<ul style="list-style-type: none"> Construction has been commenced recently. Site specific EMP yet to be generated by the contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor. Proper waste management yet to be implemented. Health and safety plan should be prepared and implement at working site strictly. Access disturbance to the local community is occurred since no alternative route is being designated during construction activity. No road safety measure is followed at site. PPEs are partially implemented in the working site. Appropriate safety signs to be placed in the site. No first aid box is available at the site. 	<ul style="list-style-type: none"> Health and safety plan is provided to the contractor which is partially followed at site. PPEs are partially addressed. Sanitation facility is improved in the camp site. Site safety signage is placed in the camp site. Signalman is posted at the excavation site. First aid box is supplied with readily available accessories at the camp office. 	<ul style="list-style-type: none"> Environmental focal person yet to appoint to oversee EMP implementation. Site specific EMP yet to be generated by contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor. Tool box meeting is not conducted at site to educate the workers. Emergency procedure for accident, fire incident is not maintained at the site. Poor implementation of safety measures for COVID-19 at construction sites. 	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.
LGED W4D	<ul style="list-style-type: none"> Construction has been commenced recently. Site specific EMP yet to be generated by the contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor. Proper waste management yet to be implemented. Health and safety plan should be prepared and implement at working site strictly. Access disturbance to the local community is occurred since no alternative route is being designated during construction activity. No road safety measure is followed at site. PPEs are partially implemented in the working site. Appropriate safety signs to be placed in the site. No first aid box is available at the site. 	<ul style="list-style-type: none"> Health and safety plan is provided to the contractor which is partially followed at site. PPEs are partially addressed. Onsite training is carried out to educate the contractor' staffs and workers in regard to environment, health and safety management. Sanitation facility is improved in the camp site. Site safety signage is placed in the camp site. Signalman is posted at the excavation site. First aid box is supplied with readily available accessories at the camp office. 	<ul style="list-style-type: none"> Environmental focal person yet to appoint to oversee EMP implementation. Site specific EMP yet to be generated by contractor and approved by the PD. Monthly monitoring checklist yet to be submitted by contractor. Poor implementation of safety measures for COVID-19 at construction sites. Tool box meeting is not conducted at site to educate the workers. Emergency procedure for accident, fire incident is not maintained at the site. 	Contractor needs to appoint an EHS nodal person and more focused on OHS training, slope protection, waste management and pollution control.

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
LGED W19		Construction is completed and the work site is reinstated prior to handed over to WFP.		
RHD W1	<ul style="list-style-type: none"> Environmental Expert for implementation of EMP yet to be deployed by the contractor. Environmental quality monitoring for 1st and 2nd quarter of 2020 is not conducted yet. Rectification report on corrective action plan sent by ABD consultant yet to be submitted. Cutting hill slope must be stopped and should take engineering measures to avoid slope failure. Drainage congestion is being occurred in the camp due to lack of proper drainage facility. Waste water from batching plant is drained to the nearby private land. Dust pollution is occurred due to operation of hot mix plant which affected surrounding environment. Waste bins are placed in the camp site but no measures are taken to date for construction wastes management. Fuel storage is not confined and construction vehicles are frequently moved along the fuel drums and spills from storage site contaminated adjacent private land. Waterlogging problems happened at the road diversion site due to lack of cross drainage facility. Health and safety plan is provided to the contractor to be fully implemented. National labor standard was not followed in the work site. Inventory of PPEs yet to be periodically submitted. Emergency procedure for accident, fire incident is not maintained at the site. 	<ul style="list-style-type: none"> Environmental quality monitoring (air, noise, surface water, groundwater and soil quality) for construction phase has been carried out by the contractor in October 2020 in accordance to the EMP. Monthly monitoring checklist is submitted to DMSC and PMU. Health and safety plan is supplied and addressed partially at the site. Onsite training is carried out to educate the contractor' staffs and workers in regard to environment, health and safety management. Traffic management plan prepared by contractor and implemented at site. Warning signs and safety barrier is used at the road diversion section for traffic safety. Dust suppression measures are followed at site and a log-sheet yet to be submitted by the contractor. Sanitation facility is improved in the camp site. Housekeeping is partially addressed during 5th EMR period. PPEs are partially addressed. Adequate lighting is ensured at the site during night shift. 	<ul style="list-style-type: none"> Construction Environmental Plan (CEMP) has to be prepared immediately. Environmental Monitoring Officers or quality assigned persons have to be deployed by the contractor. Mitigation measure to be devised to address the pollution caused by the batching plants placed along with the agricultural land. A management plan for surplus aggregates to be formulated and implemented. Disturbance to hill slope must be stopped and should take engineering measures to avoid slope failure. Excavated soils are stored on the shoulder of the road hinders accessibility. Safe and specified waste, wastewater and drainage network management to be ensured in the contractor's yards and labour campsites. Poor implementation of safety measures for COVID-19 at construction sites. Emergency procedure for accident, fire incident is not maintained at the site. 	Contractor needs to appoint an EHS nodal person and more focused on OHS management and training, waste management, management of batching and hot mix plant and pollution control.
RHD W2	<ul style="list-style-type: none"> Site specific EMP yet to be formulated by the contractor. Environmental Expert for implementation of EMP yet to be deployed by the contractor. Environmental quality monitoring for 1st and 2nd quarter of 2020 is not conducted yet. Rectification report on corrective action plan sent by ABD consultant yet to be submitted. Cutting hill slope must be stopped and should take engineering measures to avoid slope failure. 	<ul style="list-style-type: none"> Environmental quality monitoring (air, noise, surface water, groundwater and soil quality) for construction phase has been carried out by the contractor in October 2020 in accordance to the EMP. Monthly monitoring checklist is submitted to DMSC and PMU. Health and safety plan is supplied and addressed partially at the site. 	<ul style="list-style-type: none"> Construction Environmental Plan (CEMP) has to be prepared immediately. Environmental Monitoring Officers or quality assigned persons have to be deployed by the contractor. Mitigation measure to be devised to address the pollution caused by the batching plants placed along with the agricultural land. 	Contractor needs to appoint an EHS nodal person and more focused on OHS management and training, waste management, management of batching and hot

Package	Major issues identified during 4th monitoring period (Jan-Jun 20)	Issues addressed during 5 th monitoring period (Jul-Dec 20)	New Issues identified during 5 th monitoring period (Jul-Dec 20)	Comments
	<ul style="list-style-type: none"> Waste water from batching plant is drained to the road which causes waterlogging problems along the road. Dust pollution is occurred due to operation of hot mix plant which affected surrounding environment. Waste bins are placed in the camp site but no measures are taken to date for construction wastes management. Waterlogging problems happened at the road diversion site due to lack of cross drainage facility. Health and safety plan is provided to the contractor to be fully implemented. Inventory of PPEs yet to be periodically submitted. National labor standard was not followed in the work site. Emergency procedure for accident, fire incident is not maintained at the site. 	<ul style="list-style-type: none"> Onsite training is carried out to educate the contractor' staffs and workers in regard to environment, health and safety management. Traffic management plan prepared by contractor and implemented at site. Warning signs and safety barrier is used at the road diversion section for traffic safety. Dust suppression measures are followed at site and a log-sheet yet to be submitted by the contractor. Sanitation facility is improved in the camp site. Housekeeping is partially addressed during 5th EMR period. PPEs are partially addressed. Adequate lighting is ensured at the site during night shift. 	<ul style="list-style-type: none"> A management plan for surplus aggregates to be formulated and implemented. Disturbance to hill slope must be stopped and should take engineering measures to avoid slope failure. Poor implementation of safety measures for COVID-19 at construction sites. Excavated soils are stored on the shoulder of the road hinders accessibility. Safe and specified waste, wastewater and drainage network management to be ensured in the contractor's yards and labour campsites. Emergency procedure for accident, fire incident is not maintained at the site. 	mix plant and pollution control.
BREB G6	<ul style="list-style-type: none"> Training on implementation of ECoP is conducted prior to starting project construction works. Burrow pits of battery house are confined to prevent accident. Excavated spoils are stored and used in backfilling. Standard ladder to be arranged during working at height. PPEs are partially addressed. Worksites are to be equipped with safety signs. Emergency procedure for accident, fire incident is not maintained at the site. 	<ul style="list-style-type: none"> Onsite training is carried out to educate the contractor' staffs and workers in regard to environment, health and safety management. Excavated spoils are stored and used in backfilling. PPEs are partially addressed. First aid box is available at the site. Adequate implementation of safety measures for COVID-19 at construction sites. 	<ul style="list-style-type: none"> Foundation pits of battery house and solar panel are not protected and creates social disturbance. Construction activity of battery house affected the road located adjacent to the working sites. Standard ladder to be arranged during working at height. Worksites are to be equipped with safety signs. Emergency procedure for accident, fire incident is not maintained at the site. 	Training on implementation of ECoP seems to be working.
BREB G1, G2A, G2B, G5, W1A, W2B and G7		Construction is completed and the work site is reinstated prior to leaving the construction site.		

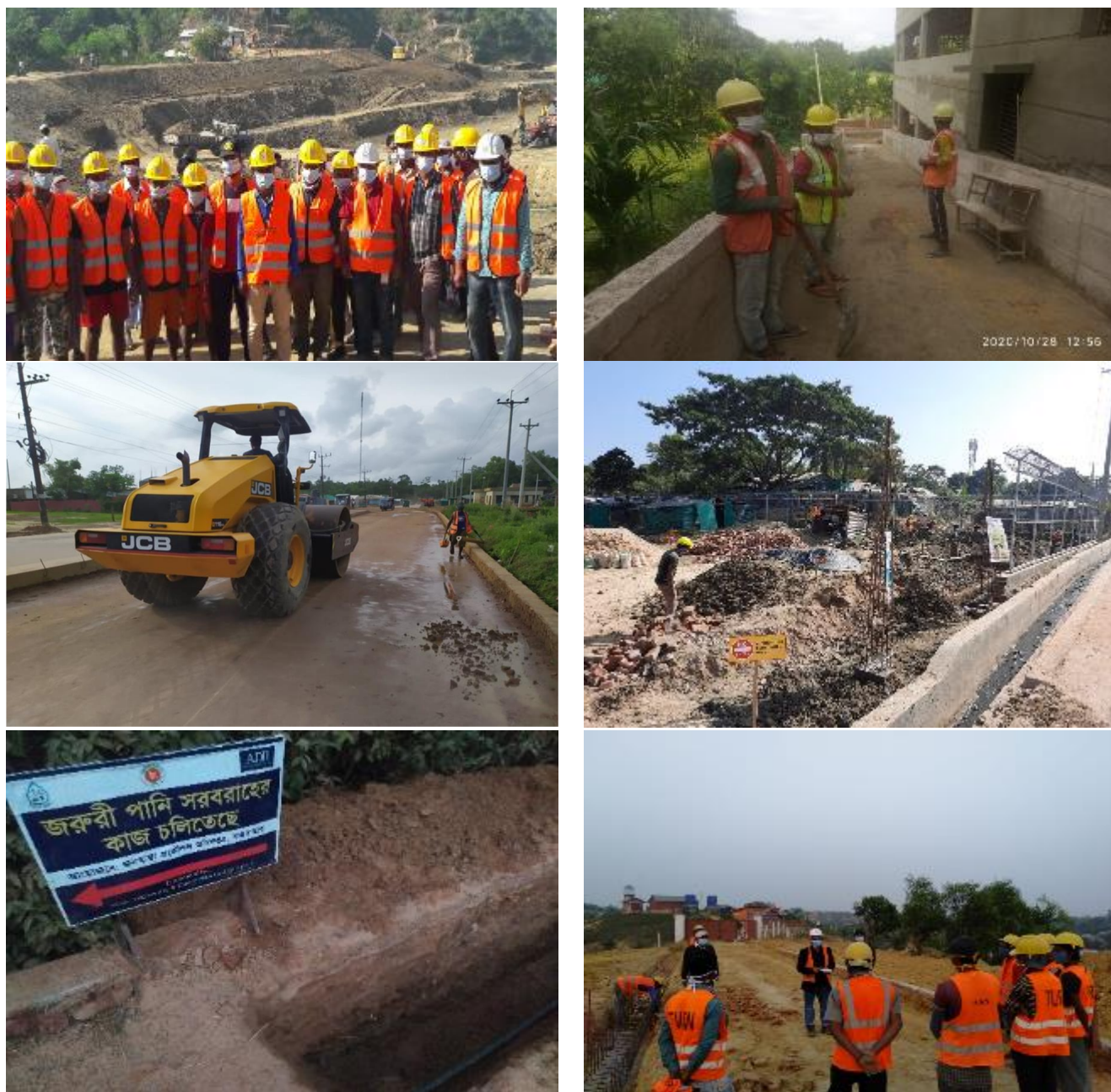


Figure 14 Safeguards status at various sites. Most of them found as partially to fully satisfactory

6 Performance Indicators

125 This section presents some site-based performance indicators for observe the performance of all running subprojects at a glance. The performance indicators are based on field observations from each subproject. While the Health and Safety (H&S) performances indicators are presented in **Table 27** and performance indicators in **Table 28**, some photographs of site visits where information collection through onsite training with workers were done are presented in **Figure 15**.



Figure 15 Training and information collection from various subprojects

Table 27 H&S Performance indicators of all subprojects

Environmental Safeguards Questions	DPHE								LGED										RHD		BREB		
	W 3	W 4	W 5	W 1 0	W 9 A	W 9 B	W 1 1	W 12 A	W 3	W 5	W 8	W 6	W 9	W 2 0	W 2 B	W 1 A	W 1 B	W 4 C	W 4 D	W 1	W 2	G 6	G 7
1. Sensitive receptors adjacent to the site? (i.e. residential, schools/learning center, health care center, daycare...)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
2. Are the workers aware of the EMP?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3. Occupational Health and Safety:																							
3.1 Is there a designated person responsible for ensuring safe working practices? Are the workers aware?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3.2 Have the workers received appropriate OHS training to perform their jobs? How often are they briefed on OHS requirements? *	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	N	Y	Y	Y	Y	N
3.3 Do the workers use personal protective equipment (PPE - hats, glasses, boots etc.)? **	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.4 Are working areas clear of slipping and tripping hazards?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.5 Are health and safety warning and information signs visible and understandable to workers?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Y	Y	Y	Y
3.6 Are there any hazardous materials? Are they stored and handled appropriately?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.7 Are workers exposed to risks from working at height? If yes, are the workers using harnesses (fall protection equipment)?	Y / N	Y / N	Y / N	N	Y/ N	Y/ N	Y/ N	Y/ N	Y / N	Y / N	Y / N	Y / N	Y / N	Y/ N	Y/ N	Y/ N	Y/ N	Y/ N	Y/ N	Y / N	Y / N	Y / N	N
3.8 Are workers exposed to risk from confined spaces? (i.e. storage areas for hazardous materials)	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3.9 Is there a record of occupational injuries and diseases?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3.10 Do workers receive health checks?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3.11 What medical facilities are made available for the workers?	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Labor Camps:																							
3.12 What toilet and washing facilities are provided?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.13 Do workers have access to clean drinking water?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.14 Is the workers accommodation provided by the contractor?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Emergency Procedures:																							
3.15 Are any procedures in place in case of an injury on site?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3.16 Is there a first aid kit available on site?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
3.17 Are any procedures in place for chlorine leak, oil spills?	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3.18 Is firefighting equipment available on site? Is servicing up to date?	N	N	N	N	N	N	N	N	N	Y	Y	Y	Y	Y	N	N	Y	N	N	Y	Y	N	N
4. Grievance Redress Mechanism {GRM}:	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N

Environmental Safeguards Questions	DPHE								LGED										RHD		BREB		
	W 3	W 4	W 5	W 10	W 9 A	W 9 B	W 11	W 12 A	W 3	W 5	W 8	W 6	W 9	W 20	W 2 B	W 1 A	W 1 B	W 4 C	W 4 D	W 1	W 2	G 6	G 7
4.1 Are the names and contact information posted for possible complaints?																							
4.2 Is there a log book available on site?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
5. Housekeeping: 5.1 Did you observe examples of poor housekeeping? (i.e. empty containers scattered, stagnation of water from improper disposal of solid waste?)	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y

*H&S has been briefed by the ADB consultants on site

**PPEs are partially used in all site

*** F= First Aid boxes are available on site

**** Y = Yes; N = No

Table 28 Mitigation effectiveness rating for all subprojects (deduced from consultants' observation)

Sl. No.	Package No.	Q1 (Jul – Sep 18)	Q2 (Oct – Dec 18)	Q3 (Jan – Mar 19)	Q4 (Apr – Jun 19)	Q5 (Jul – Sep 19)	Q6 (Oct – Dec 19)	Q7 (Jan – Mar 20)	Q8 (Apr – June 20)	Q9 (Jul – Sep 20)	Q10 (Oct – Dec 20)	Overall Score
BREB												
01	EAP/BREB/G1	Construction completed										
02	EAP/BREB/G2A	Construction completed										
03	EAP/BREB/G2B	Construction completed										
04	EAP/BREB/W1A	Construction completed										
05	EAP/BREB/W2	Construction completed										
06	EAP/BREB/G5	Construction completed										
07	EAP/BREB/G7	Construction completed										
08	EAP/BREB/G6							3	3	3	4	3.5
DPHE												
01	EAP/DPHE/G1	Subproject Completed										
02	EAP/DPHE/W1	Construction completed										
03	EAP/DPHE/W2	Construction completed										
04	EAP/DPHE/W3				3	3	3	4	4	4	4	3.5
05	EAP/DPHE/W4				2	3	3	3	3	3	3	2.8
06	EAP/DPHE/W5					2	3	4	4	4	4	3.5
07	EAP/DPHE/W9A									2	2	2

Sl. No.	Package No.	Q1 (Jul – Sep 18)	Q2 (Oct – Dec 18)	Q3 (Jan – Mar 19)	Q4 (Apr – Jun 19)	Q5 (Jul– Sep 19)	Q6 (Oct – Dec 19)	Q7 (Jan – Mar 20)	Q8 (Apr – June 20)	Q9 (Jul – Sep 20)	Q10 (Oct – Dec 20)	Overall Score
08	EAP/DPHE/W9B								2	2	3	2.3
09	EAP/DPHE/W10							3	3	4	4	3.5
10	EAP/DPHE/W11										3	3
11	EAP/DPHE/W12A										3	3
12	EAP/DPHE/W13	Construction completed										
13	EAP/DPHE/W14	Construction completed										
14	EAP/DPHE/W15	Construction completed										
LGED												
01	EAP/LGED/OCB-N/W6		1	2	3	3	4	4	4	4	4	3.2
02	EAP/LGED/OCB-N/W8		1	3	4	4	4	4	4	4	4	3.5
03	EAP/LGED/OCB-N/W9			1	2	3	4	4	3	3	3	2.8
04	EAP/LGED/OCB-N/W19	Construction completed										
06	EAP/LGED/OCB-N/W4C								2	3	3	2.6
07	EAP/LGED/OCB-N/W4D									2	3	2.5
08	EAP/LGED/OCB-N/W20						2	3	4	3	3	3
09	EAP/LGED/OCB-N/W21						2	3	4	3	3	3
10	EAP/LGED/OCB-N/W1A										2	2
11	EAP/LGED/OCB-N/W1B							2	2	2	2	2
12	EAP/LGED/OCB-N/W2B										2	2
13	EAP/LGED/OCB-N/W3					2	3	3	4	3	3	3
14	EAP/LGED/OCB-N/W5					2	3	3	3	3	3	2.8
RHD												
01	EAP/RHD/W1		2	3	4	3	4	4	4	4	4	3.5
02	EAP/RHD/W2		2	3	4	3	4	4	4	4	4	3.5

Note: Mitigation Effectiveness Rating Criteria

1	2	3	4	5
Very poor (take very few measures)	Poor (take few measures)	Medium (take several measures)	Good (take main measures)	very good (meet all requirements)

126 **Trend in performance:** A time trend analysis for EMP non-compliance has been studied against hands-on training provided to the workers for the time period of year 2020. It has been found that the non-compliance issue was decreasing over time with a steady input of hands-on training for workers until December 2019. Due to accessibility issues attributed to restrictions associated with Covid-19, safeguards monitoring activity has been hampered which reversed the trend and increases noncompliance issues. Despite COVID-19 pandemic, monitoring activity has increased during reporting period which decreased the noncompliance issues. **Figure 16** and **Figure 17** explains the situation in detail. Given the comparative study, it can be concluded that steady and continuous training can improve the H&S situation at site and may produce better EMP compliance.

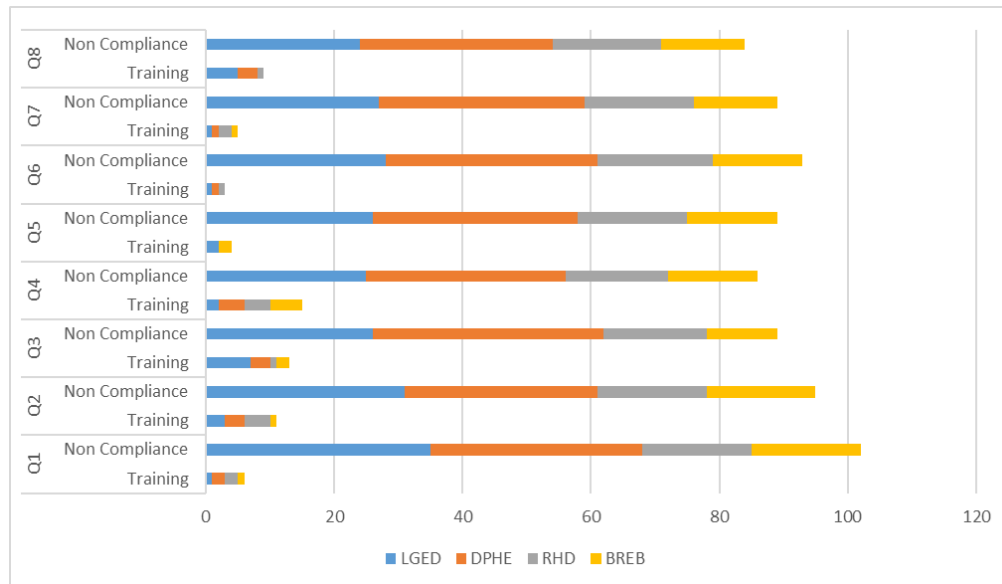


Figure 16 Training vs EMP non-compliance over time (information up to December 2020)

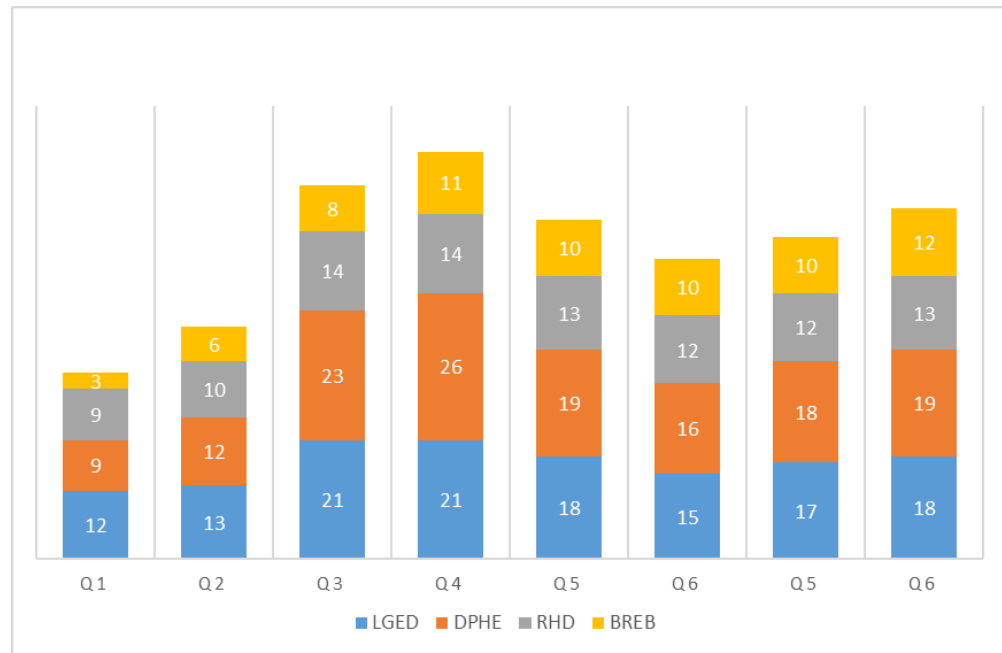


Figure 17 Number of mitigation measures taken over time

7 Conclusion and Recommendations

127 The Environmental safeguards compliance performance of the Contractors are improving slowly but steadily. The onsite training workshop and regular monitoring of ADB to sensitize the EAs and contractors seems to have obvious impact in this regard.

128 Due to accessibility issues attributed to restrictions associated with COVID-19, implementation of environmental safeguards is hindered, causes increasing trend in noncompliance issues. In addition, inadequate safety measures are arranged to encounter COVID-19 in the construction sites. Onsite regular COVID-19 precautions should be maintained by the contractors regularly.

129 Environmental quality data from periodic monitoring indicated that in reference to the Bangladesh standard, the quality of ambient air and water quality in the project area is within the standard limit. The noise level is within the safe limit for mixed areas with intermittent spikes due to proximity of the sites to the roads and human interference.

130 There were instances that can be considered as poor implementation of the EMPs due to construction works of EAP. To address these concerns, a number of recommendations were made to improve the EMP implementation. The actions recommended have been implemented, ongoing, and to be monitored. **Table 29** presents the environmental concerns along with the corrective actions.

Table 29 Environmental issues and corrective action plan

No.	Environmental Issues	Corrective Action	Component	Requirement	Responsibility
1	Obtaining legal permits (ECC and NOCs) from the DOE and Forest Department are still under process	EAs require to expedite the process of securing the permits from the DOE, the Forest Department, and other relevant authority.	DPHE/ LGED	Clearance/NOC	DPHE/LGED
2	None of the contractors has appointed EHSO at the project sites	Appoint qualified EHSO to guide the contractors in the preparation and implementation of site-specific EMPs and follow up EHS issues with EAs, DMSC, and ADB. The EAs need to pay attention to improve the implementation of the EMPs by the contractors.	RHD/ DPHE/ LGED	EHS Officer	RHD/ DPHE/ LGED
3	Seven indicative IEEs for DPHE component (surface water supply and waste management packages) require revisions for disclosure on the ADB website.	Final/detailed design should be provided to the environmental consultant to finalize the remaining IEEs for disclosure.	DPHE	Final detailed design	DPHE
4	Hillocks located along the RHD road alignment are being razed for the improvement of the road side drainage system therefore; gully erosion is formed at the slope due to torrential downpour.	Disturbance to hill slope needs to be stopped, if it cannot be avoided, contractor should be required to implement bioengineering measures such as RCC wall, geotextile over the slopes of the hill with appropriate nailing, and planting of indigenous species on the slopes.	RHD/W1 and RHD/W2	Hill slope protection measures	RHD
5	Waterlogging problems due to changes of stream flow that occurred along the cyclone shelter in Teknaf (LGED/W9) causing inundation to the adjacent land.	Appropriate drainage facilities such as piped drain beneath the cyclone shelter would be the solution for the waterlogging problem. Other measures need to be explored to address the issue. Consultations must be conducted with the affected community to get their views and	LGED/W9	Drainage facility	LGED

No.	Environmental Issues	Corrective Action	Component	Requirement	Responsibility
		concerns on a more appropriate solution.			
6	Occupational safety and health measures are partially addressed at construction sites in EAP. COVID-19 response on health and safety guidance is also partially followed in EAP sites.	Appropriate use of health and safety equipment, PPEs, and monitoring and documentation of OHS hazards at work and camp sites. Technical Guidance for Social and Institutional Containment and Prevention of Pandemic COVID-19 Infection by GOB and ADB has to be complied with. Monitoring of compliance by contractors need to be strictly enforced.	LGED/BREB/ DPHE/RHD	Compliance to H&S Plan and guidelines for COVID-19	Contractors

Reporting Information:

Revision	Description	Originator	Reporting Contribution
00	Fifth Semi-Annual Environmental Monitoring Report (July – December 2020)	Shahid Zaman	1. Shahid Zaman, Environment Specialist (TA Consultant, ADB) 2. Arifur Rahman, Environment Specialist (LGED Component) 3. Nurul Alam Siddique, Environment Specialist (DPHE Component) 4. S. A. Hasan, Environment Specialist (RHD Component)

Appendix I: Environmental Clearance Certificate (RHD Component)

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

Memo No: 22.02.0000.18.72.151.18.296

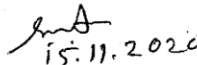
Date: 15/11/2020

Subject: Environmental Clearance for “Emergency Assistance Project” Improvement of National Highway (N-1) from Link Road (Cox’s Bazar) to Teknaf.

Ref : Your application dated 17/09/2019, 14/07/2020 and 20/10/2020.

With reference to the above, the Department of Environment (DOE) hereby accords Environmental Clearance to “Emergency Assistance Project” Improvement of National Highway (N-1) from Link Road (Cox’s Bazar) to Teknaf.

A copy of the said Environmental Clearance Certificate is attached herewith for your necessary action.


(Syed Nazmul Ahsan)
Director (Environmental Clearance)
Phone: 8181673

Project Director
“Emergency Assistance Project” Improvement of National Highway (N-1) from Link Road
(Cox’s Bazar) to Teknaf
Roads & Highways Department
Sarak Bhaban, Agrabad, Chattogram.

Copy Forwarded to :

1. PS to Secretary, Ministry of Environment, Forest and Climate Change, Bangladesh Secretariat, Dhaka.
2. Director, Department of Environment, Chattogram Regional Office, Chattogram.
3. Deputy Director, Department of Environment, Cox’s Bazar District Office, Cox’s Bazar.
4. Assistant Director, Office of the Director General, Department of Environment, Head Office, Dhaka.

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

Environmental Clearance Certificate
Section 12(1) of the Environment Conservation Act, 1995 (Amended 2010)

Clearance Certificate Number: 296

File number: 22.02.0000.18.72.151.18.296

Clearance Certificate Issue Date: 15 November, 2020

Renewal date not later than: 14 November, 2021

A. Clearance Certificate Type
Environmental Clearance Certificate

B. Clearance Certificate Holder
Executive Director “Emergency Assistance Project” Improvement of National Highway (N-1) from Link Road (Cox’s Bazar) to Teknaf Roads & Highways Department Sarak Bhaban, Agrabad, Chattogram.

C. Premises to which this Clearance Certificate Applies
The Project Road starts from the intersection with Chattogram-Cox’s Bazar Highway (N1) at Link Road, traverse for a length of 80.76 km and ends at the ShaplaChattar at Teknaf.

D. Activities for which this Clearance Certificate Authorizes and Regulates
1. Improvement of Road : 80.76 Km 2. Reconstruction of 27 culverts 3. Improvement of 7.3m carriageway along the existing 5.5m carriageway

E. Terms and Conditions for Environmental Clearance Certificate

- Limit Condition for Discharges to Air and Water:** The Environmental Clearance Certificate must comply with schedule 2 and 10, rule 12 of the Environment Conservation Rules, 1997.
- Noise Limit:** The Environmental Clearance Certificate must comply with the Noise Pollution (Control) Rules, 2006.



In case of non-coverage of ECR 1997 the World Bank Environment, Health and Safety Guideline shall be adhered to.

3. Operating conditions:

- 3.1 Activities must be carried out in a competent manner. This includes:
 - (a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
 - (b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.
- 3.2 All plant and equipment installed at the premises or used in connection with the Environmental Clearance activity:
 - (a) must be maintained in a proper and efficient condition; and
 - (b) must be operated in a proper and efficient manner.
- 3.3 Construction works shall be restricted to day time hours so as to avoid/mitigate the disturbance of local lives as well as implementation schedules of the works shall be notified in advance to nearby residents.
- 3.4 Storage area for soils and other construction materials shall be carefully selected to avoid disturbance of the natural drainage.
- 3.5 This shall be ensured that soil is obtained from nearby areas, which are free of invasive plants. Re-vegetation and replanting shall be undertaken if rehabilitation works involve extensive vegetation clearance.
- 3.6 Vegetation clearance shall be minimizing at the construction phase as to minimize soil erosion. Soils for embankments shall be properly tested and compacted to ensure stability.
- 3.7 Proper construction practices shall be followed that minimize loss of habitats and fish breeding, feeding & nursery sites.
- 3.8 Proper and adequate sanitation facilities shall be ensured in labor camps throughout the proposed project period.
- 3.9 In order to control noise pollution, vehicles & equipment shall be maintained regularly; working during sensitive hours and locating machinery close to sensitive receptor shall be avoided.
- 3.10 No solid waste can be burnt in the project area. An environment friendly solid waste management should be in place during whole the period of the project in the field.
- 3.11 Proper and adequate on-site precautionary measures and safety measures shall be ensured so that no habitat of any flora and fauna would be demolished or destructed.
- 3.12 All the required mitigation measures suggested in the Environmental Management Plan included in EIA are to be strictly implemented and kept operative/functioning on a continuous basis.
- 3.13 Any heritage sight, ecological critical area, and other environmentally and/or religious sensitive places shall be avoided during project construction phase.
- 3.14 Resettlement plan should be properly implemented and people should be adequately compensated, where necessary.
- 3.15 Construction material should be properly disposed off after the construction work is over.



- 3.16 The Environmental Management Plan included in EIA shall strictly be implemented and kept functioning on a continuous basis.

4.1 Monitoring and Recording conditions:

- 4.1.1 The results of any monitoring required to be conducted by this Clearance Certificate must be recorded.
- 4.1.2 The following records must be kept in respect of any samples required to be collected for the purposes of this Clearance Certificate:
- (a) the date(s) on which the sample was taken;
 - (b) the time(s) at which the sample was collected;
 - (c) the point at which the sample was taken; and
 - (d) the name of the person who collected the sample.

4.2 Requirement to monitor concentration of pollutants discharged

For each monitoring, the Clearance Certificate holder must monitor (by sampling and obtaining results by analysis) the following parameter: air quality, water quality and Noise.

5. **Reporting Conditions:** Environmental Monitoring Reports shall be made available simultaneously to Head quarters, Dhaka and Cox's Bazar District and Chattogram Regional office of the Department of Environment on a quarterly basis during the whole period of the project.
6. **Notification of environmental harm:** The Clearance Certificate holder or its employees must notify the Department of Environment of incidents causing or threatening material harm to the environment as soon as practicable after the person becomes aware of the incident.

F. Recording of pollution complaints

The certificate holder must keep a legible record of all complaints made to the certificate holder or any employee or agent of the certificate holder in relation to pollution arising from any activity to which this Environmental certificate applies. The record must include details of the following:

- (a) the date and time of the complaint;
- (b) the method by which the complaint was made;
- (c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
- (d) the nature of the complaint;
- (e) the action taken by the certificate holder in relation to the complaint, including any follow-up contact with the complainant; and



(f) if no action was taken by the certificate holder, the reasons why no action was taken.

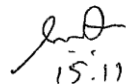
The record of a complaint must be kept for at least 4 years after the complaint was made. The record must be produced to any authorized officer of the DOE who asks to see them.

G. Validity of the Clearance Certificate

This Environmental Clearance is valid for one year from the date of issuance and project authority shall apply for renewal to Cox's Bazar District Office of DoE in Cox's Bazar with a copy to the Head office of DOE in Dhaka at least 30 days ahead of expiry.

Violation of any of the above conditions shall render this clearance void.

This Environmental Clearance Certificate has been issued with the approval of the appropriate authority.


15.11.2020

(Syed Nazmul Ahsan)
Director (Environmental Clearance)
Phone: 8181673

Appendix II: Site Photographs

1. DPHE Mini Pipe Water Supply System



2. DPHE Integrated Waste Management



3. DPHE Surface Water Base Water Supply System



4. LGED Cyclone Shelters



5. LGED Access Road



6. LGED Storm Water Drainage Canal



7. LGED Internal Road



8. RHD/W1 and RHD/W2



9. BREB/G6: Nano-Grid




10. Onsite Training Program at RHD, LGED, DPHE and BREB Component







Appendix III: Sample Compliance Audit Reports




AUDIT FINDINGS (EAP/RHD/W1) September 28, 2020




The findings from the site audits and action items required to mitigate non-conformances, where required, are provided in the sub-sections below:


Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Onsite Training on EHS	Onsite training on EHS was conducted on 28 September 2020 where 20 workers including DMS engineers were participated. ADB Environmental Specialist has given a brief lecture to the participants majorly focused on: occupational health and safety including PPEs, safety signage, first aid, housekeeping, waste management, management of hazardous materials, emergency procedures. Moreover, explained about the importance of regular tool box meeting at the site On the other hand, participants were also explained the standard procedure for COVID-19 at the site such as appropriate PPEs, entry protocol to the worksite, hand washing protocol, discourage gathering at site and maintain physical distance, place signboard and posters at site on COVID response etc. However, all the participants hold a very positive attitude towards the training program.				
Corrective Action Plan	EHS issues identified and reported till date by environmental specialist have not rectified yet.	Rectify all EHS issues immediately and submit the rectification report.	October 2020	Contractor and CSC	Photograph is not required.
EMP Monitoring Checklist	EMP monitoring checklist has been submitted by the contractor on monthly basis.	Rectified			Photograph is not required.
Environmental Inspection and Monitoring Report	Contractor has started submitting the environmental report on a monthly basis.	Rectified			Photograph is not required.

Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Monitoring of Environmental Parameter	In order to ensure proper implementation of the environmental safeguard requirements, the Contractor has conducted air quality, noise measurement, surface water quality and groundwater quality testing and analysis through third party organization.	Rectified			
H&S Plan	HSP is circulated to the contractors but it has not been implemented at the site.	CSC should supervise the contractor strictly in the implementation of the HSP properly.	October 2020	Contractor and CSC	Photograph is not required.

Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Hill cutting and soil erosion	In order to achieve required road width, the hills located along the project alignment have been cut. Due to removal of topsoil from the highland, currently gully erosion is taking place at the disturbed slopes and no erosion control measures are taken to date. Consequently, the sediments discharged into the nearby surface water streams increasing the turbidity of the water which may affect the aquatic life living in the water body.	To mitigate these issues, adequate cross drainage as well as erosion control measures such as (i) cover disturbed slopes as soon as possible with grass turfing, vegetation or other materials (mulch) to reduce erosion potential; (ii) divert water from disturbed areas; (iii) maintain any structural control measures at the eroded sites should be applied immediately.	October 2020	Contractor and CSC	 
Management of Concrete Batching Plant	Waste water from batching plant is being discharged directly to the nearby agricultural field which polluted soil as well as water.	Contractor must prepare a waste water management plan and undertake the following measures: <ul style="list-style-type: none"> • All runoff and wastewater is to be collected and contained onsite in a sufficiently large tank/sedimentation pit. • Wastewater to be reused as part of the dust suppression system at earliest possible opportunity to restore storage capacity. 	October 2020	Contractor and CSC	


Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Asphalt Mix Plant	Severe dust pollution is observed at the camp site due to the operation of asphalt plant which affected the labors and surrounding environment badly where workers were observed without dust mask, ear plug etc.	Contractor should use consult with supplier regarding dust issues and also install wet scrubber or other measures to reduce the dust level in the plant site. Dust mask and ear plug must be provided to the labors at the plant.	October 2020	Contractor and CSC	
Drainage congestion	Waterlogging problems were occurred at the different locations especially at the road diversion sections along the culvert construction sites where cross drainage facility is not functioning, subsequently waterlogging problem is occurred near the road alignment.	Contractor should increase the frequency of watering (at least 4 times a day) to reduce the dust level on the road (special care should be taken for the access road to the camp).	October 2020	Contractor and CSC	
Control of Petroleum Products	<ul style="list-style-type: none"> Petroleum products are stored in scattered way at different locations where no absorbent kit is kept. Storage of petroleum products is located adjacent to the batching plant where large amount of waste water generated and mixed with spillage and discharged to the cultivated land which contaminate soil as well as water. The fuel storage is not confined and mixing trucks are frequently moved along 	<ul style="list-style-type: none"> Petroleum products must be stored in a designated storage location where any spillage can be safely maintained without contamination of the surrounding area. Spill absorbent must be kept at the refueling site. Storage should be confined and established away from haulage. Safety signs must be installed at the storage site. 	October 2020	Contractor and CSC	



Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
	<p>the fuel drums, therefore, accident may occur at any moment.</p> <ul style="list-style-type: none"> No safety signage as well as fire extinguisher is placed at the storage area. 	<ul style="list-style-type: none"> Fire protection measure must be arranged at storage area. 			
Worker Health and Safety	<ul style="list-style-type: none"> Labors were observed to work without PPEs at the site. Labors engaged in the noisy work site (more than 95dB) without ear protection. Workers were observed in the dusty work site without respiratory protection. Child labors are appointed and engaged in hazardous activity without PPEs. No health and safety checklist is followed at the work site. No first aid box was found in the construction site. 	<ul style="list-style-type: none"> PPEs need to be supplied to workers and enforced them to use at site. Contractor should comply with requirements of Government of Bangladesh Labour Law of 2006 (amended in 2013). Provide first aid facilities that are readily accessible by workers. Contractor must conduct tool box talk regularly at each site. 	October 2020	Contractor and CSC	 




Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Construction camp	<ul style="list-style-type: none"> Construction camp is not managed satisfactorily where no boundary fence with security is observed. No safety signs are placed in the construction camp. No housekeeping was observed there. Moreover, no waste management is found in the camp. Toilets for the labors are built without proper doors and septic tank is opened which emitted odor in the surrounding. No drainage network has been developed yet inside the camp where waste water management is not observed at all. Emergency procedure is not followed in the camp. 	<ul style="list-style-type: none"> Site safety signage must be placed at designated locations in the camp. Contractor should install garbage bins and construct a concrete waste disposal site which have the impermeable floor and wall and covered by shed to avoid air, soil and groundwater pollution. Emergency contact information should be displaced at the camp site. Sanitation facility should be improved. Drainage system must be developed inside the camp. 	February 2020	Contractor and CSC	

AUDIT FINDINGS (EAP/LGED/W1B) September 28, 2020

The findings from the site audits and action items required to mitigate non-conformances, where required, are provided in the sub-sections below:


Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Onsite Training on EHS	Onsite training on EHS was conducted on 28 September 2020 at the construction camp located at Camp 15 where 8 workers including DMS engineers were participated. ADB Environmental Specialist has given a brief lecture to the participants majorly focused on: occupational health and safety including PPEs, safety signage, first aid, housekeeping, waste management, management of hazardous materials, emergency procedures. Moreover, explained about the importance of regular tool box meeting at the site On the other hand, participants were also explained the standard procedure for COVID-19 at the site such as appropriate PPEs, entry protocol to the worksite, hand washing protocol, discourage gathering at site and maintain physical distance, place signboard and posters at site on COVID response etc. However, all the participants hold a very positive attitude towards the training program.				
EHS Expert	As per contract, Contractor has to appoint an Environmental Expert for the implementation of the EMP but till date EHS expert has not been employed for the subproject.	Contractor should appoint the EHS expert immediately for proper implementation of EMP.	October 2020	Contractor	Photograph is not required.
Site Specific EMP	As per EMP, Contractor has not prepared the site specific EMP till date.	Site Specific EMP must be prepared and implement accordingly.	October 2020	Contractor and CSC	Photograph is not required.
Environmental Inspection and Monitoring Report	Contractor should prepare and submit the environmental report on a monthly basis but till date not a single report has been submitted.	Prepare Environmental Inspection and Monitoring report on a monthly basis.	October 2020	Contractor and CSC	Photograph is not required.
H&S Plan	Health and safety plan has been prepared as per EMP and sent to PD-LGED and CSC to share with the Contractor to improve their construction practices but contractor has not received the plan yet.	HSP should be circulated to the contractor asap and monitoring the implementation activity accordingly.	October 2020	LGED and CSC	Photograph is not required.

Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
Hill cutting and soil erosion	In order to achieve required road width, the hills located along the project alignment have been cut in Mocharkhloa. Due to removal of topsoil from the highland, currently gully erosion is taking place at the disturbed slopes and no erosion control measures are taken to date. Consequently, the sediments discharged into the nearby surface water streams increasing the turbidity of the water which may affect the aquatic life living in the water body.	To mitigate these issues, adequate cross drainage as well as erosion control measures such as (i) cover disturbed slopes as soon as possible with grass turfing, vegetation or other materials (mulch) to reduce erosion potential; (ii) divert water from disturbed areas; (iii) maintain any structural control measures at the eroded sites should be applied immediately.	October 2020	Contractor and CSC	
Worker health and safety	<ul style="list-style-type: none"> Access disturbance to the local community is occurred since no alternative route is being designated during construction activity. No road safety measure is followed at site. National labor standard was not followed to hire work force. PPEs are partially implemented in the working site. No first aid box is available at the site. Tool box meeting is not conducted at site to educate the workers. 	<ul style="list-style-type: none"> PPEs need to be supplied to workers and enforced them to use at site. Provide first aid facilities that are readily accessible by workers. Contractor must conduct tool box talk regularly at each site. Sanitation facility must be ensured at the working site. 	October 2020	Contractor	


Issues	Observation	Corrective Action	Deadline	Responsibility	Photograph
					
Construction camp	<ul style="list-style-type: none"> Construction camp is confined and secured by boundary fencing. Proper waste management yet to be implemented in the camp site. No safety signs are placed in the construction camp. No housekeeping was observed there. Moreover, no waste management is found in the camp. Emergency procedure is not followed in the camp. 	<ul style="list-style-type: none"> Site safety signage must be placed at designated locations in the camp. Separate garbage bins should be supplied for organic and inorganic wastes at the site and finally disposed at the designated location in the camp. Contractor should install garbage bins and construct a concrete waste disposal site which have the impermeable floor and wall and covered by shed to avoid air, soil and groundwater pollution. Emergency contact information should be displayed at the camp site. 	October 2020	Contractor	 

AUDIT FINDINGS (EAP/DPHE/W10) October 01, 2020

The findings from the site audits and action items required to mitigate non-conformances, where required, are provided in the sub-sections below:




Issues	Observation	Corrective Action	Deadline	Responsibility	Photographs
Onsite Training on EHS	<p>Onsite training on EHS was conducted on 01 October 2020 where 4 a brief lecture to the participants majorly focused on: occupational health and safety including PPEs, safety signage, first aid, housekeeping, waste management, management of hazardous materials, emergency procedures. Moreover, explained about the importance of regular tool box meeting at the site</p> <p>On the other hand, participants were also explained the standard procedure for COVID-19 at the site such as appropriate PPEs, entry protocol to the worksite, hand washing protocol, discourage gathering at site and maintain physical distance, place signboard and posters at site on COVID response etc. However, all the participants hold a very positive attitude towards the training program.</p>				
Environmental Quality Monitoring	In order to ensure proper implementation of the environmental safeguard requirements, the Contractor has conducted air quality, noise measurement, surface water quality and groundwater quality testing and analysis through third party organization.		Rectified		<p>Photograph is not required.</p>



Issues	Observation	Corrective Action	Deadline	Responsibility	Photographs
Site Office (Access, Materials Storage etc.)	<ul style="list-style-type: none"> Site order book is maintained properly at the work site. Site safety signage are absent in the site. Waste management measures are not followed for construction waste in the site. Construction materials were stockpiled outside of the site boundary where children were playing. 	Contractor should take action according to the site order book.	October 2020	Contractor	 
Worker Health and Safety	<ul style="list-style-type: none"> Safety protocol for COVID-19 is not followed in the site. Construction site is not confined and children were observed in the active working site. Health and safety measures are not followed for the labors; they work in the site without PPEs. Drainage congestion occurred in the working site. No protection was taken for site excavation site more than 2m in depth. No first aid box is available at the site. No fire protection was found. 	<ul style="list-style-type: none"> COVID safety protocol to be followed strictly at the site. Fire protection measures such as fire extinguisher should be available at the site. Contractor should conduct tool box meeting regularly at each site. 	October 2020	Contractor	

Issues	Observation	Corrective Action	Deadline	Responsibility	Photographs
	<ul style="list-style-type: none"> No tool box meeting was conducted at site to educate the workers. Emergency procedure was not followed at site. 				

AUDIT FINDINGS (EAP/BREB/G6) September 13, 2020

The findings from the site audits and action items required to mitigate non-conformances, where required, are provided in the sub-sections below:

Issues	Observation	Corrective Action	Deadline	Responsibility	Photographs
Onsite Training on EHS	<p>Onsite training on EHS was conducted on 13 September 2020 where 8 workers were participated. ADB Environmental Specialist has given a brief lecture to the participants majorly focused on: occupational health and safety including PPEs, safety signage, first aid, housekeeping, waste management, management of hazardous materials, emergency procedures. Moreover, explained about the importance of regular tool box meeting at the site</p> <p>On the other hand, participants were also explained the standard procedure for COVID-19 at the site such as appropriate PPEs, entry protocol to the worksite, hand washing protocol, discourage gathering at site and maintain physical distance, place signboard and posters at site on COVID response etc. However, all the participants hold a very positive attitude towards the training program.</p>				
Worker health and safety	<ul style="list-style-type: none"> • PPEs were used at the site. • COVID-19 safety protocol is addressed at the site where hand sanitizer, mask and soap were supplied to the workers. • Site safety signs are absent in the site. • Tool box meeting is not conducted at site to educate the workers. • Emergency procedure for accident, fire incident is not maintained at the site. 	<ul style="list-style-type: none"> • Contractor should conduct tool box meeting regularly. • The excavated pond/house should be confined using safety tape for fall prevention. • Fire protection measures such as fire extinguisher should be available at the site. 	September 2020	Contractor	 

Issues	Observation	Corrective Action	Deadline	Responsibility	Photographs
Community health and safety	<ul style="list-style-type: none"> Foundation pits of solar panel, battery room are left open and causing trouble for locals Excavated earth materials were left open. 	<ul style="list-style-type: none"> Worksites are to be equipped with safety signs. Work site should be confined with safety tape. Excavated materials should be removed or properly stockpiled with cover at the site. 	September 2020	Contractor	
Waste Management	<ul style="list-style-type: none"> Construction wastes were scattered around the work site due to absence of housekeeping at the site. There is no waste management facility in the site to manage construction waste. 	<ul style="list-style-type: none"> Contractor should clean the work site regularly and provide garbage bins for both organic and inorganic wastes. Construction wastes should be dumped in the designated place. 	September 2020	Contractor	

Appendix IV: Laboratory Test Result



DSCL

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Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Ambient Air Quality
Sampling Location	Camp Site, Khuniapalong, Upa: Ramu, Dist: Cox's Bazar
Sampling Id & GPS	AAQ_01 (21.34154°N; 92.07609°E)
Sample Collector	Collected by DSCL Personnel
Sampling Date	12 September 2020
Monitoring Time	09:30 am – 05:30 pm

Test Result of Ambient Air Quality Analysis

Parameter	Unit	AAQ_01 Camp Site, Khuniapalong, Upa: Ramu, Dist: Cox's Bazar	Bangladesh Standard ²⁴	Duration (hours)	Weather Condition	Method of Analysis
		21.34154°N 92.07609°E				
PM _{2.5}	µg/m ³	29.66	65	24	Cloudy	AEROQUAL Series 500 Particulate matter monitors
PM ₁₀	µg/m ³	45.88	150	24		AEROQUAL Series 500 SOx monitor
SO ₂	µg/m ³	03.25	365	24		AEROQUAL Series 500 NOx monitor
NO _x	µg/m ³	04.73	100	Annual		CO Meter
CO ⁺	ppm	1	9	8		

Note:

NYS Not Yet Standardized; ⁺CO Concentration are 08 Hours only

²⁴ The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.R.O. No. 2201 law/2005.

Sample ID	Location	GPS Location	Humidity (%)	Temperature (°C)	Wind Speed (Knots)	Wind Direction
AAQ_01	Camp Site, Khuniapalong, Upa: Ramu, Dist: Cox's Bazar	21.34154°N 92.07609°E	70.15	31.5	4.30	North-West

Description of the Surrounding Environment

Sample Locations & ID	Sample Site Description
Camp Site, Khuniapalong, Upa: Ramu, Dist: Cox's Bazar AAQ_01	<ul style="list-style-type: none"> The weather was cloudy throughout the monitoring period. It was drizzling all day long People movement was low Traffic volume was moderate. Dust particle moderate.

Test Performed By:
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Jr. Environmental Specialist



Checked By:
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DSCL

Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Undhiprang under "Emergency Assistance Project"
Description of Sample	Ambient Air Quality
Sampling Location	Moricha Bazar, Upa: Ukhiya, Dist: Cox's Bazar
Sampling Id & GPS	AAQ_02 (21.30612°N; 92.09585°E)
Sample Collector	Collected by DSCL Personnel
Sampling Date	13 September 2020
Monitoring Time	10:00 am – 06:00 pm

Test Result of Ambient Air Quality Analysis

Parameter	Unit	AAQ_02	Bangladesh Standard**	Duration (hours)	Weather Condition	Method of Analysis
		Moricha Bazar, Upa: Ukhiya, Dist: Cox's Bazar				
		21.30612°N 92.09585°E				
PM _{2.5}	µg/m ³	42.21	65	24	Cloudy	AEROQUAL Series 500 Particulate matter monitors
PM ₁₀	µg/m ³	55.20	150	24		AEROQUAL Series 500 SOx monitor
SO ₂	µg/m ³	03.89	365	24		AEROQUAL Series 500 NOx monitor
NO _x	µg/m ³	05.45	100	Annual		CO Meter
CO*	ppm	1	9	8		

Note:

NYS: Not Yet Standardized; *CO Concentration are 09 Hours only

** The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.O. No. 2201.09/2005.

Sample ID	Location	GPS Location	Humidity (%)	Temperature (°C)	Wind Speed (Knots)	Wind Direction
AAQ_02	Moricha Bazar, Upa: Ukhiya, Dist: Cox's Bazar	21.30612°N 92.09585°E	65.55	30.5	5.15	East-South

Description of the Surrounding Environment

Sample Locations & ID	Sample Site Description
Moricha Bazar, Upa: Ukhiya, Dist: Cox's Bazar AAQ_02	<ul style="list-style-type: none"> The weather was mostly cloudy throughout the monitoring period. Traffic volume was high. People movement was high. The sampling site is beside the main Bazar. Construction work was ongoing. Weekly Cow hut was held beside the sampling location.

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Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Ambient Air Quality
Sampling Location	Base camp, Balukhali, Upa: Ukhiya, Dist: Cox's Bazar
Sampling Id & GPS	AAQ_01 (21.19822°N, 92.17068°E)
Sample Collector	Collected by DSCL Personnel
Sampling Date	14 September 2020
Monitoring Time	09:10 am – 05:10 pm

Test Result of Ambient Air Quality Analysis

Parameter	Unit	AAQ_01 Base camp, Balukhali, Upa: Ukhiya, Dist: Cox's Bazar 21.19822°N 92.17068°E	Bangladesh Standard**	Duration (hours)	Weather Condition	Method of Analysis
PM _{2.5}	µg/m ³	31.16	65	24	Cloudy	AEROCAL Series 500 Particulate matter monitors
PM ₁₀	µg/m ³	40.52	150	24		AEROCAL Series 500 SOx monitor
SO ₂	µg/m ³	03.11	365	24		AEROCAL Series 500 NOx monitor
NO _x	µg/m ³	04.89	100	Annual		CO Meter
CO*	ppm	1	9	8		

Note:

*NYE: Not Yet Standardized; *CO Concentration are 8H-hours only

**The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.R.O. No. 220-Law/2005.

Sample ID	Location	GPS Location	Humidity (%)	Temperature (°C)	Wind Speed (Knots)	Wind Direction
AAQ_01	Base camp, Balukhali, Upa: Ukhiya, Dist: Cox's Bazar	21.19822°N 92.17068°E	75.00	31.2	5.50	South-West

Description of the Surrounding Environment

Sample Locations & ID	Sample Site Description
Base camp, Balukhali, Upa: Ukhiya, Dist: Cox's Bazar AAQ_01	<ul style="list-style-type: none"> The weather was cloudy throughout the monitoring period. Humidity was high and slightly drizzling during the sampling period. People movement was moderate. Traffic volume was moderate. Construction work was ongoing.

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Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Ambient Air Quality
Sampling Location	Unchiprang, Hnila Upa: Teknaf, Dist: Cox's Bazar
Sampling Id & GPS	AAQ_02 (21.09089°N, 92.21284°E)
Sample Collector	Collected by DSCL Personnel
Sampling Date	15 September 2020
Monitoring Time	09:45 am – 05:45 pm

Test Result of Ambient Air Quality Analysis

Parameter	Unit	AAQ_02	Bangladesh Standard**	Duration (hours)	Weather Condition	Method of Analysis
		Unchiprang, Hnila Upa: Teknaf, Dist: Cox's Bazar 21.09089°N 92.21284°E				
PM _{2.5}	µg/m ³	34.98	65	24	Cloudy	AEROQUAL Series 500 Particulate matter monitors
PM ₁₀	µg/m ³	46.22	150	24		AEROQUAL Series 500 SOx monitor
SO ₂	µg/m ³	04.53	355	24		AEROQUAL Series 500 NOx monitor
NO _x	µg/m ³	03.31	100	Annual		OD Meter
CO*	ppm	1	9	8		

Note:

*NYS-Not Yet Standardized; **CO Concentration are 08 Hours only

** The Bangladesh National Ambient Air Quality Standards have been taken from the Environmental Conservation Rules, 1997 which was amended on 19th July 2005 vide S.R.O. No. 220 /Law/2005.

Sample ID	Location	GPS Location	Humidity (%)	Temperature (°C)	Wind Speed (Knots)	Wind Direction
AAQ_02	Unchiprang, Hnila Upa: Teknaf, Dist: Cox's Bazar	21.09089°N 92.21284°E	68.95	30.9	5.12	North- East

Description of the Surrounding Environment

Sample Locations & ID	Sample Site Description
Unchiprang, Hnila Upa: Teknaf, Dist: Cox's Bazar AAQ_02	<ul style="list-style-type: none"> The weather was mostly cloudy throughout the monitoring period. Traffic volume was high. People movement was high. The sampling site is beside the Unchiprang Bazar. Construction work was ongoing. Vegetation cover was low.

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DSC

Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Noise Level Measurement
Sampling Location	NM_01 (Camp Site, South Khuniapalong Upa: Ramu, Dist: Cox's Bazar); NM_02 (Beside Mirza Ali Mosque, South Khuniapalong, Upa: Ramu, Dist: Cox's Bazar); NM_03 (South Station, Moriche Bazar, Upa: Ukhia, Dist: Cox's Bazar), Upa: Sitakunda Chettogram; NM_04 (Khademul Islam Madrasa, Rabeta, North Khuniapalong, Upa: Ramu, Dist: Cox's Bazar)
Sample Collector	Collected by DSC Personnel
Sampling Date	12 - 13 September 2020

Noise Level Analysis

No	Location	GPS Location	Land Use Category	Time				Noise Level dBA (LAeq)*	
				Day		Night		Day	Night
				Start	End	Start	End		
NM_01	Camp Site, South Khuniapalong Upa: Ramu, Dist: Cox's Bazar	21.34164°N 92.07618°E	Residential	10:30 am	11:00 am	8:47 pm	09:02 pm	53.55	42.60
NM_02	Beside Mirza Ali Mosque, South Khuniapalong, Upa: Ramu, Dist: Cox's Bazar	21.33791°N 92.07505°E	Commercial	11:30 am	12:00 pm	9:15 pm	10:15 pm	67.90	56.84
NM_03	South Station, Moriche Bazar, Upa: Ukhia, Dist: Cox's Bazar	21.30859°N 92.09673°E	Commercial	01:10 pm	01:40 pm	9:30 pm	10:00 pm	70.05	58.25
NM_04	Khademul Islam Madrasa, Rabeta, North Khuniapalong, Upa: Ramu, Dist: Cox's Bazar	21.35620°N 92.07909°E	Silent	02:00 pm	02:30 pm	10:05 pm	10:35 pm	52.28	42.50
Notes: <ul style="list-style-type: none"> Land use category is based on the classification provided in the Noise Pollution Control Rules (2006). The sound level standard for residential area at day time is 55 dBA and night time is 45 dBA. The sound level standard for commercial at day time is 65 dBA and night time is 55 dBA. The sound level standard for silent at day time is 45 dBA and night time is 35 dBA. Noise Level is the average noise recorded over the duration of the monitoring period. 									

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Description of the Surrounding Environment

Sample Locations & ID	Sample Site Description
Camp Site, South Khuniapalong Upa: Ramu, Dist: Cox's Bazar NM_01	<ul style="list-style-type: none"> People movement was moderate Traffic volume was moderate The place is in residential area construction work was going on.
Beside Mirza Ali Mosque, South Khuniapalong, Upa: Ramu, Dist: Cox's Bazar NM_02	<ul style="list-style-type: none"> People movement was high Traffic volume was high. The place is in commercial area. Beside Cox's Bazar- Teknaf highway. Some grocery shops are present.
South Station, Moricha Bazar, Upa: Ukhia, Dist: Cox's Bazar NM_03	<ul style="list-style-type: none"> Commercial area Construction work was going on. People movement was High. Traffic volume was high. Crowded area.
Khademul Islam Madrasa, Rabeta, North Khuniapalong, Upa: Ramu, Dist: Cox's Bazar NM_04	<ul style="list-style-type: none"> People movement was moderate. Traffic volume was moderate. Silent area. Infront of Khademul Islam Madrasa

BS
Test Performed By:
Saiful Islam Imran
Jr. Environmental Specialist



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Checked By:
Tonmoy Pandit
Deputy Manager

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Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Noise Level Measurement
Sampling Location	NM_01 (Base Camp, Balukhali Upa: Ukhiya, Dist: Cox's Bazar); NM_02 (Pelongkhali Bazar, Upa: Ukhiya, Dist: Cox's Bazar); NM_03 (Ulubunia Rasta: More, Whaikhyang Upa: Teknaf, Dist: Cox's Bazar); NM_04 (Unchiprang, Hnila, Upa: Teknaf, Dist: Cox's Bazar)
Sample Collector	Collected by DSCL Personnel
Sampling Date	14 - 15 September 2020

Noise Level Analysis

No	Location	GPS Location	Land Use Category	Time				Noise Level dBA (LA _{eq}) ^{av}	
				Day		Night		Day	Night
				Start	End	Start	End		
NM_01	Base Camp, Balukhali Upa: Ukhiya, Dist: Cox's Bazar	21.19815°N 92.17069°E	Residential	10.40 am	11.10 am	8.05 pm	08.35 pm	58.25	52.60
NM_02	Pelongkhali Bazar, Upa: Ukhiya, Dist: Cox's Bazar	21.14537°N 92.15821°E	Commercial	02.10 am	02.40 pm	08.57 pm	09.27 pm	68.15	58.47
NM_03	Ulubunia Rasta: More, Whaikhyang Upa: Teknaf, Dist: Cox's Bazar	21.13274°N 92.18329°E	Commercial	12.22 pm	12.52 pm	9.50 pm	10.20 pm	62.44	49.88
NM_04	Unchiprang, Hnila, Upa: Teknaf, Dist: Cox's Bazar	21.09093°N 92.21279°E	Commercial	11.25 am	11.55 am	10.58 pm	11.28 pm	67.96	58.10
Notes: <ul style="list-style-type: none"> Land use category is based on the classification provided in the Noise Pollution Control Rules (2005). The sound level standard for residential area at day time is 55 dBA and night time is 45 dBA. The sound level standard for commercial at day time is 65 dBA and night time is 55 dBA. Noise Level is the average noise recorded over the duration of the monitoring period. 									

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Multidisciplinary Development Consultants

Description of the Surrounding Environment

Sample Locations & ID	Sample Site Description
Base Camp, Balukhali Upa; Ukhiya, Dist: Cox's Bazar NM_01	<ul style="list-style-type: none"> ➤ People movement was high ➤ Traffic volume was high ➤ The place is in residential area ➤ Minor construction work was going on.
Palongkhali Bazar, Upa; Ukhiya, Dist: Cox's Bazar NM_02	<ul style="list-style-type: none"> ➤ People movement was high ➤ Traffic volume was high. ➤ Commercial area. ➤ Construction work ahead and casting activity was ongoing during sampling time.
Ulubunia Rastar More, Whaildhyang Upa: Teknaf, Dist: Cox's Bazar NM_03	<ul style="list-style-type: none"> ➤ Commercial area ➤ A Cyclone Shelter located beside the alignment. ➤ People movement was comparatively low. ➤ Traffic volume was low. ➤ Ulubunia Bazar is 500m ahead from the sampling location.
Unchiprang, Hnila, Upa; Teknaf, Dist: Cox's Bazar NM_04	<ul style="list-style-type: none"> ➤ People movement was moderate. ➤ Traffic volume was moderate. ➤ Commercial area. ➤ Beside Unchiprang Bazar.

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Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Surface Water Quality
Sample Collector	Collected by DSCL Personnel
Sampling Date	13 September 2020

On-site Result of Surface Water Quality Analysis

Parameters	Unit	SW_01	Standards for Inland Surface Water** (best fishing practice)	Analysis Method
		21.31245°N, 92.09657°E		
		Canal Water		
		Reju Khal, Union: Moricha; Upa: Ukhiya; Dist: Cox's Bazar		
pH*	-	7.50	6.5-8.5	Multimeter
Temperature*	°C	31.2°C	NYS	Multimeter
Dissolved Oxygen (DO)*	mg/l	7.5	5 or more	DO Meter
Electrical Conductivity (EC)*	µs/cm	222	NYS	Multimeter

* On-Site Test Result; ** Standards for Inland Surface Water According to ECR, 1997



Sample Location and ID	Sample Site Description
Reju Khal, Union: Moricha; Upa: Ukhiya; Dist: Cox's Bazar (SW_01)	<ul style="list-style-type: none"> - The water is collected from Reju Khal. - The depth from where sample was collected is approximately 3 inches. - Water remains all-round the year. - Fishing activity occurred in the Khal.

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Lab Memo: 257/CC, DPHE, CL, Dhaka

Date: 01-10-2020

Physical /Chemical/ Bacteriological Analysis of Water Sample

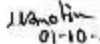


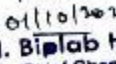
Sample ID: CEN2020100022	Sample Receiving date: 17-09-2020
Ref. Memo No: DSCU/2020/III & Dated: 17-09-2020	Sample Source: Surface Water
Sent by: Md. Mashur Rahman, Jr. Environmental Specialist, DSCU, Mirpur DOHS, Dhaka.	Dist: Cox's Bazar, Upa: Ukha Upazila
Care Taker: DSCU (SW_01, Package-1)	Union: VIII: Reju Khal, Morichcha
Sample Collection date:	Date of Testing: 17/09/2020-29/09/2020

LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Biochemical Oxygen Demand (BOD)	0.2	9	mg/L	5 days incubation	0.1
2	Chemical Oxygen Demand (COD)	4.0	40	mg/L	CRM	-
3	Phosphate	6.0	0.18	mg/L	UVS	0.10
4	Sulphate	400	1	mg/L	UVS	1.0
5	Total Suspended Solid (TSS)	10	8	mg/L	Gravimetric Method	-
6	Turbidity	10	63	NTU	Turbidity Meter	-

Comments: Sample was collected & supplied by client.

N.B: UVS- UV-Visible Spectrophotometer, CRM-Closed Reflex Methods, LOQ- Limit of Quantitation.

Test Performed by: 1.) Name: Mahabuba Sabina Motin Designation: Sample Analyzer  01-10-2020 2.) Name: Md. Saiful Alam Khosru Designation: Sample Analyzer  01.10.2020	Countersigned/Approved by: 1.) Name: Mita Sarker Designation: Senior Chemist  01/10/2020 2.) Name: Md. Biplob Hossain Designation: Chief Chemist  01/10/2020 Md. Biplob Hossain Chief Chemist Department of Public Health Engineering Central Laboratory Mohakhali, Dhaka
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Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Surface Water Quality
Sample Collector	Collected by DSCL Personnel
Sampling Date	15 September 2020

On-site Result of Surface Water Quality Analysis

Parameters	Unit	SW_01	Standards for Inland Surface Water** (best fishing practice)	Analysis Method
		21.09438°N 92.21253°E		
		Canal Water Noapara Khal, Union: Unchiprang; Upa: Teknaf; Dist: Cox's Bazar		
pH*	-	7.14	6.5-8.5	Multimeter
Temperature*	°C	29.5°C	NYS	Multimeter
Dissolved Oxygen (DO)*	mg/l	6.5	5 or more	DO Meter
Electrical Conductivity (EC)*	us/cm	148	NYS	Multimeter

* On-Site Test Result; ** Standards for Inland Surface Water According to ECR, 1997



Sample Location and ID	Sample Site Description
Noapara Khal, Union: Unchiprang; Upa: Teknaf; Dist: Cox's Bazar (SW_01)	<ul style="list-style-type: none"> The water is collected from Noapara Canal The depth from where sample was collected is approximately 4 inches Water remains all-round the year. Fishing activity occurred in the Khal.

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Lab Memo: 257/CC, DPHE, CL, Dhaka

Date: 01-10-2020

Physical /Chemical/ Bacteriological Analysis of Water Sample





Sample ID: CEN2020100023	Sample Receiving date: 17-09-2020
Ref. Memo No: DSCL/2020/NIH & Dated: 17-09-2020	Sample Source: Surface Water
Sent by: Md. Mashur Rahman, Jr. Environmental Specialist, DSCL, Mirpur DOHS, Dhaka.	Dist: Cox's Bazar, Upa: Teknaf
Care Taker: DSCL (SW_01, Package-2)	Union: Vill.: Katakhal Khal, Unchilprang
Sample Collection date:	Date of Testing: 17/09/2020-29/09/2020

LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Biochemical Oxygen Demand (BOD)	0.2	2	mg/L	5 days Incubation	0.1
2	Chemical Oxygen Demand (COD)	4.0	8	mg/L	CRM	-
3	Phosphate	6.0	0.13	mg/L	UVS	0.10
4	Sulphate	400	43	mg/L	UVS	1.0
5	Total Suspended Solid (TSS)	10	7	mg/L	Gravimetric Method	-
6	Turbidity	10	71	NTU	Turbidity Meter	-

Comments: Sample was collected & supplied by client.

N.B: UVS- UV-Visible Spectrophotometer, CRM-Closed Reflex Methods, LOQ- Limit of Quantitation.

Test Performed by: 1.) Name: Mahabuba Sabina Motin Designation: Sample Analyzer Signature:  01-10-2020 2.) Name: Md. Saiful Alam Khosru Designation: Sample Analyzer Signature:  01.10.2020	Countersigned/Approved by: 1.) Name: Mita Sarker Designation: Senior Chemist Signature:  01/10/2020 2.) Name: Md. Biplab Hossain Designation: Chief Chemist Signature:  01/10/2020 Md. Biplab Hossain Chief Chemist Department of Public Health Engineering Central Laboratory Mohakhali, Dhaka
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Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Groundwater Quality
Sample Collector	Collected by DSCL Personnel
Sampling Date	13 September 2020

On-site Result of Ground Water Quality Analysis

Parameters	Unit	GW_01	GW_02	Standards for Potable Water**	Analysis Method
		21.33959°N 92.07819°E	21.34150°N 92.07550°E		
		Dep Tube well Water Labor Shed, Union: Modhdhom Khuniapalong; Upa: Ramu; Dist: Cox's Bazar	Dep Tube well Water Beside Camp site; Union: Khuniapalong; Upa: Ramu; Dist: Cox's Bazar		
pH*	-	6.15	5.95	6.5-8.5	Multimeter
Temperature*	°C	31.5	30.6	20-30	Multimeter
Selinity*	ppm	150	223	<600	Multimeter

* On-Site Test Result; ** Standards for Potable Water According to ECR, 1997



Sample Location and ID	Sample Site Description
Labor Shed, Union: Modhdhom Khuniapalong; Upa: Ramu; Dist: Cox's Bazar (GW_01)	<ul style="list-style-type: none"> The sample is collected from deep tube well water. The water is used for drinking and other domestic purposes. Septic tank is 20m distance from the sampling source Source was established in 2012. Depth is approximately 250ft
Beside Camp site; Union: Khuniapalong; Upa: Ramu; Dist: Cox's Bazar (GW_02)	<ul style="list-style-type: none"> The sample is collected from deep tube well water. The water is used for drinking and other domestic purposes. Septic tank is 50m distance from the water source The source was established in 2015. Depth is approximately 350ft

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Lab Memo: 257/ CC, DPHE, CL, Dhaka

Date: 01-10-2020

Physical /Chemical/ Bacteriological Analysis of Water Sample

Sample ID: CEN2020100024	Sample Receiving date: 17-09-2020
Ref. Memo No: DSCU/2020/NNI & Dated: 17-09-2020	Sample Source: Ground Water
Sent by: Md. Mashiur Rahman, Jr. Environmental Specialist, DSCL, Mirpur DOHS, Dhaka.	Dist: Cox's Bazar, Upa: Ukhia Upazila
Care Taker: DSCL (GW_01, Package-1)	Union: Vill: Laborshed, Moddhom, Khuniapalong
Sample Collection date:	Date of Testing: 17/09/2020-29/09/2020


LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Arsenic (As)	0.05	0.001	mg/L	AAS	0.001
2	Chloride	150-600	12	mg/L	Titrimetric	-
3	Coliform (Faecal)	0	0	N/100ml	MFM	-
4	Coliform (Total)	0	0	N/100ml	MFM	-
5	Colour	15	1.7	Hazen	UVS	-
6	Hardness	200-500	125	mg/L	Titrimetric	-
7	Iron (Fe)	0.3-1	0.29	mg/L	AAS	0.05
8	Manganese (Mn)	0.1	0.05	mg/L	AAS	0.03
9	Turbidity	10	3.9	NTU	Turbidity Meter	-

Comments: Sample was collected & supplied by client.

N.B: AAS- Atomic Absorption Spectrophotometer, UVS- UV-Visible Spectrophotometer, MFM- Membrane Filtration Method, LOQ- Limit of Quantitation.

Test Performed by: 1.) Name: Mahabuba Sabina Motin Designation: Sample Analyzer 2.) Name: Md. Saiful Alam Khosru Designation: Sample Analyzer	Countersigned/Approved by: 1.) Name: Mita Sarker Designation: Senior Chemist 2.) Name: Md. Biplob Hossain Designation: Chief Chemist
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Lab Memo: 257/ CC, DPHE, CL, Dhaka

Date: 01-10-2020

Physical /Chemical/ Bacteriological Analysis of Water Sample

Sample ID: CEN2020100025	Sample Receiving date: 17-09-2020
Ref. Memo No: DSCL/2020/NII & Dated: 17-09-2020	Sample Source: Ground Water
Sent by: Md. Mashiur Rahman, Jr. Environmental Specialist, DSCL, Mirpur DOHS, Dhaka.	Dist: Cox's Bazar, Upa: Ukha Upazila
Care Taker: DSCL (GW_02, Package-1)	Union: Vill.: Basecamp, South Khuniapalong
Sample Collection date:	Date of Testing: 17/09/2020-29/09/2020

LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Arsenic (As)	0.05	0.001	mg/L	AAS	0.001
2	Chloride	150-800	10	mg/L	Titrimetric	-
3	Coliform (Faecal)	0	0	N/100ml	MFM	-
4	Coliform (Total)	0	0	N/100ml	MFM	-
5	Colour	15	1.2	Hazen	UVS	-
6	Hardness	200-500	130	mg/L	Titrimetric	-
7	Iron (Fe)	0.3-1	0.23	mg/L	AAS	0.05
8	Manganese (Mn)	0.1	0.08	mg/L	AAS	0.03
9	Turbidity	10	2.8	NTU	Turbidity Meter	-

Comments: Sample was collected & supplied by client.

N.B: AAS- Atomic Absorption Spectrophotometer, UVS- UV-Visible Spectrophotometer, MFM- Membrane Filtration Method, LOQ- Limit of Quantitation.

Test Performed by: 1.) Name: Mahabuba Sabina Motin Designation: Sample Analyzer 2.) Name: Md. Saiful Alam Khosru Designation: Sample Analyzer	Countersigned/Approved by: 1.) Name: Mita Sarker Designation: Senior Chemist 2.) Name: Md. Biplab Hossain Designation: Chief Chemist Md. Biplab Hossain Chief Chemist Department of Public Health Engineering Central Laboratory Mohakhali, Dhaka
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Multidisciplinary Development Consultants

Name of the Project	Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchiprang under "Emergency Assistance Project"
Description of Sample	Groundwater Quality
Sample Collector	Collected by DSCL Personnel
Sampling Date	15 September 2020

On-site Result of Groundwater Quality Analysis

Parameters	Unit	GW_01	GW_02	Standards for Potable Water**	Analysis Method
		21.19819°N 92.17059°E	21.09073°N 92.21338°E		
		Submergible Water Pump	Deep Tube well Water		
		Base Camp Union: Balukhali; Upa: Ukhiya; Dist: Cox's Bazar	Madrasatul Islamia Sunnah; Union: Unchiprang; Upa: Teknaf; Dist: Cox's Bazar		
pH*	-	7.55	6.36	6.5-8.5	Multimeter
Salinity*	ppm	166	215	<600	Multimeter
Temperature*	°C	28.9	30.1	20-30	Multimeter

* On Site Test Result; ** Standards for Potable Water According to ECR, 1997

Sample Location and ID	Sample Site Description
Base Camp Union: Balukhali; Upa: Ukhiya; Dist: Cox's Bazar (GW_01)	<ul style="list-style-type: none"> - The sample is collected from submergible water pump. - The water is used for drinking and household purposes. - Septic tank is 80m distance from the sampling source - Source was established in 2019. - Depth is approximately 370ft
Madrasatul Islamia Sunnah; Union: Unchiprang; Upa: Teknaf; Dist: Cox's Bazar (GW_02)	<ul style="list-style-type: none"> - The sample is collected from deep tube well water. - The water is used for drinking and household purposes. - Septic tank is 20m distance from the water source - The source was established in 2010. - Depth is approximately 350ft



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Lab Memo: 257/ CC, DPHE, CL, Dhaka

Date: 01-10-2020

Physical /Chemical/ Bacteriological Analysis of Water Sample

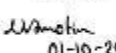
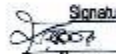
Sample ID: CEN2020100028	Sample Receiving date: 17-09-2020
Ref. Memo No: DSC/L/2020/III & Dated: 17-09-2020	Sample Source: Ground Water
Sent by: Md. Mashiur Rahman, Jr, Environmental Specialist, DSC/L, Mirpur DOHS, Dhaka.	Dist Cox's Bazar, Upa/Ukhia Upazila
Care Taker: DSC/L (GW_01, Package-2)	Union:, VII.: Basecamp, Balukhali
Sample Collection date:	Date of Testing: 17/09/2020-29/09/2020



LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Arsenic (As)	0.05	0.001	mg/L	AAS	0.001
2	Chloride	150-600	15	mg/L	Titrimetric	-
3	Coliform (Faecal)	0	0	N/100ml	MFM	-
4	Coliform (Total)	0	0	N/100ml	MFM	-
5	Colour	15	1.1	Hazen	UVS	-
6	Hardness	200-500	167	mg/L	Titrimetric	-
7	Iron (Fe)	0.3-1	0.57	mg/L	AAS	0.05
8	Manganese (Mn)	0.1	0.31	mg/L	AAS	0.03
9	Turbidity	10	2.3	NTU	Turbidity Meter	-

Comments: Sample was collected & supplied by client.

N.B: AAS- Atomic Absorption Spectrophotometer, UVS- UV-Visible Spectrophotometer, MFM- Membrane Filtration Method, LOQ- Limit of Quantitation.

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Lab Memo: 257/ CC, DPHE, CL, Dhaka

Date: 01-10-2020

Physical /Chemical/ Bacteriological Analysis of Water Sample

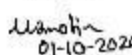
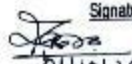
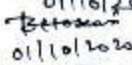
Sample ID: CEN2020100027	Sample Receiving date: 17-09-2020
Ref. Memo No: DSCL/2020/Nill & Dated: 17-09-2020	Sample Source: Ground Water
Sent by: Md. Mashur Rahman ,Jr. Environmental Specialist, DSCL, Mirpur DOHS, Dhaka.	Dist: Cox's Bazar, Upa: Teknaf
Care Taker: DSCL (GW_02, Package-2)	Union:, Vill.: Unchlprang
Sample Collection date:	Date of Testing: 17/09/2020-29/09/2020

LABORATORY TEST RESULTS:

Sl.#	Water quality parameters	Bangladesh Standard	Concentration present	Unit	Analysis Method	LOQ
1	Arsenic (As)	0.05	0.001	mg/L	AAS	0.001
2	Chloride	150-600	160	mg/L	Titrimetric	-
3	Coliform (Faecal)	0	0	N/100ml	MFM	-
4	Coliform (Total)	0	0	N/100ml	MFM	-
5	Colour	15	0.9	Hazen	UVS	-
6	Hardness	200-500	200	mg/L	Titrimetric	-
7	Iron (Fe)	0.3-1	0.18	mg/L	AAS	0.06
8	Manganese (Mn)	0.1	1.28	mg/L	AAS	0.03
9	Turbidity	10	1.0	NTU	Turbidity Meter	-

Comments: Sample was collected & supplied by client.

N.B: AAS- Atomic Absorption Spectrophotometer, UVS- UV-Visible Spectrophotometer, MFM- Membrane Filtration Method, LOQ- Limit of Quantitation.

Test Performed by: 1.) Name: Mahabuba Sabina Motin Designation: Sample Analyzer 2.) Name: Md. Saiful Alam Khosru Designation: Sample Analyzer	Signature  01-10-2020  01.10.2020	Countersigned/Approved by: 1.) Name: Mita Sarker Designation: Senior Chemist 2.) Name: Md. Biplab Hossain Designation: Chief Chemist Md. Biplab Hossain Chief Chemist Department of Public Health Engineering Central Laboratory Mohakhali, Dhaka	Signature  01/10/2020  01/10/2020
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Department of Soil, Water and Environment
University of Dhaka
Dhaka 1000
Bangladesh

Report of Analysis

Date: 29.09.2020

Sample Supplied by
Mr. Tonmoy Pandit
Deputy Manager
Development Solutions Consultant Ltd.
House # 734 (5-B), Road # 10, Avenue # 04
DOHS Mirpur, Dhaka-1216, Bangladesh

Sample Title: Soil Quality Test

Re: Environmental Quality Test for Rehabilitation of the National Highway from Link Road (Cox's Bazar) to Teknaf via Unchprang under "Emergency Assistance Project (ADB Grant No. 0582-Ban)"

Analytical Results:

Serial No.	Sample ID	Test Parameters				
		pH	Lead (Pb) (mg/kg)	Iron (Fe) (%)	Sulphate (SO ₄ ²⁻)	Organic Matter (%)
1	SL_01	7.19	0.69	2.28	20.50	0.95

Methods Used:

1. pH : pH Meter
2. Organic Matter : Wet Oxidation Method
3. Iron & Lead : Aqua Regia Digestion & Atomic Absorption
4. Sulphate : Turbidity Method

(Dr. Md. Khalilur Rahman)
Professor and Chairman

Dr. Md. Khalilur Rahman
Professor & Chairman
Dept. of Soil, Water & Environment
University of Dhaka
Dhaka-1000, Bangladesh

Appendix V: Compliance Monitoring Checklist

Access Road and Internal Road Packages- LGED Component)

Sl. No.	Issues	Location	Compliance status			Remarks
			C	PC	NC	
A. Construction Camp and Site Office						
1	Locate the construction camps at areas which are acceptable from environmental, cultural or social point of view		√			
2	Environment, Health and Safety Officer designated				√	Need to deploy. Contractor not interested.
3	Site Specific Environmental Management Plan (SEMP) in site office		√			
4	Health and Safety Plan in site office		√			
5	First aid box with first aiding agents in site office		√			
6	Fire extinguisher/ protective arrangements		√			
7	Emergency contacts in case of any incident		√			
8	Incident register book		√			
9	Complain/ visitor's comment book		√			
10	Installation of materials and equipment storage		√			
11	Separate storage of fuel and lubricant			√		Need to improvement. Contractor not interested. Due to small quantity is used.
12	Installation of safety signboards		√			
13	Installation of fences to restrict public access into the camp		√			
B. Labor shed						
1	Establishment of labor shed		√			
2	Hygiene and sanitation facilities		√			
3	Bin for collecting garbage and food waste with disposal system		√			
4	Wastewater disposal system			√		Need to improvement. Contractor negligence.
5	Special facilities for female labor (dress-up, breast feeding, etc.)			√		Need to improvement. Contractor negligence.
6	Measures against mosquito, insects, snakes etc.		√			
C. Roads Safety and Traffic Management						
1	Consult with community on schedule of construction activity		√			
2	Implementation of traffic management plan approved by PD				√	Need to prepare. Contractor negligence.

Sl. No.	Issues	Location	Compliance status			Remarks
			C	PC	NC	
3	Observation of traffic regulations, installation of traffic signs along the construction sites			√		Need improvement. Contractor negligence.
4	Install bold diversion signs to be visible even at night, and provide flag persons to warn of dangerous conditions (24 hours/as necessary)			√		Need improvement. Contractor negligence.
5	Provide sufficient lighting at night within and in the vicinity of construction sites		√			
D. Occupational Health and Safety						
1	Implementation of H&S plan			√		need improvement to
2	Personal Protective Equipment (safety boots, helmets, gloves, protective clothing, breathing mask, goggles and ear protection)			√		Need improvement. Contractor as well as labor negligence. More training and supervision is needed.
3	Fall prevention and protection measures to prevent the hazard of falling more than 2 meters			√		need improvement to
4	Ensure no involvement of child labour		√			
5	Installation of safety signboards at the sites		√			
6	Installation of reversing signals on the construction vehicles			√		need improvement to
7	Confined the construction sites to restrict public access		√			
8	Accident/ Incident records and steps taken		√			
9	Tool box talk on OHS, PPE and others before starting construction activity		√			
E. Environmental Quality						
1	All site personnel have a basic level of environmental awareness training		√			
2	Implementation of waste management plan approved by Consultant/PMU			√		Need improvement. Contractor negligence.
3	Measures for construction waste/ debris management			√		Need improvement. Contractor negligence.
4	Undertake housekeeping at all sites and camps to ensure cleanliness		√			
5	Prohibit burning of any kind of waste		√			
6	Air quality monitoring and dust controlling measures			√		Need improvement, inadequate water spraying.
7	Noise level monitoring and controlling measures		√			
8	Effluents not to be disposed of directly into natural waters, but via settling basins to allow suspended sediment to settle out			√		need improvement to
9	Management of excavated soil			√		Need improvement Contractor negligence.

Sl. No.	Issues	Location	Compliance status			Remarks
			C	PC	NC	
10	Restoration of any utility services		√			
11	Any private property damage		√			
12	Locate hot mix and batching plant at environmental and socially acceptable area		√			
13	Provide dust extraction systems for the hot mix and batching plant		√			
14	Prohibit disposal of bitumen in running or dry streambeds or in ditches		√			
F. Protection for Biodiversity						
1	Awareness raising program for managing biodiversity (wildlife and vegetation)			√		need to conduct
2	Strictly prohibit hunting of birds and other animals in the forest		√			
3	Removal of trees require prior approval of PMU/Consultant/FD etc.		√			
4	Supply gas for cooking to avoid tree felling		√			
5	Taking care not to block the routes with equipment of temporary storage		√			
6	No construction related camp, equipment and material storage at the crossing site		√			
7	Contractor needs to be fully aware when working in vicinity of elephant travel routes		√			